ANNEX 3-40 COUNTER WEAPONS OF MASS DESTRUCTION (WMD) OPERATIONS

SAFEGUARDING THE FORCE

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Activities to safeguard the force from the effects of weapons of mass destruction (WMD) attacks and chemical, biological, radiological, and nuclear (CBRN) incidents and to manage the consequences associated with CBRN contamination in the operating environment involve joint force execution of tasks to mitigate, sustain, and support. Mitigation tasks involve the ability to plan, prepare for, respond to, and recover from WMD attacks to continue military operations in a CBRN-contaminated environment through minimizing or negating the effects of CBRN attacks.[1] Sustain tasks relate to the ability to maintain the CBRN response and recovery operations needed to regenerate combat readiness (e.g., personnel and equipment decontamination).[2] Support tasks are those that leverage joint force response and recovery capabilities to assist US Government (USG) or international partners in mitigating CBRN effects and sustaining operations (e.g., foreign consequence management and defense support of civil authorities).

The Air Force provides a wide range of CBRN defense capabilities needed to execute these tasks. As **Table 6** indicates, the Air Force delivers a combination of CBRN defense capabilities spread across the combat support, force protection, force health protection, homeland operations, medical and security cooperation functional communities. These functional communities provide CBRN defense capabilities and conduct CBRN defense actions. CBRN defense capabilities and activities, in turn, are further organized according to the "sense, shape, shield, and sustain" framework. This framework demonstrates how the various functional communities synchronize and integrate at the installation level to provide Air Force commanders with the capabilities needed to mitigate CBRN agent effects and sustain mission essential combat readiness.

[1] Joint Publication (JP) 3-40, *Countering Weapons of Mass Destruction*.
[2] Ibid.

	CWMD Activity: Safeguard the Force and Manage Consequences	Supported DoD Lines of Effort
Air Force CWMD-Related Operations, Missions, and Capabilities	Combat support • Field forces able to survive and operate in CBRN-contaminated environments • Base forces in WMD threat environments • Protect forces from CBRN weapons • Generate the mission in WMD threat environments • Support and sustain the mission, forces, and infrastructure in WMD threat environments	• Contain and Reduce Threats • Respond to Crises
	Force protection • Emergency management • Wing inspection • Crisis action team/command post • Emergency operations center • Emergency communications center • Specialized support/recovery teams • First and emergency responders	• Contain and Reduce Threats • Respond to Crises
	Force health protection • Medical treatment and care as part of all hazards approach • Aeromedical evacuation from CBRN-contaminated operating environments • Medical stability operations (includes medical C-CBRN threat response)	• Contain and Reduce Threats • Respond to Crises
	Homeland operations in response to CBRN attacks and incidents • Defense support to civil authorities • Homeland defense	• Contain and Reduce Threats • Respond to Crises
	Security Cooperation • CBRN defense relationships • Foreign consequence management	• Contain and Reduce Threats • Respond to Crises

Table 6: Air Force Contributions to the Safeguarding the Force and Managing Consequences Activity

GENERAL FRAMEWORK FOR SAFEGUARDING THE FORCE

Despite commander, Air Force forces (COMAFFOR) efforts to prevent, contain, and reduce adversary CBRN-related threats, some adversary strikes may reach their targets. Measures to safeguard the force are designed and implemented to improve the ability of personnel to survive and sustain operations in a CBRN-contaminated environment. Commanders will assess the threat in relation to the mission and determine appropriate measures to mitigate CBRN effects and sustain operations following WMD attacks and CBRN incidents. Safeguarding the force requires implementation of cross-functional measures that maximize the ability to survive and operate in a contaminated environment through proper planning, training, risk assessment, and vulnerability and hazard mitigation. Understanding the nature of CBRN threats and how to operate through them is the responsibility of every Airman.

In the event of a CBRN attack, the ability to perform the mission at an installation may decrease due to degradation of the operations tempo. A well-trained and exercised plan for conducting operations in a CBRN-contaminated environment will facilitate a more rapid return to full operational capability, especially in conjunction with advanced warning of impending strikes. Efforts to safeguard the force will reduce vulnerability to and minimize the effects of WMD and CBRN agents employed against US and host nation installations and facilities, interests, points of embarkation and debarkation, and critical infrastructure.

ACTIONS TO SAFEGUARD THE FORCE (SENSE, SHAPE, SHIELD, AND SUSTAIN)

A combination of combat support, force protection, and force health protection CBRN defense activities are conducted to enable a commander to neutralize, contain, and/or manage the effects of WMD attacks on Air Force installations or areas of interest. Commanders should implement CBRN defense measures that are appropriate to the threat, location of the installation, and availability of resources. These measures may include any or all of the following:

- Facility hardening
- Evacuation
- Individual and collective protection
- Detection, identification, sampling, and quantification warning and reporting systems
- Contamination avoidance
- Contamination control
- Decontamination
- Health risk assessments
- Medical surveillance
- Medical countermeasures

A “one size fits all” approach to CBRN defense is not possible due to variables associated with adversary WMD employment, geographic operating locations, weather patterns, number of at-risk personnel, availability of defense equipment, etc. Individual CBRN effects may be significantly different and often require unique strategies and procedures. For example, medical countermeasures and restriction of movement strategies designed to contain disease outbreaks are unlikely to be useful against chemical, radiological, or nuclear effects. Likewise, the protection provided by existing mission-oriented protective posture (MOPP) gear is not uniform across the CBRN spectrum. In general, CBRN detection systems, computer-based warning systems and reporting tools, and various levels of personnel and equipment decontamination capabilities reduce the effects of an attack. These CBRN defense activities and measures should be applied in a layered and tailored approach to

facilitate a comprehensive response. All Air Force CBRN defense measures and capabilities used to safeguard the force from CBRN incidents are categorized functionally according to the sense, shape, shield, and sustain framework. While these measures and capabilities normally are implemented at the installation level, the commander, Air Force forces (COMAFFOR) should be aware of and ensure the emplacement and employment of theater-wide CBRN defense capabilities.

Sense: Air Force sense capabilities provide commanders with up-to-date information on CBRN threats by detecting, identifying, and qualifying/quantifying hazards. Obtaining this information requires accurate intelligence assessments in a number of areas, to include CBRN agent sampling, detection, and identification.

CBRN agent detection, sampling, and identification are multifaceted and multifunctional operations that involve the use of CBRN point and stand-off detection systems; medical, food, and water surveillance; and pre- and attack recovery reconnaissance for explosive ordnance detection by unit and installation attack recovery reconnaissance teams. Samples collected for real-time identification, typically detected and collected by civil engineering and bioenvironmental engineering personnel, provide evidence of an attack involving CBRN agents and may trigger an installation emergency management response. Point detection systems continue to improve and incorporate the use of rapid identification capabilities. Epidemiological surveillance conducted by public health and medical personnel also can contribute to detecting biological warfare agent exposure, low-level chemical agent exposure (below current instrument detection levels), and radiation exposure. Airmen serve as a key component of the sensing architecture. All Airmen should recognize their role as a CBRN "sensor." They should be trained to sense indications of impending or actual attacks involving the use of CBRN agents, report those indications, and take the immediate and prudent actions necessary to protect themselves and mission resources.

Shape: Shaping describes the characterization of CBRN hazards to accurately describe the current and future operational picture to the commander. Operations and capabilities that allow a commander to shape the operational environment include CBRN effects predictions, meteorological condition assessments, gaining situational awareness, and predicting future events. In turn, the commander establishes protected beddown locations to mitigate CBRN effects and identifies health risks to ensure a fit and healthy fighting force.

Prediction, in combination with detection, identification, and quantification, provides commanders with a clear delineation between clean and contaminated areas. Intelligence, civil engineering, and weather experts provide predictions on the nature of the threat based on available data. For meteorological condition assessments, weather experts supply information on weather conditions and other meteorological data, while civil engineer readiness and emergency management CBRN experts provide predictions about the type of agent, release point, and the plume (i.e., footprint of the contaminated area).

Predictive modeling under differing meteorological conditions helps commanders prepare responses to a wide range of possible threat scenarios. Meteorological conditions such as temperature, cloud cover, rainfall, and wind speed may impact the effectiveness of attacks involving CBRN agents, as well as the persistence of the resulting contamination. Analyzing the potential meteorological effects on unit operations is essential to implementing an effective response. The Air Force should be

able to produce real-time data on current weather conditions pre-, trans-, and post-attack to determine what conditions might affect CBRN agent plume patterns and persistence in the operating environment. Accurate and timely meteorological assessments also contribute to effective sampling, detection, and identification of CBRN agents.

Maintaining situational awareness of CBRN-related threats is critical to predicting the potential future degradation of operations and allows commanders to optimize offensive and defensive operations. Integrating information obtained from different functional communities shapes the commander's view of the operational battle space.

Location planning is necessary for the beddown of forces and mission parameters. Site development concerns are also critical for optimizing efforts to safeguard the force. The physical features of a region should be factored into CBRN defense planning, as different geographical features will affect the potential for sensing CBRN agents and alter the spread of the CBRN contamination.

Commanders obtain health risk assessments for each potential CBRN agent via medical staff, to include the Public Health Emergency Officer (typically a flight surgeon or Public Health Officer) and the Medical NBC Officer (typically a bioenvironmental engineer), supplemented by information from emergency management, reach back support, and other theatre support assets. By coupling the operational and health risks, the commander can make informed risk management decisions.

Shield: Shielding includes protecting forces from the harmful effects of CBRN agents. Shielding may be accomplished through activities including the administration of vaccines and prophylaxis (to prevent, mitigate, and minimize CBRN exposure effects), or contamination avoidance to prevent or reduce exposures. Commander-directed shield actions include disease and casualty prevention, contamination avoidance, contamination control, and protective countermeasures.

Disease and casualty prevention include steps taken to prevent casualties before attack and minimize casualties after a CBRN attack. Good health and hygiene, vaccines, and prophylaxis increase the survivability of forces. Commanders should optimize the appropriate level and type of protection based upon current intelligence, the specific CBRN agent, the quantity of the agent dispersed, weather conditions, and the location of the attack or potential attack.

Contamination avoidance includes actions taken to minimize the impact of attacks involving CBRN agents through eliminating personnel exposure to hazards. Successful contamination avoidance results from a combination of dispersal, prediction, sampling and identification, marking, rerouting of equipment and materials, and protective countermeasures, such as sheltering people and providing hardening for facilities and critical equipment. Before an attack occurs, dispersal of mission critical assets will enhance the probability that some facilities and equipment will escape contamination. Dispersal includes transporting mission-essential personnel and equipment from high-risk to low-risk areas for survival, recovery, and reconstitution. Permanent and expedient hardening measures are used to strengthen buildings and utility systems, or to provide barriers to mitigate the destructive effects of weapons on aircraft and equipment. Successful hardening measures will protect people and weapon systems from explosive effects. Permanent hardening may be incorporated into structures during initial construction or added later as a modification or retrofit. Expedient

hardening, such as the rapid erection of sandbag walls or building soil berms, is the primary hardening method for expeditionary forces.

Contamination control procedures prevent secondary transfer of disease, chemical, biological or radiological material, and/or re-aerosolization of hazard agents when operating in a CBRN-contaminated environment. Contamination control includes avoiding, reducing, removing, or rendering harmless the hazards from CBRN contamination. As part of the contamination control process, decontamination operations are intended to help sustain operations by preventing or minimizing performance degradation, casualties, or loss of materiel.

If CBRN contamination is found on equipment, facilities, or vehicles, the items should be marked to identify the hazard, implement contamination avoidance procedures, facilitate enforcement of contamination mitigation actions, such as the chemically contaminated object rule, and consider the feasibility of decontamination. Contaminated areas should be identified and personnel should avoid the use of contaminated objects and areas to the extent possible, given mission considerations. Relocation or rerouting of equipment and material may be necessary to survive and recover from an attack involving CBRN agents if contamination has a significant adverse impact on operations. For air and space forces this may require relocating operations to a different base and transporting uncontaminated assets to an alternate location. Diverting aircraft to an uncontaminated airfield prevents the spread of contaminants to valuable airlift assets and cargo.

When contamination is unavoidable, protective countermeasures allow Air Force forces to survive and operate in CBRN-contaminated environments. Prior to an attack involving CBRN agents, planning for the development and implementation of protective countermeasures may be critical to mission sustainment. The commander should optimize the appropriate level of protection based on the specific threat (type, quantity, hazard, and means of delivery), anticipated warning time, duration of exposure, and the actual or projected attack location. Protective countermeasures include restriction of movement (to reduce exposure of forces to contagious biological and persistent chemical agents via limiting interactions between personnel, restricting large gatherings, closing facilities, quarantining and isolating exposed personnel, etc.), shelters (or collective protection), immunizations and chemoprophylaxis, masks, personal protective equipment, and individual protective equipment. If forces receive advance warning of an attack, personnel protective measures and MOPP gear can increase their survivability during operations.

An Emerging Concept: Single Skin Shelter Material

This example shows a 25-bed EMEDS Field Hospital using Single Skin ColPro shelter material. Although it looks and feels similar to industry standard shelter material, the Single Skin technology has a ColPro barrier material imbedded into the external fabric during the manufacturing process. The Single Skin technology eliminates the need for an additional ColPro liner kit and is valuable to greatly reduce the required set-up/conversion time from non-ColPro to full-ColPro mode of the EMEDs Field Hospital or any other ColPro shelter requirement.

Sustain: Sustainment of combat operations in a CBRN-contaminated environment may be required in certain scenarios. Recovery and reconstitution operations are designed to regenerate unit combat readiness as soon as possible. These activities, which are performed as needed, include attack recovery reconnaissance to identify hazardous areas, notification of personnel, decontamination, and the management of casualties.

Contamination mitigation actions and health risk assessments are important first steps toward a return to attack preparation operational capability. If assets could not be covered and/or protected from CBRN contamination, priority should be given to identifying and using uncontaminated assets to the extent possible. Command staffs, subject matter experts, and installation personnel should be aware of site decontamination capabilities, to include knowing when attempting decontamination is worthwhile.

Attack recovery health risk assessment, accomplished by bioenvironmental engineering staff, provides critical guidance to commanders. Accurate assessment of health risks by the installation aerospace medicine team allows commanders to make informed risk management decisions.

Long-term health risks due to exposure to low levels of residual contamination should also be considered in sustainment of combat operations. Even after decontamination,

formerly contaminated assets may pose a long-term health risk to personnel.[3] Commanders should implement measures consistent with Department of Defense (DOD) Instruction 6055.05, *Occupational and Environmental Health*, and Air Force Tactics, Techniques, and Procedures (Interservice) (AFTTP(I)) 3-2.60 *CBRN Decontamination* to track formerly contaminated assets and document potential exposures of personnel. Bioenvironmental engineers are responsible for clearance certification of platforms and materials post-decontamination.

Immediate medical actions are important to personnel survivability and operability in the post-CBRN attack phase. Casualty management involves triaging, treating, stabilizing, and transporting the victims of CBRN attacks. Safeguarding the force through hazard mitigation and force sustainment operations will also include medical activities such as self-aid and buddy care.

Commanders, through medical and services personnel, should also be prepared to care for contaminated casualties and human remains. In addition to challenges within the theater of operations, medical evacuation and return of deceased personnel could be problematic due to potential prohibitions on overflight and landing imposed by other states.

Operating effectively in a contaminated environment may be critical to mission success. Proper planning in the sense, shape, and shield areas prior to CBRN attack will ensure that operations to sustain the force are successfully accomplished.

PLANNING CONSIDERATIONS FOR SAFEGUARDING THE FORCE

Joint, Coalition, and Host Nation Operations Planning: The Air Force should plan to support counter-WMD operations as part of a joint and coalition force, as well as with host nation forces that may provide additional valuable resources, but may also add new vulnerabilities. Commanders should fully understand joint force, allied, and partner capabilities, requirements, and potential limitations to make the most effective use of existing CBRN defense assets to protect essential mission activities. To the extent that joint, allied, or partner forces provide mission critical functions, commanders should both plan for and train to provide capabilities to sustain these functions or have the ability to execute without allied or partner support.

Manpower: Contractor and/or host nation personnel are often utilized to provide valuable functions and services on military installations, including support to CBRN defense operations. Commanders typically are prepared to protect non-military personnel in the event of a WMD attack or CBRN incident and should account for this protection in response plans (e.g., installation emergency management plans, disease containment plans, medical contingency response plans) and training. Where contractors and/or host nation personnel provide mission critical functions, commanders may plan and train for provision of CBRN defense measures that sustain these functions independent of these non-military personnel. Contractor or host nation roles should be defined within host nation support agreements, memoranda of understanding, and/or statements of work.

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[3] See AFTTP(I) 3-2.60, *CBRN Decontamination* for a more detailed discussion of the levels of decontamination.