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LFM 03

ARMED FORCES DOCTRINE  
FOR CHEMICAL AND  
BIOLOGICAL WEAPONS  
EMPLOYMENT AND  
DEFENSE

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DEPARTMENTS OF THE ARMY, THE NAVY, AND THE AIR FORCE

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DEPARTMENTS OF THE ARMY,

THE NAVY, AND THE AIR FORCE

WASHINGTON, D. C., 19 April 1964

**ARMED FORCES DOCTRINE FOR CHEMICAL AND BIOLOGICAL WEAPONS  
 EMPLOYMENT AND DEFENSE**

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# CHAPTER I

## INTRODUCTION

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### 1. Purpose and Scope

a. This manual establishes joint chemical and biological (CB) doctrine for the United States Army, Navy, Air Force, and Marine Corps. It contains principles, policies, and concepts applicable to the employment of chemical and biological (CB) weapons, and to defense against enemy CB weapons.

b. Users of this manual are encouraged to submit recommended changes or comments to improve the manual. Comments will be keyed to the specific page, paragraph, and line of the text in which the change is recommended. Reasons will be provided for each comment to insure understanding and complete evaluation. Forward comments direct to Commanding Officer, U. S. Army Combined Arms Combat Developments Agency, Fort Leavenworth, Kansas.

### 2. Responsibilities

a. *The President.* The President of the United States makes the decision to employ CB weapons.

b. *The Secretary of Defense.* The Secretary of Defense is responsible for the preparedness of U. S. Armed Forces to use CB weapons and for insuring that the decisions of the President with respect to such use are executed.

c. *The Joint Chiefs of Staff.* The Joint Chiefs of Staff issue directives to the U. S. Armed Forces prescribing principles and policies for CB weapons employment and for defense against enemy CB weapons.

d. *The Military Departments and Services.*

- (1) *The Army.* The Army has primary responsibility for CB operations on land except those otherwise assigned by the Joint Chiefs of Staff. The Army is responsible for such activities as research, development, manufacture, procurement, storage, and supply of material pertaining to CB operations, including defense against enemy CB

weapons, except those specifically assigned to other agencies. The Army furnishes technical advice to the other Services in accordance with their stated requirements.

- (2) *The Navy.* The Navy is responsible for CB weapons support for a naval campaign, and for naval CB weapons fire support for amphibious and coastal operations of the Army and Marine Corps.

- (3) *The Marine Corps.* The Marine Corps is responsible for CB operations related to its assigned functions, including defense against enemy CB weapons.

- (4) *The Air Force.* The Air Force is responsible for aerial delivery of CB agents in support of tactical and strategic air operations conducted by Air Force elements, and for providing, as required, aerial delivery of CB agents in support of the Army. The Air Force is responsible for research and development (R&D) of air-deliverable CB munitions (and sub-systems thereof) and CB defensive items peculiar to air operations, with the exclusion of R&D of CB agents. The Air Force is also responsible for the manufacture, procurement, and storage of such munitions <sup>except where it is more advantageous to request the Army to provide this service.</sup> ~~involving toxic or otherwise hazardous agents~~ *see* The Army is responsible for the filling of munitions involving toxic or otherwise hazardous agents and for facilities required in CONUS.

### 3. Policies

- a. The decision for U. S. Forces to use chemical and biological weapons rests with the President of the United States. Commanders receive

directives relating to the employment of CB munitions through command channels. The pattern and objectives for the use of CB agents will depend upon such variables as U. S. foreign policy, requirements of the military situation, Allied participation, nature of the enemy, and related factors. Once the decision has been made to conduct CB operations, authority to use CB weapons is normally delegated to the lowest echelon responsible for the area within which the effects of the agents will extend.

b. Commanders are currently authorized to use certain chemical agents such as flame, incendiaries, smoke, riot control agents, and defoliants.

c. All U. S. forces will be trained, equipped, and supplied for CB defense.

#### **4. Definitions**

a. *CB Casualty*. A person who has been affected sufficiently by a chemical or biological agent to be rendered incapable of performing

his functions or duties.

b. *CB Operations*. The intentional employment of lethal or non-lethal chemical and biological agents to accomplish an assigned mission.

c. *Defoliant*. A chemical used to remove prematurely the leaves from plants.

d. *Incapacitating Agents*. An agent that produces temporary physiological or mental effects, or both, which will render individuals incapable of concerted effort in the performance of their assigned duties.

e. *Lethal Agent*. A chemical or biological substance designed to produce death when used in field concentrations among target personnel.

f. *Riot Control Agent*. An agent that produces only a temporary irritating or incapacitating effect when used in field concentrations which will render individuals incapable of concerted effort for a short period other than escape from immediate effects of the agent.

## CHAPTER II

# CHARACTERISTICS AND OPERATIONAL APPLICATIONS OF CHEMICAL AND BIOLOGICAL WEAPONS

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### 5. General

When considering chemical and biological weapons employment, defense, and logistics, the need exists for a common understanding of the characteristics of CB weapons and of concepts for their operational application.

### 6. Characteristics of Chemical and Biological Weapons

*a. Effectiveness in Small Numbers.* Under suitable conditions, small numbers of certain CB weapons are capable of producing large numbers of casualties.

*b. Area Coverage.* CB weapons are area weapons. Biological weapons in particular are capable of covering extensive areas with minimum logistical effort because of the small quantities of agent required for an effective dose.

*c. Effectiveness Against Ill-Defined Targets.* Cloud travel extends the effects of most CB weapons in both time and space beyond the point of release. The blanketing effects of the traveling and expanding cloud render CB agents particularly effective for attacking target areas in which enemy troop locations are not precisely known.

*d. Penetration of Enclosed Spaces.* CB agents have a search-type capability whereby they diffuse through the air and penetrate such objects as structures, fortifications, and ships. This capability provides a means of attacking personnel enclosed in hard targets.

*e. Nondestruction of Materiel.* The agents delivered by CB weapons do not destroy materiel. Although some agents have a contaminating effect for considerable periods of time, no CB agents physically destroy industrial complexes, cultural institutions, lines of communications, or other facilities and materiel.

*f. Choice of Casualty Effect.* Depending upon

the availability of munitions and delivery systems, a choice of casualty effect, ranging from mild temporary incapacitation to death, can be exercised through proper selection of type and number of weapons.

*g. Rapid Acting or Delayed Effect.* The available agents may produce wide variations in the time of development of effects as well as their duration.

*h. Troop Safety Hazard.* Some agents, or agent-vector combinations, can be used to provide a residual-contamination hazard for a period of time ranging from hours to days. This capability, depending upon the specific situation, can be either desirable or undesirable. Cloud travel also can create a hazard to friendly forces.

*i. Obstacles to Maneuver.* The use of CB weapons does not produce physical obstacles to maneuver. Their use may, however, create residual contamination in the area. Troops crossing these contaminated areas require full protective equipment.

*j. Environmental Dependence.* The performance of CB weapons varies with existing meteorological and terrain conditions.

*k. Prediction of Results.* Weapon effectiveness is influenced by dissemination methods, meteorological factors, target conditions, unreliability of extrapolative predictive information, and personnel protection and training of the enemy. The accuracy of effect prediction depends upon the extent and accuracy of target information and meteorological prediction.

*l. Surprise.* The majority of CB agents are colorless, odorless, and tasteless. They normally cannot be detected by the unaided senses, which increases their surprise attack possibilities.

*m. Degradation of Effect.* The enemy can degrade CB effects by use of protective equip-

ment and shelters, and by conduct of training in CB defense.

*n. Immunity.* Population groups acquire a relative immunity to certain diseases through natural processes or by preventive inoculation. Normally, the use of antipersonnel biological weapons involves massive overdoses which in certain circumstances might tend to override immunity. There is no known natural or induced immunity to the effects produced by chemical agents.

*o. Agent Decay.* Biological weapons contain living organisms that tend to die at predictable rates under various environmental conditions. Such factors as temperature, sunlight, and relative humidity affect agent decay. Storage decay can be minimized by use of controlled refrigeration. Selection of the proper agent for predicted meteorological conditions during the time of release and cloud travel will further assist in decay control. Decay in viability may be much slower than decay in infectivity.

*p. Selective.* Chemical and biological agents are primarily antipersonnel agents, but may also be antianimal or antiplant.

## **7. Operational Applications of Chemical and Biological Weapons**

*a.* CB weapons increase the weapons selec-

tion available to a commander and afford him a highly effective means of conducting antipersonnel operations.

*b.* Chemical and biological weapons can profitably be used by land, sea, and air forces to assist in the following tasks:

- (1) Attacking an enemy land, air, or naval force.
- (2) Softening and isolating an objective.
- (3) Hindering support of enemy operations by interdiction of communication and transportation.
- (4) Isolating enemy positions or neutralizing a bypassed enemy position.
- (5) Restricting enemy use of a sea or land area, or containing enemy sea or land forces within an area.
- (6) Hindering or canalizing enemy movements.
- (7) Protecting the flanks of tactically deployed forces.
- (8) Creating a diversion.
- (9) Supporting an amphibious operation or raid, an airborne operation, or a covert mission.
- (10) Attacking enemy forces intermixed with and indistinguishable from enemy civilian populations.
- (11) Riot control.

## CHAPTER III

# PRINCIPLES AND PROCEDURES FOR CB WEAPONS EMPLOYMENT PLANNING

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### 8. General

a. Planning for CB weapons employment requires adherence to the same basic principles and procedures that apply to the planning process for employment of other weapons.

b. The commander and his staff must understand the capabilities and limitations of CB weapons. They must consider the impact of employment of these weapons on the scheme of maneuver, organization for combat, force requirements, disposition of forces, logistics, and control.

c. CB weapons employment planning is a part of fire support planning. CB firepower supplements, and may, under some circumstances, largely supplant high explosive or nuclear firepower. The principles and procedures of fire support coordination are not changed by the introduction of CB weapons. Fire support coordination requirements assume increased importance, however, because of the relatively large area coverage capability of CB weapons and the wide variation of effects that can be achieved by appropriate selection of agents and delivery means. Communications techniques and procedures normally used for support of ground, air, and naval operations are adequate for CB support.

d. Large-scale CB employment plans must be prepared well in advance in appropriate detail, and must be kept current. The requirement for detailed planning is equally applicable to alternate or contingent use of these weapons. The courses of action and planning factors vary depending upon the limitations imposed on the use of CB, nuclear, and high explosive weapons. CB weapons use will be planned to permit a graduated application of force *on order*, varying from short duration incapacitating agents to lethal agents. Under specific favorable conditions, chemical agents may be employed with a minimum of advance planning to allow the attack of fleeting targets.

### 9. Planning Considerations

Plans for the employment of CB weapons at all command echelons must include consideration of the following:

a. *Policy of Higher Authority.* The employment of CB weapons has a political as well as a military significance. Employment must conform to Department of Defense policy. The commander must be furnished an early statement of general policy on the use of toxic CB agents to insure timely planning and execution of operations. This statement should specify the conditions under which the various agents may or may not be used. Specific policies may not be immediately available, in which case commanders request timely guidance as the need arises.

b. *Restrictions on Use.* CB weapons are basically area weapons that have effects ranging from mild incapacitation to high lethality. Political and military considerations may dictate such restrictions on the use of these weapons as—

- (1) Type of agent which may be employed.
- (2) Type of targets which may be attacked.
- (3) Areas in which CB weapons may be employed.
- (4) Extent to which civilians may be exposed to CB weapons effects.

c. *Relation to Mission.* CB weapons employment is considered in relation to the accomplishment of the mission. It must be ascertained that benefits to be derived from their use will not accrue from the employment of other weapons. The impact of added requirements for coordination and control, plus the specialized requirements for protection of friendly forces, must be evaluated in the planning stages to insure that the use of these weapons will result in a decided advantage.

d. *Impact on Future Operations.* Plans for

CB weapons employment include proper selection of weapons and agents in order to minimize interference with future operations. Some considerations are as follows:

- (1) Contamination by persistent chemical agents will restrict the use of terrain.
- (2) High casualty rates may prevail among civilians.
- (3) Psycho-chemical agents may cause passive personnel to become dangerously violent.
- (4) Incapacitating agents may produce large numbers of casualties, generating a requirement to divert forces to impound and care for them until such time as they are recovered.

*e. Enemy CB Posture.* Knowledge of enemy CB doctrine, employment capability, and defensive posture permits a better estimate of his vulnerability to attack and the scope of the actions he can possibly take in retaliation. Enemy CB doctrine and production capability may be obtained from strategic intelligence sources. Enemy tactical defensive posture is normally obtained from tactical intelligence sources. Such data as the availability to the enemy of protective masks, protective clothing, decontamination and processing facilities, CB munitions and delivery systems, and status of training of enemy troops may indicate enemy vulnerability to CB attack.

*f. Vulnerability of Friendly Forces.* Essential to CB employment planning is the consideration of vulnerability to enemy attack. Prior to the initiation of CB operations the commander insures that his combat and combat support forces are trained, equipped, and psychologically prepared to employ and defend against CB weapons.

*g. Safety of Friendly Forces.* Safety requirements may influence the selection of an agent, the choice of the delivery means, the location and the time of attack. The hazards created are generally within the downwind of the target area. There is little risk involved to friendly forces with normal CB protection and adequate warning.

*h. Command and Control Measures.* Specific instructions must provide for the initiation, control, and termination of employment of CB weapons.

*i. Effect on Civil Population.* Planners consider the anticipated effect of CB operations on the civil population, giving particular attention to the civil affairs problems to be expected from employment of CB weapons. Estimates of expected CB weapons effects on the civil population will be provided to civil affairs agencies for their guidance.

*j. CB Weapons Used in Conjunction With Other Weapons.* CB weapons may be employed in conjunction with other weapons to produce combined casualty effects greater than those attainable through the use of the same weapons separately.

*k. Target Weather.* CB weapons effects are greatly influenced by weather. Careful consideration must be given to the predicted surface meteorological conditions in the target area. Continuing target weather information is required by units delivering CB munitions. Weather variations are dealt with by providing alternate CB attack plans varying with the agent, the munitions, the delivery systems, and the munition quantities used; the time of attack; or the location of munition impact. To provide for the safety of friendly forces, alternate CB plans may require a change in force dispositions, increased personnel protection, or a more accurate delivery system. Provisions are made for attack by other weapons when adverse weather precludes CB weapons employment.

*l. Post Strike Evaluation.* With existing methods of post strike reconnaissance, the commander employing CB munitions has little or no means of obtaining immediate information on the results of CB attacks. This is particularly true when air strikes or long range missiles are employed against enemy forces not in contact with friendly ground forces. Plans provide for obtaining post strike evaluations from appropriate agencies at the earliest possible time.

## 10. Planning Guidance

*a.* CB planning guidance may be in the form of a policy letter or a letter of instruction. It may also be an annex to a plan if the guidance furnished includes more than policy. The commander ordering the operation in which CB weapons are to be employed provides the following information as a minimum:

- (1) Policy on employment.
- (2) Allocation of munitions.
- (3) Concept of employment, to include method of exploiting the attack.
- (4) System for controlling employment, including restraints.
- (5) Provisions for logistical support.
- (6) Degree of delegation of authority for employment.
- (7) Intelligence estimate of enemy offensive and defensive capabilities.

*b.* The commander of an operation employing CB weapons passes to his subordinates, for use in preparing their portions of the CB plan, pertinent information from *a* above, plus the following:

- (1) General purpose of the attack and the concept of employment.
- (2) Casualty levels required.
- (3) Undesirable effects.
- (4) Troop safety criteria.
- (5) Coordination required.
- (6) Control provisions.
- (7) Instructions on CB defense, where applicable.
- (8) Weapons systems available.
  - (*a*) Delivery systems and accuracies.
  - (*b*) CB agents.
  - (*c*) Delivery forces.

- (9) Information on determination of CB requirements.
- (10) Timing of CB attacks.
- (11) Intelligence estimate of enemy offensive and defensive capabilities.
- (12) Procedures for post strike evaluation.

## 11. Coordination

Modern transportation means have increased the speed and range of operation of maneuvering forces. The acceleration of maneuver coupled with the area coverage that may result from CB weapons employment increases the probability of interference with other operations. All elements involved must therefore increase their coordination efforts both in initial planning and in executing the operation. Operational plans must be correlated as far in advance as possible and should include, as a minimum, the fire and movement plan of the ground commander, as well as the anti-air, interdiction, and close-support tasks of the Air Force, Navy, or Marine Corps. The employment of CB agents must be closely coordinated with operations of adjacent friendly forces. Contamination of terrain essential to future operations is avoided. A CB attack that can cause toxic clouds to pass over another unit must be coordinated with that unit and approved by the next higher command.

## CHAPTER IV

### CHEMICAL AND BIOLOGICAL DEFENSE

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#### 12. General

Friendly forces that are to participate in an operation will be trained, equipped, and supplied for CB defense and for accomplishment of their assigned mission in a CB environment. The responsible commander will announce his estimate of the CB threat, his intentions as to the use of CB weapons, and the prescribed degree of CB preparedness to be achieved by the force.

#### 13. Considerations in CB Defense

*a.* Intelligence of the enemy's capability to launch CB operations is a continuing requirement. The enemy may surreptitiously introduce CB agents into the area of operations. CB defense is a prerequisite to an attack capability. Intelligence of the enemy's CB defense capability is the most readily obtained indication of his capability to use CB weapons. Information that provides intelligence of a defense capability includes availability of protective masks, protective clothing, decontaminating and processing equipment, and CB munitions and delivery systems; and the status of CB training of enemy personnel.

*b.* Most weapons delivery systems are capable of delivering CB agents. Detection and warning of and countermeasures against these weapons delivery systems normally are in operation regardless of the degree of threat of CB weapons attack. If there is an immediate threat of CB weapons employment, all attacks are considered potential CB attacks until proven otherwise.

*c.* Detection of the presence of CB agents requires special equipment and training. A capability to detect these agents will be possessed to an appropriate degree by all elements of all Services. Warning of the presence of a CB attack is given as rapidly as possible.

*d.* Protective equipment and supplies as well

as operational readiness (through training) are maintained by all elements of all Services to permit continued mission performance with minimum reduction of efficiency in a CB environment. Implementation of protective measures is a part of CB defense readiness. The adoption of maximum protective measures upon confirmation of the presence of CB agents is essential for survival.

*e.* Decontamination of persons contaminated by certain chemical agents must be initiated immediately. Emphasis is placed upon training the individual in personal decontamination and first/self aid. Large scale decontamination is limited to vital installations, equipment, and materiel. Complete decontamination of ships at sea is required. As permitted or dictated by the tactical situation, such passive measures as avoiding contamination and waiting for weathering and decay to reduce or eliminate the hazard may be appropriate.

*f.* Medical defensive measures consist primarily of prophylaxis, therapy, and sanitation. The lack of familiarity of medical personnel with the specialized effects of CB agents requires that they be given intensive training in this area. Prophylaxis available for some biological agents may be administered prior to enemy biological attack. This assists in achieving an advanced state of defensive readiness. Therapy will reduce the incidence of lethality and the duration of incapacitation among CB casualties. Standing operating procedures (SOP) must be adequate to cover both enemy attack and accidents in handling weapons.

*g.* CB defense planners must recognize that offensive operational capabilities will be diminished to some degree by instituting CB defense measures. Operating in a CB environment reduces efficiency of individuals, hampers the logistical support effort, and restricts maneuver of forces.

h. Civil affairs agencies, in planning for defense against enemy CB attack, must consider many factors including need to alert the civil population as to imminence of enemy CB attack, defense instruction and preparations, possible evacuation requirements, casualty handling procedures, decontamination needs, requirements for additional food and water supplies, and problems of increased refugee movement. Resultant psychological impact on the population in all these respects will also be considered.

#### 14. CB Defense Planning

a. Prior to and during a CB attack, protective action is taken by individual members of a force. Individual protective actions will affect in varying degrees the ability of each person to perform his assigned task. Because of the diverse tasks and equipment items of units, unit capabilities are subject to varying degrees of reduction of combat effectiveness by the adoption of CB defense measures. This reduction in combat effectiveness is minimized by practical training and by use of protective equipment. Highly mobile units may be encumbered by special CB defense materiel. To attain a maximum state of readiness at all levels, selected personnel may be diverted from their assigned duties to perform CB defense duties.

b. The CB defense plan sets forth the commander's CB intelligence requirements including the proposed method of satisfying these requirements. Based upon available intelligence, the commander makes his estimate of the imminence of the threat of CB weapons use. The state of CB defense readiness to be achieved is then specified.

c. The following guidance is provided to assist the commander in determining items and quantities of protective equipment and types of support units to be included in an operation.

- (1) *When available intelligence clearly indicates that the use of toxic chemical agents is probable*, individual protective equipment is issued to all troops and permeable protective clothing is worn. Decontamination materials are held in forward depots or phased in as early supply shipments; decontami-

nation and processing facilities are phased in early in the operation. Chemical depot and maintenance support are phased in as early as the situation will permit.

- (2) *When available intelligence clearly indicates a lack of capability of the enemy to use toxic chemical agents*, individual protective equipment and clothing impregnation sets will be held in unit supply installations or in forward depots. Impregnated clothing need not be worn. Collective protection equipment and decontamination materials are held in base depots, and chemical decontamination and processing facilities are phased in late in the operation.
- (3) *Where only limited intelligence is available concerning the enemy's capability and probable courses of action in the use of toxic chemical agents*, the units and the chemical protective equipment to be included in operations are determined by a careful consideration of the available intelligence, the likelihood of quick changes in the enemy situation, and the accessibility of friendly rear bases or depots.
- (4) *Where no intelligence is available regarding the enemy's capability or probable courses of action in the use of toxic chemical agents*, the type of operation governs the chemical protective measures to be taken.
  - (a) In amphibious or airborne operations from distant bases, individual protective equipment, clothing impregnation sets, and moderate amounts of decontamination materials accompany the troops; decontamination and processing facilities are phased in as early as practicable. When the operation has progressed to such an extent that the target presented by the concentration of troops has passed, and further CB intelligence has not been developed, individual protective equipment is turned in to appropriate unit supply.

- (b) In amphibious or airborne operations from relatively near bases, individual protective equipment accompanies the troops; all other types of protective equipment and chemical decontaminating and processing facilities remain at the rear bases ready for movement forward when required. The policy in *a* above pertaining to turn-in of individual equipment applies.
- (c) In operations on a large land mass, individual protective equipment may be kept in appropriate unit supply, collective protection equipment and decontamination materials are held in the communications zone or base area.
- d.* The decision as to the state of CB defense readiness, together with provisions for changing it as required, is translated into action through appropriate portions of plans and orders which provide for the following:

- (1) CB attack warning.
  - (a) Attack by delivery system capable of carrying CB munitions.

- (b) Detection of the presence of CB agents.
- (c) Communications for attack warning.
- (2) Assignment of tasks related to CB defense readiness.
- (3) Resupply of CB material consumed.
- (4) Coordinating instructions.
  - (a) Agent detection reporting.
  - (b) Mutual CB defense aid by units.
  - (c) Authority and controls for establishing CB defense conditions.
  - (d) Procedures to be followed upon accidental release of CB agents.

*e.* Provisions for CB defense must be included in operational plans and orders. Because formats for such plans/orders vary widely among the Services, no format for CB defense is provided.

*f.* The effectiveness of CB defense depends initially upon training. Continual CB defense training is conducted in peacetime to achieve a realistic capability for survival in CB operations in wartime. All Services must insure that training programs are adequate and practical.

## CHAPTER V

### CB COMBAT SERVICE SUPPORT PLANNING

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#### 15. General

Logistics planning for CB weapons employment follows normal planning procedures. Commanders must be aware of the impact of CB employment on logistics functions and must anticipate an additional load on the logistics support system.

#### 16. Responsibilities

a. The Army has logistics responsibility for all items of CB weapons and defense materiel from research and development through overall production, procurement, storage, and distribution in CONUS for all services, except for certain items peculiar to a specific surface.

b. The Navy, Marine Corps, and Air Force stock and maintain CB weapons and defense materiel for their individual requirements through their own logistics support systems which provide support to their CONUS and oversea forces. They procure certain items peculiar to their individual service.

c. The force commander, in joint operations, provides logistics support as prescribed in current Department of Defense logistics guidance.

#### 17. Considerations

##### a. Supply.

- (1) *Employment aspects.* CB weapons employment increases requirements for handling of weapons and equipment. The nature of the agent in CB munitions requires that CB munitions be stored separately to simplify surveillance and to limit hazards from faulty or damaged munitions. Field filling of munitions or equipment requires special equipment to transfer the agent from the bulk shipping containers to the delivery munitions. Specially trained personnel and strict safety controls are required for this operation. Nonexpendable shipping

containers used with selected CB munitions are returned to support bases or to CONUS. The disposal of faulty or damaged munitions and supplies contaminated beyond reasonable decontamination limits, presents special logistical problems.

- (2) *Defensive aspects.* CB weapons employment increases the requirement for resupply or replacement of defensive equipment and materiel such as individual and unit protective equipment, detection and warning equipment, and decontamination equipment and supplies.

##### b. Maintenance.

- (1) *Employment aspects.* Maintenance problems increase when equipment becomes contaminated by persistent agents. Equipment operated in contaminated areas is monitored and decontaminated prior to conducting maintenance and repair. Separate sites within the maintenance area may be required for storage and decontamination of equipment prior to maintenance. The delay inherent in decontamination may necessitate a large number of replacement items in the supply system. A policy of conducting maximum decontamination of equipment at the lowest echelon (user) is necessary to assure the placing of only essential demands on the supply system.
- (2) *Defensive aspects.* Enemy employment of CB weapons results in contamination of equipment which, in turn, requires the use of specialized CB defensive equipment and materiel. This further increases maintenance and repair requirements.

c. *Medical Evacuation and Hospitalization.*

(1) *Employment aspects.*

(a) Fixed bed requirements in any operational area depend upon admission rates, dispersion factors, types of casualties, transportation, and established evacuation policy. The pattern of casualties from CB weapons will alter existing accumulation factors. Of greatest significance, however, may be the characteristic wide fluctuation of daily admission rates resulting from the use of these weapons. The problem is one of handling recurring peak loads of patients. This problem must be met either by expanding hospital facilities or by rapidly evacuating casualties to support bases or to CONUS. Command and control procedures are adopted to provide rapid response to recurring peak loads.

(b) Since CB weapons can inflict a large number of casualties in a very short period of time, emphasis rests on training of each individual in personal protection and first aid.

(2) *Defensive aspects.* Medical installations, personnel, and patients are vulnerable to CB attack. While they may not be primary targets; the area coverage capabilities of the CB weapons are such that the effects may encompass medical installations. Therefore, in extensive CB weapons employment, collective protection for treatment facilities is required to safeguard patients and medical personnel from attack. There will be a high consumption rate of antibiotics and vaccines which have a characteristically limited storage life.

d. *Transportation.*

(1) *Employment aspects.* Employment of CB munitions introduces special problems in the areas of safety, security, and handling. Most biological agents require refrigeration during transpor-

ation. Common to any mode of transportation selected for hazardous-type CB shipments is the requirement for technical escort in order to guard shipments, protective personnel handling the shipments, dispose of damaged munitions, and decontaminate objects and areas accidentally contaminated during shipment.

(2) *Defensive aspects.*

(a) Transportation problems are created by enemy CB employment. When large areas are contaminated by persistent effect chemical agents, traffic may require rerouting along uncontaminated routes.

(b) Rapid determination of the extent of contamination on transportation routes is essential to reduce interference with the logistical support effort.

(c) Effectiveness of transportation means may be reduced by contamination. Decontamination will be required to reduce hazards to personnel and to restore effectiveness.

(d) The requirement to transport decontaminating materiel and equipment and to evacuate casualties places an increased demand on the transportation system.

e. *Personnel.*

(1) *Employment aspects.* CB specialists are required to plan and provide CB support for CB operations.

(2) *Defensive aspects.* Enemy CB employment not only may inflict large numbers of casualties upon friendly forces but may require them to operate in a toxic environment, thereby reducing their efficiency. Personnel plans provide for rapid replacement of large numbers of casualties, and for accelerated rotation of personnel or units whose efficiency has been reduced by prolonged operations in a toxic environment.

## APPENDIX I

### REFERENCES

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TO1102-1-1	
TM 9-1950	Rockets.
AFM 160-21	
AFM 160-21A	Biological Warfare Defense Manual for Medical Service Officers.
DA PAM 108-1	Index of Motion Pictures, Filmstrips, Slides, and Phono-Recordings.
DA PAM 310-1	Index of Administrative Publications.
DA PAM 310-3	Index of Training Publications.
DA PAM 310-4	Index of Technical Manuals, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders.

## APPENDIX II

### FORMAT FOR CB DEFENSE PLAN

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SECURITY CLASSIFICATION

Issuing Headquarters  
PLACE of Issue  
Day, Month, Year, Hour, Zone

#### CHEMICAL, BIOLOGICAL (CB) PLAN

*References:* Maps, charts, and relevant documents.

*Task Organization:* Lists units (forces), by type, having chemical and biological delivery capability. Indicate means of delivery, such as bombs, spray, rockets, missiles, guns, generators, etc.

1. SITUATION. Brief statement of the over-all situation with emphasis on employment of chemical and biological weapons.

a. *Enemy Forces.*

(1) Current intelligence data, as appropriate.

(2) Enemy capabilities which directly affect friendly CB weapons employment.

b. *Friendly Forces.* General statement of planned CB weapons employment to be conducted by external forces which affect the mission of the command. Includes phasing and objectives.

c. *Attachments and Detachments.* Special units attached or detached from the issuing unit if not listed under "Task Organization," with the time they are to be effective.

d. *Assumptions.* Lists assumptions used as a basis for CB planning.

2. MISSION. States the over-all mission of the command and its purpose.

3. EXECUTION.

a. *Concept of CB Weapons Employment.*

(1) General plan for CB weapons deployment.

(a) Objectives.

(b) Phasing.

(2) Initial allocation of weapons, showing: (Use addenda if desired).

(a) Commands.

(b) Weapons.

1. Type.

2. Agents.

(c) Reserves.

b. Devotes a lettered paragraph to each major subordinate element of the command for assignment of CB tasks, including preplanned target assignments, showing: (Use addenda if desired)

(1) Target designation and location.

(2) Priority.

(3) Commander responsible for executing attack.

(4) Date and time of attack.

(5) Desired effects.

c. Instructions applicable to two or more elements of the command placed in the final lettered subparagraphs headed "Coordinating Instructions", such as:

- (1) Conditions under which the plan is effective.
- (2) Statement of policy on CB concerning:
  - (a) Control and allocation.
  - (b) Restrictions on use.
  - (c) Target selection criteria.
- (3) CB offensive operational procedures (or reference to appropriate standing operating procedures) to include:
  - (a) Target nomination, processing, and approval procedures.
  - (b) Coordination with friendly forces for safety.
  - (c) Attack order and recall procedures and authority.
  - (d) Poststrike analysis requirements and responsibilities.
  - (e) Procedure for requesting and approving further allocation of CB weapons.

#### 4. ADMINISTRATION AND LOGISTICS

- a. Supply and maintenance procedures and responsibilities.
- b. Handling, storage, and transportation.
- c. Personnel and medical considerations.
- d. Special requirements, when appropriate, incident to conducting CB operations in areas of allied forces.

#### 5. COMMAND AND SIGNAL

- a. Special communications and cryptographic arrangements, procedures, and systems for execution of CB weapons employment.
- b. Code words and assigned meanings for initiation of CB weapons employment.
- c. Arrangement, procedures, and systems for reporting enemy CB attacks and follow-up intelligence.
- d. Designation of commander(s) having authority to initiate CB weapons employment.
- e. Designation of commander(s) who may initiate retaliatory CB weapons employment.

(SIGNED) \_\_\_\_\_

Commander

ADDENDA: As required.

DISTRIBUTION:

AUTHENTICATION:

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FM 101-40, C 1  
 NPW 36(C), C 1  
 AFM 355-2A  
 LFM 03, C 1

CHANGE }  
 No. 1 }

DEPARTMENTS OF THE ARMY,  
 THE NAVY, AND THE AIR FORCE  
 WASHINGTON, D.C., 14 November 1966

## ARMED FORCES DOCTRINE FOR CHEMICAL AND BIOLOGICAL WEAPONS EMPLOYMENT AND DEFENSE

FM 101-40/NPW 36(C)/AFM 355-2/LFM 03, 19 April 1964, is changed as follows:

√ Page 3, paragraph 2d(4). In line 16, "involving toxic or otherwise" is changed to read "except where it is".

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