

Joint Pub 3-11



# Joint Doctrine for Nuclear, Biological, and Chemical (NBC) Defense



10 July 1995

# PREFACE

## 1. Scope

This publication provides guidelines for the planning and execution of NBC defensive operations. It focuses on the NBC threat; national policy; and strategic, operational, and logistic considerations peculiar to the preparation and conduct of NBC defense.

## 2. Purpose

This publication has been prepared under the direction of the Chairman of the Joint Chiefs of Staff. It sets forth doctrine to govern the joint activities and performance of the Armed Forces of the United States in joint operations as well as the doctrinal basis for US military involvement in multinational and interagency operations. It provides military guidance for the exercise of authority by combatant commanders and other joint force commanders and prescribes doctrine for joint operations and training. It provides military guidance for use by the Armed Forces in preparing their appropriate plans. It is not the intent of this publication to restrict the authority of the joint force commander (JFC) from organizing the force and executing the mission in a manner the JFC deems most appropriate to ensure unity of effort in the accomplishment of the overall mission.

## 3. Application

a. Doctrine and guidance established in this publication apply to the commanders of combatant commands, subunified commands, joint task forces, and subordinate components of these commands. These principles and guidance also may apply when significant forces of one Service are attached to forces of another Service or when significant forces of one Service support forces of another Service.

b. The guidance in this publication is authoritative; as such, this doctrine (or JTTP) will be followed except when, in the judgment of the commander, exceptional circumstances dictate otherwise. If conflicts arise between the contents of this publication and the contents of Service publications, this publication will take precedence for the activities of joint forces unless the Chairman of the Joint Chiefs of Staff, normally in coordination with the other members of the Joint Chiefs of Staff, has provided more current and specific guidance. Commanders of forces operating as part of a multinational (alliance or coalition) military command should follow multinational doctrine and guidance ratified by the United States. For doctrine and procedures not ratified by the United States, commanders should evaluate and follow the multinational command's doctrine and procedures, where applicable.

For the Chairman of the Joint Chiefs of Staff:



WALTER KROSS  
Lieutenant General, USAF  
Director, Joint Staff

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# TABLE OF CONTENTS

	PAGE
EXECUTIVE SUMMARY .....	vii
CHAPTER I	
THREAT AND NBC DEFENSE POLICY	
• Purpose .....	I-1
• Overview .....	I-1
• Worldwide Proliferation of Weapons of Mass Destruction .....	I-1
• Threat Employment Concepts .....	I-1
• Asymmetrical Battlefield .....	I-3
• National Military Strategic NBC Considerations .....	I-3
• Command and Control .....	I-5
• Basis for US National NBC Policy .....	I-5
CHAPTER II	
NBC DEFENSE OPERATIONS FUNDAMENTALS	
• Purpose .....	II-1
• Overview .....	II-1
• Weapons of Mass Destruction and Agents Effects .....	II-1
• Operations in an NBC Environment .....	II-6
• Operations and Sustainment Assessment .....	II-9
CHAPTER III	
THEATER NBC DEFENSE CONSIDERATIONS	
• Purpose .....	III-1
• Overview .....	III-1
• Theater Strategic Considerations .....	III-1
• RCAs and Herbicides .....	III-5
• Theater Command, Control, Communications, Computers, and Intelligence .....	III-7
• NBC Defense Force Assets .....	III-8
• Multinational Forces Considerations .....	III-9
• Protection of US Civilian Personnel in Theater .....	III-9
• Protection of Enemy Prisoners of War (EPW) .....	III-9
CHAPTER IV	
LOGISTIC SUPPORT OPERATIONS	
• Purpose .....	IV-1
• Overview .....	IV-1
• Logistic Operations .....	IV-1

# Table of Contents

---

- Services Support ..... IV-5
- Supply Support ..... IV-7
- Transportation ..... IV-7
- Host-Nation Support ..... IV-7
- Multinational Support and Friendly Forces Considerations ..... IV-7
- Nuclear Survivability and NBC Contamination Survivability Standard ..... IV-8
- Environmental Considerations ..... IV-8

## CHAPTER V MEDICAL SUPPORT

- Purpose ..... V-1
- Overview ..... V-1
- Health Service Support (HSS) ..... V-1
- Medical Intelligence ..... V-2
- Preventive Medicine Principles ..... V-2
- Patient Evacuation ..... V-5
- Patient Decontamination and Triage ..... V-6
- Medical Facilities ..... V-6
- Impact on Health Services Support ..... V-6
- Special Medical Augmentation for Operations in an NBC  
Contaminated Environment ..... V-7

## CHAPTER VI TRAINING AND READINESS

- Purpose ..... VI-1
- Overview ..... VI-1
- Joint NBC Training ..... VI-1
- Readiness Reporting ..... VI-3

## APPENDIX

- A Nuclear, Biological, and Chemical Defense Planning Responsibilities,  
Guidance, and Operations Appendix to an OPLAN ..... A-1

## ANNEX

- A Treaty Obligations History ..... A-A-1
- B Responsibilities for NBC Defense Planning ..... A-B-1
- C Planning Guidance for NBC Defensive Operations ..... A-C-1
- D Nuclear, Biological, and Chemical Defense Operations;  
Riot Control Agents and Herbicides Appendix to an  
Operations Annex ..... A-D-1
- B References ..... B-1
- C Administrative Instructions ..... C-1

GLOSSARY

Part I—Abbreviations and Acronyms ..... GL-1

Part II—Terms and Definitions ..... GL-3

FIGURE

I-1 Threat Employment Concepts ..... I-2

I-2 National Military Strategic NBC Considerations ..... I-3

II-1 Weapons of Mass Destruction and Agents Effects ..... II-1

II-2 Principles of NBC Defense ..... II-7

III-1 Theater Strategic Considerations ..... III-2

IV-1 Logistic Support for NBC Readiness Considerations ..... IV-2

VI-1 Joint NBC Training Considerations ..... VI-1

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# EXECUTIVE SUMMARY

## COMMANDER'S OVERVIEW

- **Describes the Threat and Nuclear, Biological, and Chemical (NBC) Defense Policy**
  - **Covers NBC Defense Operations Fundamentals**
  - **Provides Theater NBC Defense Considerations**
  - **Describes Logistic and Medical Support Operations**
  - **Covers NBC Training and Readiness Considerations**
- 

### Threat Overview

*The threat of the use of weapons of mass destruction (WMD) occurs across the range of military operations.*

**Nuclear, biological, and chemical (NBC)-capable nations**, including developing nations, **may use these weapons to achieve political or military objectives.** Weapons of mass destruction (WMD) may be used in isolation or as an adjunct to conventional combat power. **The number of nations capable of developing and possessing WMD is steadily increasing** and the potential for their use can range from blackmail or acts of terrorism to conflict or war. **Nuclear threats** occur within a given theater of war and could proceed without the exchange of strategic nuclear weapons. **Biological threats** can cause lethal, disabling, contagious, or noncontagious type casualties. **Chemical warfare** achieves surprise and causes mass casualties which hinders the momentum of an opposing force, disrupts command, control, communications, computers, and intelligence, and degrades combat potential.

### National Military Strategic NBC Considerations

*The national military strategy for nuclear, biological, and chemical (NBC) operations is based on defense and deterrence.*

**An effective orchestration of US strategic and theater nuclear forces and conventional resources** must be implemented to provide direction, intelligence, and employment of US forces in countering enemy NBC war making capabilities. **This strategy supplements the geographic combatant commander's theater strategy in attaining campaign objectives** including interagency coordination, dissemination of information, command and control, and a basis for US national NBC policy.



## Weapons of Mass Destruction and Agents Effects

*NBC defense operations present many unique challenges to commanders including a clear understanding of the effects of WMD and the implementation of the principles of NBC defense.*

**Effects of a nuclear detonation are primarily in three areas: thermal radiation, blast, and nuclear radiation.** Corollary effects, such as **electromagnetic pulse**, can break down electronics system protection, disrupt communications, and have significant psychological impacts on friendly forces. A **biological threat** is the capability of an enemy to plan and deploy a biological material, such as a microorganism or toxin, intended to cause disease, injury, or death in people, plants, or animals or deterioration of materiel. **Chemical agents and compounds** are classified according to physical state, physiological action, and use. The terms **persistent** and **nonpersistent** describe the time an agent stays in an area. Threat forces classify chemical agents according to their physiological effect on the body. They identify **six major types**: nerve, blood, blister, choking, psychochemical, and irritants.

## Operations in an NBC Environment

*A capability to defend against NBC attack and to survive and sustain combat operations in an NBC environment requires intelligence forewarning and highly trained, properly equipped forces throughout the theater of operations.*

**US forces must be prepared to conduct operations in an NBC environment with minimal degradation.** At the theater operational level, NBC defense involves **protection for forces** and the means to remove or cope with operationally significant hazards, conceal intentions in the area of responsibility, and provide adequate health service support to preserve the fighting capability of the forces. **Avoidance; protection** (including hardening, protecting personnel, mission-oriented protective posture (MOPP), physical defense measures, and reacting after the attack); and **decontamination** are the primary principles of NBC defense. These are combined with a **proactive theater-level program** of intelligence, psychological operations, deception, and obscuration.

## Theater Strategic Considerations

*NBC defense operations may be required throughout the range of military operations.*

Because of the complexity and potential adverse impact of NBC warfare on US and multinational theater operations, **it is imperative that all facets of NBC defense be considered in formulating courses of action.** Theater strategic considerations include theater strategy, theater strategic protection, joint operation planning and execution system, force requirements, risk assessment, operation planning guidance, and operational readiness.

## Theater Command, Control, Communications, Computers, and Intelligence

*Command, control, communications, computers, and intelligence are an integral part of all aspects of NBC defense.*

An **unbroken chain of communications** must extend from the National Command Authorities through the Chairman of the Joint Chiefs of Staff, to the combatant commanders, commanders of Service and functional components, and all subordinate commanders. **This is especially critical in a theater where the threat of NBC warfare exists.** NBC defense force assets, multinational forces considerations, protection of US civilian personnel in theater, and protection of enemy prisoners of war are also considerations for NBC defense.

### NBC Logistic Support

*Logistic support for NBC defense operations is vital throughout the full range of military operations.*

**The geographic combatant commander must plan for logistic support operations** for joint NBC defense. Within a theater, the geographic combatant commander exercises directive authority over logistic operations. **Adequate logistic support is vital to all combat operations.** It must provide for sustainability, anticipation, integration, continuity, improvisation, responsiveness, reconstitution of destroyed units, and stock of NBC equipment. **Services support** includes ways to cope with decontamination of equipment; clothing exchange and showers; equipment recovery and evacuation, mortuary affairs policy, standards, and procedures; and emergency destruction and evacuation of US nuclear munitions and captured NBC munitions. **Supply support** includes general supply operations and water production for decontamination. Transportation, host-nation support, multinational support and friendly forces considerations, nuclear survivability and NBC contamination survivability standards, and environmental considerations are also incorporated in logistic support and are imperative to NBC defense.

### Medical Support

*The geographic combatant commander should plan for medical support in the portions of campaign plans and orders that address NBC defense in the theater.*

**Defensive measures should be included in medical support planning** such as military surveillance; protection of personnel at risk against exposure, infection, intoxication, or inhaling a chemical agent; and early detection. The use of NBC weapons can result in a **large number of casualties** and also require special handling that can drain medical resources. Because of this, the geographic combatant commander must plan to use directive authority

to ensure the **proper coordination of health service to the force**, to include adequate shelter, food, medical prophylaxis, and fluids. The **Armed Forces Medical Intelligence Center** can assist with the theater threat assessment by evaluating the state of a potential adversary's biological warfare. **Patient evacuation within the combat zone** is normally the responsibility of the respective component command. **Movement of patients within the theater** is the responsibility of the geographic combatant commander. The management and treatment of contaminated casualties will vary with the tactical situation and the nature of the contaminant. **Preventive medicine services** help determine the health hazards associated with nuclear fallout and biological contamination. Each medical unit must have a plan that can be put into effect immediately. **Decentralization** is also necessary and all medical units should have comparable sets of medical items and decontamination equipment. **The impact on health services support caused by contaminated battlefields will result in a difficult environment in which to operate.** Stress from MOPP, reduced visual and tactile senses from protective equipment, reduced communication capability, and a sense of isolation are all detrimental to military operations.

### Training and Readiness

*Training, readiness reporting, and environmental concerns must be considered when planning for NBC defense support.*

Although individual training and exercises to test proficiency remain under the purview of the Services, **NBC defense should be integrated into individual and collective programs at all levels** and into higher echelon operational and tactical exercises, command post and other command, control, communications, and computers system exercises, and joint and multinational training exercises. The objectives of this training are to **develop and evaluate the readiness of US and multinational military forces** and mission-essential civilians to operate in an NBC environment and to **ensure proficiency** with defensive NBC equipment, materials, and procedures. Joint and multinational exercises include **exchange programs, reciprocal unit exchanges, personnel exchange programs, individual exchanges, and combination programs** which help prepare personnel and enhance training for NBC defense. The need for **readiness reporting** is important for the geographic combatant commander to exercise directive authority for logistics or if NBC would materially affect the course of action or organization of the theater.

## CONCLUSION

This publication provides guidance for the conduct of NBC defensive operations across the range of military operations. Theater level NBC defense considerations are discussed. The potential threat, logistic and medical support concerns, and NBC training and readiness issues are covered.

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# CHAPTER I

## THREAT AND NBC DEFENSE POLICY

*"We must also stop the spread of ballistic missiles and ballistic missile technology. There are few developments more frightening than that of unstable, sometimes irrational . . . regimes being able to press a button and deliver weapons of terror across great distances."*

Vice President George Bush  
August 2, 1988

### 1. Purpose

This chapter provides a discussion of the potential threat and threat doctrine that should be considered for the **planning and conduct of joint nuclear, biological, and chemical (NBC) defense operations**. This chapter also recaps the US national policy guidance and objectives for NBC defense that form the basis for NBC doctrinal precepts.

### 2. Overview

The threat of the use of weapons of mass destruction (WMD) occurs across the range of military operations. **NBC-capable nations**, including developing nations, **may use these weapons to achieve political or military objectives**. WMD may be used in isolation or as an adjunct to conventional combat power. If used, they pose the problem to US forces of creating an asymmetrical battlefield.

### 3. Worldwide Proliferation of Weapons of Mass Destruction

**The number of nations capable of developing and possessing WMD is steadily increasing.** Developing nations are receiving these weapons or means to develop them through technological transfer, overt or covert direct transfer, or support to belligerent groups or governments. The potential for their use can range from blackmail or acts of terrorism during peace to escalation during conflict or war.

a. **NBC-Capable Nations.** An NBC-capable nation is defined as **one that has the capability to produce or acquire and employ one or more types of WMD to achieve political and military objectives**. Inherent in this capability are varying degrees of abilities to conduct research and development, improve technology, stockpile, and effectively prosecute a war in an NBC environment.

b. **Planning Considerations.** **The implications of proliferation of WMD on planning are significant.** The proliferation of chemical and biological warfare (CBW) programs has been stimulated by perceptions of the political-military utility of CBW weapons. **Chemical warfare (CW)** and **biological warfare (BW)** are perceived as excellent force multipliers. Both are perceived as deterrents to regional aggression. It is projected that there will be an **increase in the number of CBW-capable countries**, albeit at a slower rate than over the past 20 years, as well as an increase in the number and effectiveness of agents and improved delivery systems available.

### 4. Threat Employment Concepts

The political and military nature of the threat has changed with the end of the Cold War. Many of the former Soviet-influenced doctrinal precepts learned by potential enemies possessing NBC capabilities still

remain. Threat employment concepts are shown in Figure I-1.

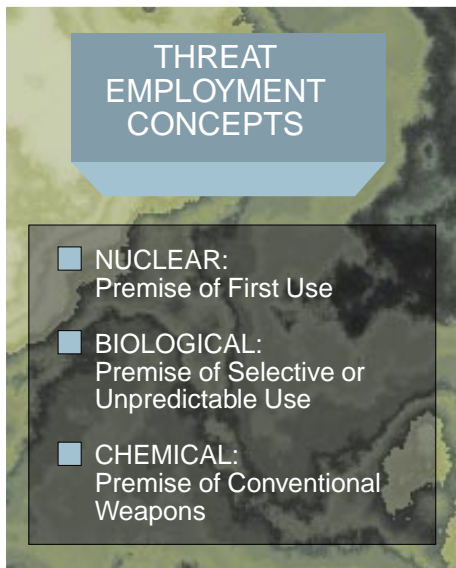


Figure I-1. Threat Employment Concepts

### a. Nuclear: Premise of First Use

- **Threat doctrine postulates that limited nuclear operations may occur within a given theater of war** and that such limited nuclear conditions could proceed without the exchange of strategic nuclear weapons. Regardless of changing political conditions, **two consequences are possible**. First, this premise provides rationale for an enemy to use nuclear weapons. Second, focusing on the potential results of a limited nuclear war that could bring either victory or, at a minimum, result in a stalemate, may provide the enemy with an incentive to use nuclear weapons first.
- The operational and tactical use of nuclear weapons would be directed against **friendly strong points, air and naval power, and critical centers of gravity**. Subsequently, enemy doctrine

envisioned that **large-scale conventional armored and mechanized forces in “nuclear dispersed” formations would strike deep into friendly defenses** and pass through nuclear-created gaps to destroy friendly command, control, communications, computers, and intelligence (C4I) facilities and other critical targets. Once within the friendly operational area, the threat objective would be to split, isolate, and destroy friendly forces.

### b. Biological: Premise of Selective or Unpredictable Use

- **Threat doctrine considers biological agents as WMD**. Such agents, including infectious microorganisms and toxins, are capable of widespread, mass infection or intoxication. **These agents**, depending on intended use, **can cause lethal, disabling, contagious, or noncontagious type casualties**. These agents could be effectively employed against large rear area objectives or against C4I or other critical targets.
- **Certain factors may significantly increase the probability of use**. Should a potential threat consider that initiating BW was worth the risk, **the employment of biological agents may provide a way of causing asymmetry on the battlefield**. Further, genetic engineering can selectively improve toxicity, lifespans, or dissemination efficiencies; defeat detection and warning systems; or make verification of use virtually impossible.

### c. Chemical: Premise of Conventional Weapons

- It is possible that **threat employment doctrine may consider chemical munitions**, including riot control agents (RCA), **to be conventional weapons**.



*The proliferation of the Soviet-made SCUD missile system has increased the likelihood that joint forces, when deployed, will be required to fight in an NBC environment.*

- **Primary uses of chemical warfare are to achieve surprise and cause mass casualties**, particularly against an unprepared adversary. Chemical weapons can be used to **hinder the momentum of an opposing force, disrupting C4I, and degrading combat potential**, to include the use of CW agents to restrict the use of terrain, facilities, and equipment.

## 5. Asymmetrical Battlefield

Because of the proliferation of WMD, **future campaigns may be fought on an asymmetric battlefield**. Where the threat of enemy NBC attack exists, the constraint on the US retaliatory capability may increase the likelihood that an enemy NBC attack will take place. **The enemy who can choose from various options and controls the timing enjoys strategic, operational, or tactical advantage** in executing the war plan and achieving the desired end state. Joint force

NBC defense readiness to fight a campaign in an NBC environment must not only be maintained to ensure force survival if attacked, but to serve as a major deterrence to any enemy perceiving an advantage by initiating NBC use.

## 6. National Military Strategic NBC Considerations

**The national military strategy for NBC operations is based on defense and deterrence.** Accordingly, this strategy demands an effective orchestration of US strategic and theater nuclear forces and conventional resources in providing **direction, intelligence, and employment** of US forces in countering enemy NBC war making capabilities, as shown in Figure I-2. This strategy supplements the geographic combatant commander's theater strategy in attaining campaign objectives.

a. **Strategic Direction and Integration.** This guidance is expressed through revised national (and alliance) military strategy, derived from national security



**Figure I-2. National Military Strategic NBC Considerations**



strategy, relative to the attainment of strategic objectives. Within the context of a NBC environment, **it is derived from the national policy of non use of biological and chemical weapons and close control of nuclear weapons in warfare.** This guidance may account for the potential of an asymmetrical battlefield, which may be imposed on the combatant commander. **The threat potential of using or the actual use of NBC weapons may change the strategic direction and integration.** It focuses on the following: acquiring and communicating worldwide and regional national military strategic NBC information, reassessing the worldwide and regional NBC strategic environment as required, revising and providing national military strategic direction, and providing appropriate command and control warfare as required.

b. **Strategic Intelligence.** Strategic intelligence on the NBC threat is required to enhance or modify policy and military planning at the national, international, and theater levels. This includes planning and coordinating strategic intelligence activities for assessing NBC threats; assessing enemy NBC capabilities and vulnerabilities; proliferation, intentions, and indications; and warning measures.

c. **Employment of Military Forces.** At the national military strategic level, **the employment of military forces primarily connotes the forces' ability to conduct both strategic operations and protection of the strategic forces and delivery means against NBC attack.** Strategic operations (firepower and forces) will be utilized against one or more of a selected series of

enemy targets with the purpose of progressive destruction and disintegration of their strategic NBC force, national command and control (C2) facilities, strategic centers of gravity, NBC war making capacity, and the will to conduct NBC war. **Protection for friendly strategic forces and means involves safeguarding US strategic centers of gravity and our strategic force potential.** Measures include active security and defense, operations security (OPSEC) considerations, and the conduct of deception operations.

#### d. Other Strategic NBC Considerations

- **Interagency Coordination.** Combatant commanders should establish close coordination relationships with US departments and agencies both within and without their sphere of command and control. In particular, **networks should be established** with diplomatic missions and supporting country teams within the theater. These sources may **provide valuable intelligence and information** on the likelihood of enemy intent to use NBC weapons. They may also **produce data** on the political and psychological implications, as well as military aspects of effectively countering NBC weapons beyond that provided by intelligence sources subordinate to the geographic combatant commander.
- **Dissemination of Information.** NBC defense, RCA, and herbicide operations are of significant national, international, and public interest.

•• The special nature of NBC warfare mandates that **combatant commanders prepare thorough and detailed plans for the immediate and accurate dissemination of information concerning the use and effects of NBC weapons**. These plans should provide for the **dissemination of information** concerning an enemy NBC first strike, the **appropriate warning** of US forces in the event of a US or allied nuclear strike, and **contingencies** for defensive NBC operations by US forces.

•• **Planning should consider multi-level target groups**. These range from the political level of both involved and noninvolved nations, to the affected civil populace, and to US forces engaged in the theater.

•• **Combatant commanders** should ensure that an integrated effort is undertaken in the information gathering and dissemination process to **provide an accurate and complete depiction of the NBC warfare situation**. Such effort would include intelligence, public affairs, legal, medical, civil affairs, and psychological operations resources.

•• **Annex F to the Joint Strategic Capabilities Plan (JSCP) prescribes procedures for the release of all NBC defense, RCA, and herbicide information to the public**. This policy does not apply to requests for information made under the Freedom of Information Act.

Release of information may be subject to OPSEC considerations and specified conditions as stipulated by the National Command Authorities (NCA).

## 7. Command and Control

Combatant commanders, subordinate joint force commanders (JFCs), and Services will implement **Chairman of the Joint Chiefs of Staff (CJCS) procedures** outlined in Emergency Action Plan, Volume V, to accomplish the following:

a. **Immediately alert the NCA**, through the CJCS, of indications that a nuclear, biological, or chemical attack may be imminent or has occurred.

b. **Request authority** to use nuclear weapons, RCAs, and herbicides as appropriate.

c. **Route requests and authentication procedures** for the use of nuclear weapons, RCAs, and herbicides as described in the Joint Strategic Capabilities Plan (JSCP).

## 8. Basis for US National NBC Policy

Treaties, international agreements, laws, and statements provide a historical perspective and basis for the **formulation of current US policy to curtail the proliferation of, and deter or ban the use of, NBC weapons**. These are addressed in Annex A to Appendix A, "Treaty Obligations History."

*"This is a complex problem that requires an experienced hand and a determined approach. First, we've got to deal with those nations that have used the gas. . . We must restore the prohibition against the use of those terrible weapons. The barriers against chemical warfare, breached during the Iran-Iraq War, must be repaired and raised even higher.*

*Second, we've got to prevent those nations approaching the threshold from proliferating. That calls for careful intelligence and controls on the technical capabilities that allow production of the weapons . . .*

*Third, we've got to prevent the most ominous proliferation of all. The eventual combination of chemical weapons and ballistic missiles could put new destructive power in the hands of governments with terrorist records.*

*At the end of the First World War, the so-called war to end all wars, mankind sought safety in collective security. Part of that security was to outlaw the use of certain weapons—chemical weapons—as a sign of our civilization. Collective security failed eventually under Hitler's blows. One of the first signs of the breakdown of civilization was the use of gas in Ethiopia.*

*From that time until our own, despite World War II, and countless conflicts, somehow the ban on the use of chemical weapons remained intact. Yet now, just as we look up, look forward to a new decade and perhaps a whole new era of peace—the alarm bell has sounded. I've heard that bell and I know what it means. And if I'm remembered for anything, it would be this: a complete and total ban on chemical weapons."*

**Vice President George Bush**  
**Address at the University of Toledo, October 21, 1988**

## CHAPTER II

### NBC DEFENSE OPERATIONS FUNDAMENTALS

*"The effects of the successful gas attack were horrible. I am not pleased with the idea of poisoning men. Of course the entire world will rage about it first and then imitate us. All the dead lie on their backs with clenched fists; the whole field is yellow."*

Rudolph Binding  
*A Fatalist at War, (of the first German use of lethal gas), April 1915*

#### 1. Purpose

This chapter provides a discussion of NBC defense fundamentals applicable to the theater of operations.

#### 2. Overview

NBC defense operations present many **unique challenges to commanders**. A clear understanding of the effects of WMD,

coupled with the implementation of the principles of NBC defense, can significantly reduce these challenges.

#### 3. Weapons of Mass Destruction and Agents Effects

This section describes the **lethality and range of effects of weapons and agents** in an NBC environment. Figure II-1 illustrates these effects.



Figure II-1. Weapons of Mass Destruction and Agents Effects

a. **Nuclear.** Effects of a nuclear detonation are primarily in three areas: **thermal radiation, blast, and nuclear radiation.** Corollary effects, such as electromagnetic pulse (EMP), can break down electronics system protection, disrupt communications, and have significant psychological impacts on friendly forces.

- **Thermal Radiation.** Thermal radiation, consisting of heat and light, results from the nuclear detonation. Thermal radiation can cause widespread injuries in the form of **skin burns and retinal damage** (flashblindness). Thermal radiation can also cause **fires and damage or destroy heat sensitive and optical systems.** The type of weapon burst (air, surface, or sub-surface) and the atmospheric conditions influence both the range and intensity of thermal damage.

- **Blast.** Blast, consisting of **shock waves, high overpressures, and severe winds** can demolish buildings, equipment, and uproot trees. Even though the shock front achieves sufficient strength to devastate most land features, the type of nuclear burst determines the severity of destruction. **Blast is not an instantaneous effect.** A finite amount of time will elapse between the “flash” and the arrival of the shock wave relative to a person’s distance from the point of detonation (ground zero). **This time will allow individuals to find some protection,** whether it be in a building, vehicle, or dropping to the ground if caught in the open.

- **Nuclear Radiation.** The most **widespread and longest lasting** weapon effect comes from the emission of radioactive products. These appear in two forms: initial and residual

radiation. **Initial radiation,** which is emitted during the first minute after detonation, produces deadly gamma rays and neutrons. **Residual radiation** is most prevalent in ground bursts where the detonation heaves up land, buildings, and other materials that are later dispersed as radioactive fallout. In the case of an air burst, residual radioactive emissions are extremely limited.

- **Electromagnetic Pulse (EMP).** If the high currents and voltage signals induced by an EMP event are delivered to unprotected electronic devices, the devices can be permanently damaged or temporarily degraded. **Radio communications will be subject to a wide variety of possible disruptions during and after a nuclear exchange.** These interruptions may range from minor disruptions lasting just a few minutes to essential communication links being rendered useless. Hardening techniques include: **electromagnetic shielding, proper grounding, circumvention circuits** to sense an EMP and “turn off” or isolate critical circuits, **filtering** of broad bandwidth EMP signals, use of voltage and current **limiting devices,** and proper **device selection and design** to tolerate EMP surges.
- **Psychological Effect.** In addition to causing massive physical destruction, **explosion of a nuclear weapon can cause tremendous psychological effects that can impact on a unit’s ability to fight.** Immediately after an attack, personnel may show alertness or evidence denial or disbelief. Following weapon detonation, some survivors will remain effective, others will be dazed and stunned, and some will be in a state of panic or acute confusion.

## ALLIED NUCLEAR WEAPONS

During the intervening years between WW I and WW II, the Americans and the British initially were persuaded to investigate the possibility of nuclear weapons primarily out of fear that the Germans were working on them and were likely to have such a weapon before anyone else—with dire consequences indeed. President Roosevelt was alert to this possibility; and added urgency came with the Japanese attack and the German and Italian declarations of war in December 1941. During early March 1942, Roosevelt was advised that the scientific investigation had proceeded to the point that it may be possible, with a major industrial effort, for a weapon to be completed as soon as the end of 1944. Consequently, a decision on whether to make such a commitment would have to be made soon. Roosevelt decided on June 17, 1942, that the United States would go forward with a major atomic program.

Two issues concerning the development of the atomic bomb surfaced after Roosevelt's decision. First, in terms of industrial infrastructure, there was the practical matter of actually going forward with the project. One of the major issues here was how to acquire sufficient U-235 to make a bomb. The government secretly took what looked like the most reasonable way, namely, it started massive work on three likely possibilities simultaneously. In addition, the government built a fourth plant to manufacture plutonium, a new type of material correctly believed likely to be usable in atomic bombs. After acquiring vast amount of land to build the necessarily huge secret laboratories and facilities for all this massive program went forward in the fall of 1942. By late 1944, the few Americans privy to the secret were assured that enough fissionable material would be available for several bombs in the summer of 1945—only six months later than originally predicted.

The second issue was that of relations on this subject with America's British and Russian allies. By a coincidence, Winston Churchill was in the United States and talked with Roosevelt about atomic weapons at Hyde Park three days after the President's June 17, decision. In that conversation—of which no real record survives—the two appear to have agreed to cooperate on atomic matters. That cooperation was, however, limited as the Americans became increasingly skeptical about British security to outsiders and reticence with the Americans. At the end of 1942 Roosevelt approved a policy of limiting the sharing of secrets, a policy Churchill protested at the Casablanca Conference in January 1943.

The Americans relaxed their restrictions somewhat in view of Britain's contribution to the whole enterprise, but even a new agreement arrived at by Churchill and Roosevelt at Quebec on August 19, 1943, did not remove all differences. A coordinating committee in Washington helped, a great deal of information was provided to the British, and the agreement to use in combat any atomic weapons only after consultation was fully adhered to, but some friction remained.

A major aspect of Roosevelt's reticence had been the preference for the United States rather than others to profit from any potential post-war benefits which might be derived from the great investment being made in the nuclear field by the American taxpayer, some two billion dollars by 1945. Of equal if not greater

importance, however, were American doubts about British security. These doubts concerned not leaks to the Axis powers but to Soviet espionage which the administration correctly believed was operating in both Great Britain and the United States.

Roosevelt consistently opposed any sharing of nuclear information with the Soviet Union, seeing no prospect of Soviet knowledge of the subject being of use during the war and vastly more suspicious of and concerned about Soviet intentions after the war. There was no sign either of Soviet willingness to exchange important secret information about any subject whatever with the Western Allies, nor of any prospect that there would be wartime cooperation in weapons development, atomic or conventional. There were, however, lots of signs that Soviet espionage networks were continuing their activity in the United States, and presumably also in Britain, that these were trying to penetrate work being done in the atomic field, and that all this was likely to be exclusively of post-war application.

Roosevelt recognized the enormous contribution which the Soviet Union was making in the war against Germany, and with his broad knowledge of the war appreciated this fact more than many Americans then or later; and he very much hoped that wartime cooperation might continue into the post-war era. Like Churchill, however, he saw no reason to take the Soviets into American confidence about a weapons system of potentially great significance in the post-war years, especially since he expected that the United States would dismantle most of the conventional forces it had built up during the war at the conclusion of hostilities as it had done after World War I, and in fact proceeded to do after World War II.

Roosevelt did live to learn that the Germans had dropped out of the race to build atomic weapons, but this in no way caused him to order the vast secret American effort to be relaxed. The available evidence supports the conclusion that he had expected any bombs built in time for use against Germany to be dropped on that country and any not ready in time to be dropped on Japan, in both cases in the hope of bringing a long war to a quick end.

President Harry Truman was briefed on both the atomic bomb project and on Soviet espionage efforts as soon as he took office. He adhered to the outlines of his predecessor's policies, becoming, if anything, less willing to share information with America's allies. The accidents of chronology resulted in his presiding over the completion of the first nuclear weapons, so that the decision on their first use had to be made by him. Many believe that Roosevelt, had he lived, would not have decided differently.

SOURCE: Gerhard L. Weinberg, *A World at Arms*,  
Cambridge University Press, 1994.

b. **Biological.** A biological threat is the capability of an enemy to plan and deploy a biological material to produce casualties in humans or animals or damage plants or other material. A **biological agent** is a

microorganism or biological toxin intended to cause disease, injury, or death in people, plants, or animals or deterioration of material. A **biological threat** is the capability of an enemy to deploy these types of agents.



- **Microorganisms. Pathogenic microorganisms are infectious agents that cause disease** in personnel, animals, or plants by entering the body through the lungs, digestive tract, skin, and mucous membranes of body openings. Once they enter the body, microorganisms multiply, overcoming the body's natural defenses, and produce disease.
- **Toxins. Toxins are poisonous substances produced as by-products of microorganisms, plants, and animals.** Some toxins can be chemically synthesized, and some can be artificially produced with genetic engineering techniques. **Toxins exert their lethal or incapacitating effects by interfering with certain cell and tissue functions.** The signs and symptoms of toxin poisoning can be confused with both chemical poisoning and infectious diseases.
- **Enemy Biological Weapons Employment.** Delivery systems for biological warfare agents most commonly generate **invisible aerosol clouds** with particles or droplets that can remain suspended for extensive periods. **The major risk is retention of inhaled particles.** To a much lesser extent, particles may adhere to an individual or to clothing. Vectors, which are organisms (e.g., insects) that transmit pathogens, may be involved in the spread of a disease. **The effective area covered varies with many factors**, including wind speed, humidity, and sunlight. In the absence of direct evidence of an attack, the first clue would be **mass casualties fitting a clinical pattern compatible with one of the biological agents**; however, diagnosis may be difficult because of the possible use of multiple pathogens. **Toxins**, although nonliving, **affect the body in a manner similar to CW agents.** However, toxins are generally much more potent. Mucous membranes, including the eyes, are also vulnerable to many biological warfare agents. **Potential targets of biological agents include the following:**
  - Rear area command centers and key facilities.
  - Troop assembly areas.
  - Ports of debarkation or supply points, airfields, and industrial centers prior to the outbreak of hostilities.
  - Naval operations near land.
  - Forward combat areas and logistical areas.
  - Any area that presents a likely target for a terrorist or insurgent group.
- c. **Chemical.** Chemical agents and compounds are classified according to physical state, physiological action, and use. The terms **persistent** and **nonpersistent** describe the time an agent stays in an area. Threat forces classify chemical agents according to their physiological effect on the body. They identify **six major types**: nerve, blood, blister, choking, psychochemical, and irritants.
  - **Persistent.** Persistent chemical agents **affect the battlefield for an extended period of time.** The exact duration of the threat from a persistent agent is dependent upon several factors, including its concentration, the temperature, wind, amount of sunlight and precipitation. **Threat forces are known to stockpile persistent agents.** Persistent chemical agents are used to produce immediate or delayed



casualties. **Immediate casualties** occur when the victim inhales the vapor or aerosol or, in some cases (Lewisite, Phosgene Oxime), when the agent produces rapid effects on the skin or eyes. **Delayed casualties** occur when the vapor or aerosol is absorbed through the skin. **Persistent agents are used for the following purposes:**

- Contaminate rear area supply depots, airfields, or port facilities.
- Defend avenues of approach.
- Neutralize personnel.
- Protect flanks.
- Degrade unit efficiency.
- Restrict the use of terrain and facilities.
- **Nonpersistent.** Nonpersistent agents **affect the battlefield for relatively short periods of time.** They are more dependent upon the local weather and climatic conditions than persistent agents because of their inherent physical and chemical properties. **Threat forces currently stockpile blood, choking, psychochemical, and nerve agents** such as Tabun, Sarin, and Soman. Although G-series nerve agents are classified as nonpersistent agents, some G agents may persist for hours to days when a thickening agent is used. Nonpersistent agents should be expected against **friendly units along the forward line of own troops** and against **units in contact with the attacking echelon.** These agents are used to immobilize, injure, or hinder activities of the unit under attack. For example, the threat may use a blood agent at a critical moment in battle to

force troops into a higher mission oriented protective posture (MOPP) level. Forcing troops into a higher MOPP level reduces morale and degrades performance. Another advantage is that the threat would not need to decontaminate the area before occupying it. Nonpersistent agents act through the respiratory system or through skin absorption. **Non-persistent agents are used to achieve the following results:**

- Create favorable fighting conditions for the initiator.
- Produce immediate casualties on targeted population before an assault by an initiator.
- Degrade and suppress enemy forces by forcing them into a higher MOPP level.
- Allow occupation with minimum decontamination.

## 4. Operations in an NBC Environment

A capability to defend against NBC attack and to survive and sustain combat operations in an NBC environment requires intelligence forewarning and highly trained, properly equipped forces throughout the theater of operations. **US forces must be prepared to conduct operations in an NBC environment** with minimal degradation. At the theater operational level, NBC defense involves **protection for forces** and the means to remove or cope with operationally significant hazards, **conceal intentions** in the area of responsibility (AOR), and **provide adequate health service support** to preserve the fighting capability of the forces. Health service support will be addressed in Chapter V, “Medical Support.”

a. **Operational Stress.** **Physical and mental demands of military operations can have profound effects** on the performance of individual Service members and units. This is particularly true when the stress of combat is intensified by **heat, continuous operations,** and **NBC protective clothing** worn as part of a unit's MOPP.

b. **Principles of NBC Defense.** NBC defense for the theater requires cognizance of the **principles of NBC defense—avoidance, protection, and decontamination**—coupled with a proactive theater-level program of intelligence, psychological operations, deception, and obscurity. Theater-level **intelligence** assets gather information on the state of the AOR and enemy capabilities and intentions. **Psychological operations** support deterrent measures and, in the event of the failure of deterrence, enhance reactive measures as a force multiplier. **Deception** at the theater level supports large-scale maneuvers.

**Obscuration** increases survivability of large-scale operations and port and airfield operations. If the enemy uses NBC weapons, an effective NBC defense program gives our forces an advantage in operational tempo. This advantage causes the enemy to cease NBC warfare or continue the conflict on less favorable terms. **Nuclear weapons** cause casualties through blast, heat, and radiation effects. **Biological and chemical weapons** cause serious injury or death and restrict the use of terrain or equipment. NBC weapons also degrade force effectiveness by causing military personnel to don cumbersome protective clothing and equipment. **To counter these effects, NBC defense, as shown in Figure II-2, adheres to the three principles: avoidance, protection, and decontamination.**

- **Avoidance.** Passive and active measures used in avoiding NBC attack are keys to NBC defense.

## PRINCIPLES OF NBC DEFENSE

### AVOIDANCE

Passive and active measures used in avoiding NBC attack are keys to NBC defense

### PROTECTION

This principle consists of: hardening of positions, protecting personnel, assuming MOPP, physical defense measures, and reacting to attack

### DECONTAMINATION

Decontamination stops the erosion of combat power and reduces possibility of additional casualties from inadvertent exposure or failure of protection

Figure II-2. Principles of NBC Defense

- **Passive measures** include training, camouflage and concealment (including the use of smoke and obscurants), hardened positions, and dispersion.
- **Active avoidance** includes contamination detection, marking, alarms, warning, reporting, and control measures.
- **Protection.** This principle consists of: hardening of positions, protecting personnel, assuming MOPP, physical defense measures, and reacting to attack.
  - **Hardening. Overhead cover, bunkered positions, armored-like sections of ships, or tanks** are examples. This measure pertains primarily to nuclear weapons in the NBC defense context.
  - **Protecting Personnel. Ordinary clothing can provide some protection against the thermal effects of a nuclear detonation, but more sophisticated protection is required against biological and chemical weapons.** These measures may include medical prophylaxis (pre-treatments) protective masks or protective ensemble, antidote, or other medical treatments. (1) **Nuclear.** Other measures to protect personnel from nuclear effects include implementing passive measures, warning others, locating and identifying burst location, and limiting exposure. (2) **Biological and Chemical.** Other biological and chemical measures include providing individual and collective protection measures or relocation of personnel to toxic-free areas.
  - **Mission-Oriented Protective Posture (MOPP).** When considering the use of MOPP, the commander should balance protection with degradation of the forces' ability to

perform their mission. Normally, the **JFC will leave the decision of MOPP level to the component commander**, who usually will decentralize the decision to the various area commanders or captains of their vessels.

• **Physical Defense Measures.** The optimum conditions for the enemy to employ biological aerosols or chemical attacks exist in the late evening or early morning. When threat conditions exist, it is recommended that during the hours of darkness as many personnel as possible **remain inside any available fixed or improvised collective protective shelters (CPSs) or wear their protective masks.** (1) The entry of Service members or materials into a CPS means that suitable precautions must be taken or **infectious or toxic agents could be carried in on clothing or surfaces.** However, biological aerosol particles that have settled on hard surfaces are unlikely to create a hazard because they are not readily re-aerosolized. The main risk comes from clothing of exposed persons and from flexible or friable surfaces. **Clothing or protective equipment that has been exposed to chemical agents**, especially nonpersistent chemical agents, **may emit vapors within the protected area and should be removed before entry.** (2) In the case of personnel who may have been exposed to a biological aerosol while outside the facility, **a potential hazard will only be created by particles deposited on the outer layers of their clothing** (and possibly their hands, head, and hair if these were not covered). If possible, they should remove their outer clothing and wash their hands, face, and hair. (3) **Use of Individual Protective Equipment.** The **mask** is the most effective protection against biological and chemical agents. Wearing a



*Operations in an NBC environment require that aircrews be fully experienced in accomplishing their mission while using Chemical Protective Clothing and Equipment.*

**respirator** provides virtually complete protection against a biological aerosol attack. Effective **respirator filters** will remove any biological aerosol particles that are present in the air and will protect against all known weaponized chemical agents. (4) **Use of Improvised Refuges.** The term “improvised refuge” is used to describe systems that offer only limited protection and can be created even when a supply of filtered air is not available. The simplest form of improvised refuge is a **room or space with the doors and windows that can be closed off**. Further benefit can be obtained by using a **space within a space**. Thus, inner rooms of buildings provide better protection than outer rooms, especially if the opening is toward the lee side of the building. Further protection can be achieved if **doors, windows, and other openings can be sealed**, but this may seriously reduce the habitability of the space.

•• **After an Attack.** Following an attack, **personnel should take immediate action to reduce the impact of the attack** and restore the fighting power to continue the mission. Different procedures

would be prescribed for nuclear, biological, or chemical attacks.

- **Decontamination.** Decontamination stops the erosion of combat power and reduces the possibility of additional casualties from inadvertent exposure or failure of protection. The extent of and time required for decontamination depends on the tactical situation, mission, degree of contamination, and other alternatives to decontamination, such as deferring the use of the equipment. **Forces should ordinarily decontaminate only that materiel needed for completion of the mission.** Depending on agent type and weather conditions, decontamination may not be required because of natural weathering effects (temperature, wind, and sunlight). Non-mission essential equipment would have the decontamination deferred, or natural weathering could be used.

## 5. Operations and Sustainment Assessment

- a. **Operations Tempo.** The operations tempo may be profoundly affected by the introduction of NBC weapons. Some of the

sustainment considerations that should be reviewed by the combatant commander are outlined in Chapter IV, “Logistic Support Operations.”

b. **Reconstitution.** The component commanders’ capabilities for force generation may be severely hampered with introduction of NBC weapons because of the disruption of normal personnel and materiel replacement processes in theater. In addition, the scale of the requirement for reconstitution may be dramatically increased, especially in a biological or nuclear environment. The number of anticipated casualties, even if afforded some protection, would severely tax reorganization and reconstitution systems.

c. **Military Performance in Chemical Protective Clothing and Equipment.** The use of protective equipment will cause serious degradation of friendly forces’ capabilities to perform their mission. The wearing of chemical protective clothing and equipment will increase the risk of heat stress. Commanders must consider adequate water intake, fatigue, and heat acclimatization.

- The conditions of sustained or continuous operations often require Service members to stay awake for extended periods of time. MOPP decreases sensory awareness, making it harder for Service members to stay awake. Additionally, wearing chemical protective clothing reduces the individual’s ability to recognize and communicate efficiently. Combat often requires that individuals change their habits (such as caffeine and nicotine use, nutrition, personal hygiene,); MOPP may

require even more extreme changes in personal habits. These changes can intensify the feelings of isolation and confusion that are common on the battlefield and increase the individual’s vulnerability to combat stress. Commanders at every level can prepare their Service members to fight effectively in MOPP by engaging in realistic training that builds confidence and cohesion.

- All Service members can expect deficits in performance because of the awkwardness of chemical protective clothing and equipment. Several factors may increase the probability that individuals will experience heat or combat stress while in MOPP. Inexperienced individuals unfamiliar with MOPP or those who are new to the unit are more likely to be affected. Service members who work shifts of indefinite length (who do not know when they will get relief from MOPP) are also more susceptible. Commanders are encouraged to stress training involving visual tasks, especially weapons use, manual dexterity tasks and communication tasks, while in MOPP because certain jobs are more likely to be affected than others (e.g., tasks that require clear vision; precise hearing; fine motor skills; social and emotional support; or communication by facial expression, gestures, and inflections in voice). Service members who have trained often and realistically in MOPP should be able to compensate for the constraints it places on communication, vision, and movement.

## CHAPTER III

### THEATER NBC DEFENSE CONSIDERATIONS

*"We can't dis-invent nuclear weapons. We believe that nuclear weapons are an essential instrument to prevent any kind of war simply by keeping the risks high enough. I do not see a situation in which we would de-nuclearize Europe."*

**Manfred Woerner**  
**Secretary General, NATO, 1991**

#### 1. Purpose

This chapter provides considerations for the planning and conduct of joint NBC defense operations at the theater level.

#### 2. Overview

NBC defense operations may be required throughout the range of military operations. Because of the complexity and potential adverse impact of NBC warfare on US and multinational theater operations, **it is imperative that all facets of NBC defense be considered in formulating courses of action (COA)**. This chapter outlines the theater strategic and operational considerations.

#### 3. Theater Strategic Considerations

See Figure III-1.

a. **The Range of Military Operations.** **The strategic environment within each theater consists of a variety of conditions—**political, economic, social, ideological, psychological, military**—and a range of NBC threats** that may elicit a response from across a range of military operations to respond to those conditions and threats. The following discussion is intended to assist commanders in **defining needs, devising strategies, and projecting resources** when planning for the conduct of NBC defense operations. A detailed description of the states of the range of military

operations can be found in Joint Pub 3-0, "Doctrine for Joint Operations."

- **Operations Other Than War Not Involving the Use or Threat of Force.** Within this state, **US forces may conduct joint training exercises in a simulated NBC environment** to demonstrate survivability, continued combat effectiveness, and retaliatory resolve; conduct peacekeeping operations; conduct disaster relief and humanitarian assistance in the wake of NBC accidents or isolated incidents caused by the actions of terrorists or belligerent groups; or execute a show of force to dissuade the use or further use of such weapons.
- **Operations Other Than War Involving the Use or Threat of Force.** **The use of WMD in a conflict situation could give one party a decisive edge** in the attainment of its objectives. Within this state, military power in response to threats may be exercised in an indirect manner while supportive of the other elements of national power. Limited objectives may be achieved by the short, focused, and direct application of force. **Availability and use of WMD may allow one party to achieve a significant advantage over the other.** Conflict also describes situations in which opposing political factions engage in actions to gain control of or destabilize the political leadership within a nation. **The use of WMD in**



## THEATER STRATEGIC CONSIDERATIONS

- The Full Range of Military Operations.
- Theater Strategy.
- Theater Strategic Protection.
- Joint Operation Planning and Execution System (JOPES).
- Force Requirements.
- Risk Assessment.
- Operational Planning Guidance.
- Operational Readiness Considerations.

Figure III-1. Theater Strategic Considerations

such clashes or crises, depending on geographic or environmental conditions, **could cause a spillover effect or collateral damage to nations that are not part of the conflict.** As the amount of forces, frequency of battles, number of nations, and levels of violence increase and are sustained over an extended period and when the sovereignty of a nation is threatened, conflict approaches the threshold of a state of war and the propensity to conduct NBC operations may increase. **Terrorist activities involving the use of WMD may also increase** during hostilities short of war.

- **War.** It is within this state that **the introduction of WMD could have the most severe and damaging effects** on operational readiness. The probability of larger numbers of both forces and

WMD being employed is greater; therefore, **the capability to inflict casualties may increase significantly.** Enemy forces may perceive a need to use WMD before their capability is destroyed by US preemptive strikes.

b. **Theater Strategy.** At the theater operational level of war, **NBC defense encompasses those actions performed by combatant commanders and their subordinate commanders** to provide protection for forces and the means to enable these forces to accomplish the strategic objectives of the combatant commander. The **key considerations** reviewed by the combatant commander in the NBC defense context include an assessment of the **NBC threat** in theater, an assessment of theater **NBC readiness posture**, an assessment of the **risk** associated with operating in an NBC

*"I am directing that the United States eliminate its entire world-wide inventory of ground-launched short-range, that is theatre nuclear weapons. We will bring home and destroy all of our nuclear artillery shells and short-range ballistic missile warheads. We will, of course, insure that we preserve an effective air-delivered nuclear capability in Europe. That is essential to NATO's security. In turn, I have asked the Soviets to go down this road with us—to destroy their entire inventory of ground-launched theatre nuclear weapons; not only their nuclear artillery, and nuclear warheads for short-range ballistic missiles, but also the theatre systems the US no longer has—systems like nuclear warheads for air-defense missiles, and nuclear land mines. Recognizing further the major changes in the international military landscape, the United States will withdraw all tactical nuclear weapons from its surface ships, attack submarines, as well as those nuclear weapons associated with our land-based naval aircraft. This means removing all nuclear Tomahawk cruise missiles from US ships and submarines, as well as nuclear bombs aboard aircraft carriers. The bottom line is that under normal circumstances, our ships will not carry tactical nuclear weapons . . . As we implement these initiatives, we will closely watch how the new Soviet leadership responds. We expect our bold initiatives to be met with equally bold steps on the Soviet side. If this happens, further cooperation is inevitable. If it does not, then an historic opportunity will have been lost. Regardless, let no one doubt we will still retain the necessary strength to protect our security and that of our allies, and to respond as necessary."*

**President George Bush**

**Broadcast Address to the Nation, Washington, Sept. 27, 1991**

environment, and **NBC impact** on joint operation planning and force requirements.

**c. Theater Strategic Protection. Combatant commanders determine wartime missions** based on the in-theater threat and the environment and direction from higher authority. **Mission analysis helps to identify specified tasks and determine implied tasks.** Theater strategy is based on the combatant commander's intent, which is derived from the **mission, intelligence evaluation, and characteristics of the theater.** The potential for NBC warfare in the theater influences the theater protection posture.

**d. Joint Operation Planning and Execution System (JOPES).** The JOPES **provides the rationale for the initiation of joint operation planning** as described in Joint Pub 5-03.1, "Joint Operation Planning and Execution System," Volume I: (Planning Policies and Procedures), and Joint Pub 5-03.2, "Joint Operation Planning and Execution System," Volume II: (Planning and Execution

Formats and Guidance). **The JSCP provides guidance** to the combatant commanders, other members of the Joint Staff, and directors of Defense agencies to accomplish assigned strategic tasks. It is the **initiating document** for deliberate joint operation planning. **A key part of the planning process is the assessment of threat NBC capabilities and intentions.** If this assessment indicates an NBC potential, an operation plan (OPLAN) or operation order would address measures necessary to counter the use of such weapons and provide broad guidance regarding NBC defense posture for the joint forces. **The crisis action planning system requires a flexible adaptation of the basic planning process.** Previously established joint operation plans are used whenever possible, with appropriate modifications to the courses of action. The method by which the basic planning system is modified for crisis action planning is described in Joint Pub 5-03.1, "Joint Operation Planning and Execution System," Volume I: Chapter V.



e. **Force Requirements.** Force development remains a Service responsibility; however, the complex nature of NBC defense warrants special interest by the combatant commander and the staffs. **The COA developed under JOPEs, the campaign plan, or supporting operation plans will provide guidance to the Services and United States Special Operations Command (USSOCOM)**

to friendly personnel is expressed in adjectival ratings and is included in the NBC messages. See the Joint Uniform Message System outlined in Joint Pub 6-04.10, “Description of US Message Text Formatting Program.”

g. **Operation Planning Guidance.** **Responsibilities** for NBC planning are shown in Annex B to Appendix A. **Considerations**



*When considering the impact of threats, Commanders must assess the problems associated with operating large port facilities in an NBC environment, particularly in terms of possible loss of manpower and materiel.*

to ensure inclusion of units like biological use verification labs or teams, NBC decontamination and reconnaissance units, as well as multispectral smoke capability.

f. **Risk Assessment.** Risk assessment is a very integral and pivotal role for the combatant commander. Such an assessment in an NBC context is **the deliberate process of calculating the possible loss of manpower and materiel to an anticipated NBC threat.** It is a subjective measurement, usually expressed in a percentage, but qualified. For instance, the assumption could be added that, “We can expect 50 percent casualties to unprotected personnel in the event of persistent chemical attack.” In the case of friendly nuclear targeting or attack, the risk

for operational planning guidance are included in Annex C of Appendix A. A **sample NBC appendix to an OPLAN** is shown at Annex D of Appendix A.

h. **Readiness Considerations.** **Readiness is the ability of US 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 the 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**—The combatant commander’s ability to integrate and synchronize ready combat and support

forces to execute his or her assigned missions. To maintain NBC defense readiness in support of joint operations, **combatant commanders should**, at a minimum, **accomplish the following**:

- Assess **enemy NBC capability** and intent.
- Include appropriate **NBC defense annexes** to OPLANs.
- Direct component commanders to assess whether **automatic masking procedures** should be directed and what conditions should apply.
- Provide **NBC protection guidance**.
- Assess available **warning means** and associated **dissemination channels**.
- Assess **readiness** of joint forces under NBC conditions.
- Have responsible component commanders **determine requirements** for chemical units (for example, smoke, decontamination, NBC reconnaissance).
- Determine **host-nation support (HNS) needs** for NBC defense and consult with allies and coalition partners.
- Determine how to **sustain operations** under NBC conditions (for example, survival of critical fixed sites, mission-essential personnel, resupply of chemical defense equipment, treatment of casualties).
- Assess resiliency of the **C4I system** under NBC conditions.
- Determine **NBC defense requirements** for all personnel.

- Determine special **medical requirements** (collective protection, biological defense pre-deployment, and theater immunization requirements, theater prophylaxis stockage levels and distribution, and Food and Drug Administration approvals for Investigational New Drug use).

## 4. RCAs and Herbicides

**Annex F** (Nuclear, Biological, and Chemical Defense; Riot Control Agents; and Herbicides) to the **JSCP** provides guidance for the use of riot control agents and herbicides. The following is an extract from the JSCP.

### a. Use in Wartime

- **The US has renounced first use of herbicides in war** except under regulations applicable to **domestic use** or for **control of vegetation** within US bases and installations and around their immediate perimeters.
- **The US has renounced the first use of RCAs in war.** US forces will only use RCAs in war in **defensive modes** to save lives as approved by the President.
- In wartime, **use of RCAs outside the war zone is authorized** as prescribed for peacetime as described in paragraph 4b.
- **For RCA and herbicide use, war is any period of armed conflict no matter how it may be characterized**, including declared and undeclared war, counterinsurgency, and any other uses of armed forces in engagements between US military forces and foreign military or paramilitary forces. Armed conflict is conflict between states in which at least one party has resorted to the use of armed force to achieve its aims. It also may involve conflict between a

state and uniformed or non-uniformed groups within that state, such as organized resistance groups.

- Commanders must recognize that, while the US does not consider herbicides and RCAs to be chemical weapons, some other countries do not draw a distinction. **Commanders must consider international ramifications and rules of engagement** before recommending the use of herbicides or RCAs.

### b. Use in Peacetime

- The Secretary of the Army, as Executive Agent for the Department of Defense for civil disturbance operations, has promulgated **instructions governing the use of RCAs in civil disturbances in the US**, the Commonwealth of Puerto Rico, and US possessions and territories.
- **RCAs may be used on US bases, posts, embassy grounds, and installations** for protection and security purposes, riot control, installation security, and evacuation of US noncombatants and foreign nationals. The US-controlled portions of foreign installations are considered US installations.
- **Chemical aerosol-irritant projectors may be used by military law enforcement personnel** for the performance of law enforcement activities. **They may be used in the following areas:**
  - On-base and off-base in the United States and its territories and possessions.
  - On-base overseas.
  - Off-base overseas in those countries where such use is specifically authorized by the host-country government.
- **RCAs may be used off-base (world-wide) for the protection or recovery of nuclear weapons** under the same conditions as those authorized for the use of lethal force. (See DOD Directive 5210.56.)
- **RCAs may be used in training.** A review of current treaties and/or Status-of-Forces Agreements between the host country and US forces may be required in determining whether or not training with RCAs is authorized.
- **Herbicides may be used within US bases, posts, and installations for control of vegetation.** Use of herbicides off-base overseas must be in accordance with host-country laws and agreements, US Environmental Protection Agency requirements, or Service regulations, whichever are the most stringent.

### c. Authority

- **Only the President may authorize the following:**
  - Use of **RCAs in war**, including defensive military modes. However, advance authority to use RCAs for protection or recovery of nuclear weapons has been delegated to the Secretary of the Defense.
  - **Wartime use of herbicides**, including installation vegetation control.
- **The Secretary of Defense may authorize the following:**
  - Use of **RCAs or herbicides in peacetime.**
  - Use of **RCAs in wartime** for the protection or recovery of nuclear weapons.

- **Combatant commanders and Service component commanders may authorize the following:**

- The use of **RCAs in peacetime** on US installations for riot control, installation security, civil disturbance operations, and noncombatant emergency evacuation operations. The US-controlled portions of foreign installations are considered US installations.

- The **movement and storage of RCAs and herbicides**, as necessary, to support requirements, provided US control is maintained.

- The **off-base use of RCAs in peacetime** for the protection or recovery of nuclear weapons under the same situations as authorized for the use of lethal force.

- The use of **herbicides in peacetime** within and, when authorized by the host-country government, around US bases for control of vegetation.

- The use of **chemical aerosol-irritant projectors by military law enforcement personnel during peace-time** for the performance of law enforcement activities in the following areas: (1) On-base and off-base in the US and its territories and possessions. (2) On-base overseas. (3) Off-base overseas in those countries where such use is specifically authorized by the host-country government.

- Authority for use of **RCAs in peacetime situations not covered by the above** (for example, to save lives in counterterrorist operations) will be addressed in plans and requested by the combatant commanders for Secretary of Defense approval.

## **5. Theater Command, Control, Communications, Computers, and Intelligence**

**C4I are an integral part of all aspects of NBC defense.** An unbroken chain of communications must extend from the National Command Authorities through the CJCS to the combatant commanders, commanders of Service and functional components, and all subordinate commanders. This is especially critical in a theater where the threat of NBC warfare exists.

a. **Command and Control.** Command in this instance generally means the commander's vested authority. When coupled with control as in C2, the expression expands to mean **the process commanders use to plan, direct, coordinate, and control forces to ensure mission accomplishment.** These terms hold special significance in an NBC environment because **the process of commanding and controlling becomes more complicated and critical in an NBC environment.**

b. **Communications.** Communications encompass the systems that support the command and control process. These systems take on a special significance under NBC warfare because of the **inherent complexity of such warfare** and the **direct vulnerability of the communications systems.** For instance, **the basic ability for voice communications is hampered** by MOPP because of difficulty in talking through a protective mask. Similarly, **EMP directly impacts radio transmissions** and sometimes even renders radios useless. This could occur at the very time when radio transmissions take on a new importance because NBC activity precipitates a need for additional reports. Full use should be made of **digital data link message standards** to facilitate warning. Communications also encompass the array of **warning systems** necessary in theater to provide adequate

notice to the forces of an NBC attack imminent or in process. Reports are as outlined in Joint Pubs 6-04.21, 6-04.22, and 6-04.23, “US Message Text Formatting Program.” The level of authority for approval of use of RCAs and herbicides also drives the architecture of communications in theater.

c. **Computers. The speed and complexity of the modern battlefield**, especially with NBC weapons present, **make computers imperative in executing C2**. Consideration must be given to protecting computers from the effects of WMD use.

d. **Intelligence**. To protect the forces, and specifically NBC forces and assets, **commanders at all levels must ensure that all sources of intelligence** (signals intelligence, imagery intelligence, human intelligence [HUMINT], measurement and signature intelligence, open source intelligence, technical intelligence, and counterintelligence) **are considered and fully involved in the determination of the enemy’s intentions, capabilities, and vulnerabilities**. Additionally, the JFC J2 staff section should assist commanders in the development of unit-essential elements of information. **A key aspect to the timely dissemination of intelligence is the availability of a dedicated communications system**. Only with the access to real-time, all source intelligence disciplines can a commander adequately defend personnel and equipment. (For further details, see Joint Pubs 2-0, “Joint Doctrine for Intelligence Support to Operations;” 2-01, “Joint Intelligence Support to Operations;” and 2-01.2, “Joint Doctrine, Tactics, Techniques, and Procedures for Counter-intelligence Support to Operations.”)

## 6. NBC Defense Force Assets

**NBC defense force considerations or force developments remain a Service and**

**Commander in Chief, US Special Operations Command responsibility**. Combatant commanders remain aware of the salient factors that pertain to NBC force requirements and USSOCOM or Service components’ responses to their requirements through JOPES. The need for the combatant commander to take special cognizance in a potential NBC environment is because of the **limited quantities of NBC specialties available** through sourcing in the time-phased force and deployment data. The criticality of these types of specialties, for instance, was apparent in identifying laboratory specialist units for biological verification teams in Operation DESERT STORM.

a. **NBC Reconnaissance**. **NBC reconnaissance assets might become critical in-theater because of the “near-real-time” need for NBC intelligence** to protect the forces properly. In addition to conventional tactical **NBC reconnaissance elements**, special operations forces have **chemical reconnaissance detachments** that are uniquely equipped and trained to infiltrate deep into enemy rear areas to confirm or deny the enemy’s NBC capability before it is employed. **JFCs should work to streamline NBC reconnaissance tasking and reporting** to ensure timely dissemination of NBC intelligence.

b. **Decontamination**. Depending on the level of use of NBC weapons in a theater, **there may be a need for a surge capability for decontamination units**. Current forces are configured to cope with only sporadic use of NBC weapons.

c. **Battle Management**. **Combatant commanders successfully execute the campaign plan under NBC conditions through battle management at the operational level**. Battle management for component commanders is equally important

for combat, combat support, and combat service support units of all Services. It encompasses not only the NBC related actions but also all other actions that permit continuation of theater operations.

## 7. Multinational Forces Considerations

**In most scenarios, the combatant commander will be working with multinational forces** in the prosecution of a conflict or military operations other than war. As such, **it is imperative that full consideration be given to multinational concerns.** One of the most important concerns is **development and implementation of an effective NBC warning system.** This system must transcend communications interoperability and language barriers in near-real-time. In many instances, this requirement will necessitate transfer of equipment and exchange of liaison personnel.

## 8. Protection of US Civilian Personnel in Theater

**The geographic combatant commander, or subordinate JFC, has the intrinsic responsibility to provide protection to US civilians in the AOR/joint operations area,** consistent with capabilities and operational mission. The responsibilities in this area are normally discharged by the Service component sponsoring the civilians in theater. These responsibilities may include, but not be limited to, the issuance of **protective equipment**, medical **prophylaxis training** on this equipment, **instructions** regarding movement, and **procedures** in the event of attack.

a. **Issue of Protective Equipment.** **Protective equipment will be made available to US civilians consistent with supply availability and their risk of**

**exposure.** In the event of shortages of masks or protective overgarments, limitations may have to be made on movement. **Sufficient quantities of the necessary protective equipment should be obtained** as the theater matures.

b. **Training.** **Civilian personnel need to be adequately trained** on the proper use of protective equipment. Normally, this training would only include measures necessary for individual protection.

c. **Instructions.** **Operating procedures and orders should include instructions regarding the expected actions by US civilians.** This may include protective equipment to be worn or carried, restrictions on locations that cannot be visited, or protected areas in which they are required to remain.

d. **Noncombatant Evacuation (NEO).** **NEO plans should be developed and exercised regularly.** NEOs are conducted under the overall direction of the Department of State which will outline which categories of civilian personnel are to be included. For instance, in the event of a high probability of hostilities, family members may be evacuated but necessary technical personnel and members of the media may remain.

## 9. Protection of Enemy Prisoners of War (EPW)

**US forces must safeguard EPW or civilian internees from attacks to include NBC.** This will place additional requirements in training, liaison, decontamination, and logistical support on US forces. **EPW may not have adequate protective equipment and must be issued and trained in the use of US equipment.** NBC defense equipment in possession of EPW may not be compatible with US filters and other associated replacement parts.

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## CHAPTER IV

### LOGISTIC SUPPORT OPERATIONS

*"Peace isn't breaking out. We just fought a war [in the Persian Gulf]. If anything, the ability to retaliate quickly and accurately anywhere in the world is more important now than in the past as weapons of mass destruction proliferate. . . You can't let down your guard."*

Hans Mark  
(Former Secretary of the US Air Force)  
Chancellor, University of Texas, 1991

#### 1. Purpose

This chapter provides **logistic support considerations** for the planning and conduct of joint NBC defense operations.

#### 2. Overview

Logistic support for NBC defense operations will be performed during any state of the range of military operations. **The**

#### 3. Logistic Operations

a. **Combatant Commander Directive Authority.** Within a theater, the geographic combatant commander exercises directive authority over logistic operations.

- US military doctrine specifies that **each Service will provide its own logistical support** except when logistic support is otherwise provided for by agreements with national agencies or



*Joint force troops conducting maintenance operations in an NBC environment.*

**combatant commander must plan for logistic support operations for joint NBC defense.** The combatant commander should cover all these aspects of logistic support in the portions of campaign plans and orders that address NBC defense in the theater.

allies, or assignments of common, joint, or cross-servicing logistics.

- **The geographic combatant commander has the authority to issue and implement directives to**



**transfer logistic functions** between or among Service components within the AOR under wartime or crisis conditions. This authority is designed to **ensure effective execution** of approved OPLANS, **provide effectiveness and economy** in OPLANS, and **prevent unnecessary duplication** of facilities and functions among the Service components.

b. **Logistic Support in an NBC Defense Posture.** The Department of Defense has designated the US Army as the executive agent for the DOD Chemical and Biological Defense Research, Development, and Acquisition Program. The US Army implements this responsibility through a joint Service agreement and chairmanship of a joint Service review group and a joint panel on chemical biological defense, reporting to the joint logistic commanders. **The US Army also chairs a joint Service coordination committee** to assist in chemical defense equipment logistic prioritization and allocation of resources worldwide. **Logistic organizations provide support and assistance to sustain forces.** This support is primarily in the functions of **supply, maintenance, transportation, civil engineering and health services**, and services associated with non-materiel support actions. Geographic combatant commanders exercise C2 of the logistic effort through Service component commanders so that they can shift support effort to the critical place and time. **Logistic commanders must initiate NBC defensive procedures** to limit exposure of their units and facilities to NBC attacks and to protect personnel and supplies from NBC contamination. Where protection is not assured, NBC defense calls for decontamination of critical support materiel. **Most logistic functions become more difficult under NBC conditions.** Medical units must implement systems to treat and evacuate larger numbers of casualties, who may also require special

handling before, during, and after treatment. The supply system must provide needed protective clothing, shelters, and munitions to support the operations. **The geographic combatant commander identifies functions and services available from host-nation (HN) assets.** US units may train and equip personnel from US, multinational, and HN forces to ensure their survival.

c. **Logistic Support for NBC Readiness.** Logistics in an environment in which NBC warfare is anticipated **must be considered from the aspect of the overall logistics effort under NBC conditions and logistic sustainment of the NBC defense effort itself.** Adequate logistic support is vital to all combat operations, which must continue under all conditions. When developing a plan, **the combatant commander balances requirements against limited resources.** The challenge is to accomplish the mission with assets available. Logistical considerations, shown in Figure IV-1, often drive the COA open to a commander.



Figure IV-1. Logistic Support for NBC Readiness Considerations

- **Sustainability.** The geographic combatant commander must have the ability to **maintain logistic support throughout the operation**. Special supplies and increased quantities may be required for NBC units. **The logistician must plan for and achieve logistic momentum**, even in an NBC environment. To meet the challenges, the geographic combatant commander should follow the sustainability imperatives.

- **Anticipation.** **Logistic planners try to foresee future operations as accurately as possible** and ensure adequate sustainment to accommodate any likely contingency. **NBC defense features high consumption rates of fuel, fog oil, decontaminants, water, protective clothing, vaccines and/or toxoids.** The geographic combatant commander and component logisticians must understand **the implications of such requirements on the logistic system's ability to sustain operations.** Logistics considerations must include the possibility of a release of a biological aerosol, for example, being more likely to take place at night because of more favorable meteorological conditions. Although daytime attacks cannot be ruled out, logisticians must plan for logistic support and precaution procedures especially during the hours of darkness.

- **Integration.** **Tactical and operational plans must fully integrate logistic considerations** and must include requirements for NBC defense. Protection of supplies and equipment is included. The effects of contamination on main supply routes (MSRs), supply points, and fixed sites are incorporated into overall planning.

- **Continuity.** All forces must **continuously receive supplies and**

**services** to maintain their fighting strength.

- **Improvisation.** **Logistic organizations must improvise to meet unforeseen emergencies.** Degradation of logistic operations under NBC conditions will require **alteration of work schedules** because of increased times needed to handle contaminated supplies and equipment, as well as work in protective clothing. Logistic planners should plan for **expedient covers and shelters** to protect critical items from contamination. Logistic commanders will prioritize and accomplish only mission-essential tasks.

- **Responsiveness.** **The logistic system must be versatile and able to react rapidly.** The hazards and potential damage caused by WMD may require **relocation** of support bases and medical service support, major **redirection** of supply flow, **reallocation** of transportation and construction means, or short-notice **transfer** of replacement personnel or units from one part of the theater to another. Plans must be made for a **surge capability** for NBC related equipment for a theater in which the use of WMD are anticipated.

- **Stocks of NBC Equipment.** Logistic support for NBC readiness involves two areas of concentration. The first is **logistic support for NBC defense of all units.** This is the supply and transportation of adequate stocks of chemical and biological defense equipment to support the operation. The second is **sustainment of chemical organizations** (smoke, decontamination, and reconnaissance units) with NBC mission-essential items.

### HITLER'S NUCLEAR WEAPONS DEVELOPMENT: THE GREAT MISCALCULATION

If radar and related electronic devices provided major boons to post-war travel as well as dramatic changes in the nature of warfare, another scientific development of the war years was to leave a very mixed and dubious legacy: the appearance of atomic weapons. In the first decades of the twentieth century, physicists and chemists had begun to unravel the inside of the atom, once thought to be a stable unit in the construction of matter in the universe, and had discovered instead that it was made up of a variety of electrons, neutrons, and other particles. In the process of radioactivity some of these particles broke apart, and it was discovered that this breaking process could be artificially stimulated by bombarding atoms in devices which were the fore-runners of accelerators and cyclotrons. In 1938, the German chemist Otto Hahn discovered that when uranium was bombarded by neutrons, instead of absorbing them, it split into two different elements each about half the atomic weight of uranium and in the process both creating energy and releasing neutrons which might in turn split other uranium atoms as they were hit, thus potentially creating a chain reaction in which enormous quantities of power would be released in a massive explosion of unprecedented dimensions. If the process were unchecked, it offered the potential of incredible destructiveness; if it were controlled and slowed, it equally promised almost unlimited power which could be used in the form of electricity.

Otto Hahn and another German scientist, the physicist Werner Heisenberg, continued work on this process, trying to determine which material best lent itself to the fission process in a manner that made that process self-sustaining, how much of this material would be needed to make a bomb, and how the process of fission could be slowed down in the manufacturing process to keep it from destroying itself. The answer to the first of these three puzzles had been discovered just before the beginning of World War II by the Danish scientist Niels Bohr; the Germans were never to find the correct answers to the other two. The most suitable material was an isotope, or variant, of uranium 236 known because of its atomic structure as uranium 235. Because there were only minute quantities of U-235 in uranium as found in nature, there was the problem of how to separate it from the rest, a question that made it all the more important to determine how much of this extremely rare material would have to be assembled to make a single explosive device. The Germans miscalculated by a great margin, and the resulting belief that huge quantities would be needed put a damper on all subsequent German efforts to create an atomic bomb. Since the Germans expected to win the war quickly, the idea of a weapon which could only be made ready in several years of arduous effort had little appeal.

This disregard of the potential of atomic weapons was reinforced by two further grave miscalculations. The first of these involved the material needed to slow down the fission process. The Germans correctly recognized that an isotope of water, usually referred to as heavy water, was excellent for this purpose and were happy over their good fortune in capturing the only large factory in the world capable of manufacturing substantial quantities of it when they occupied Norway in April 1940. The "Norsk Hydro" plant became the focus not only of German researchers but also of British and Norwegian saboteurs and bombers. A series of commando raids and air raids in February,

July, and November 1943 effectively disrupted the main German source of heavy water at a time when huge American facilities were already being erected. Not only had the German scientists in their fixation on heavy water missed the potential major role of graphite in slowing the fission process, but they had dramatically underrated the ability of the Western Allies.

When the last German *charge d'affaires* and his military attache in the United States returned to Germany in 1942, they were received by Hitler in late May and treated to a lengthy monologue on the lack of any real war industry in the United States and the absence of engineers and weapons specialists. Such views were not confined to Hitler by any means; they were widely shared among German scientists and intellectuals in general. When in August of 1945 German scientists heard of the dropping of an atomic bomb, they at first refused to believe that the Americans and British could possibly have succeeded where they had failed.

SOURCE: Gerhard L. Weinberg, *A World at Arms*, Cambridge University Press, 1994.

d. **Reconstitution.** On the NBC battlefield, **organizations may be subject to catastrophic losses.** When such losses occur, each affected unit must be brought back to operational effectiveness or replaced. **The reconstitution role of Service components is to restore debilitated or destroyed units from available assets.** First, there must be an assessment of the criticality of the function. If the function is determined to be critical, it must be resumed. Second, the unit must be assessed for remaining capability in terms of personnel and equipment. Using the surviving assets as a base, **component commanders must determine what personnel and equipment each unit will need to return to an acceptable level of effectiveness.** Personnel may come from the replacement system, medical channels, or other organizations that perform less critical functions. The required equipment may come from the supply system, maintenance facilities, or other organizations.

**individual effectiveness, and limit the spread of contamination.** All personnel perform operational decontamination of their skin and equipment. **Decontamination companies provide units with decontamination support required beyond unit capabilities.** Decontamination units accomplish this through the use of large-scale decontamination equipment. **Decontamination is provided for equipment; stockpiles of materiel; and facilities, terrain, and MSRs on a priority basis.** Supported unit commanders establish priorities. Decontamination companies decontaminate higher priority materiel, facilities, and MSRs. The natural weathering process, or the supported unit with organic resources, decontaminates lower priority items. Unit plans for decontamination of large areas must include **maximum use of HN equipment and materiel.** Commanders should ensure that all items of equipment that cannot be decontaminated are identified during their advance planning.

#### 4. Services Support

a. **Decontamination of Equipment.** Decontamination of equipment is performed to **prevent casualties, increase unit and**

b. **Clothing Exchange and Shower.** A **personal clothing exchange and shower services are available throughout all levels of command.** The standard is to

provide at least a weekly bath for personal hygiene and an exchange of clothing for each Service member. This will be done on an accelerated basis in an NBC environment, as determined by the Service component.

**c. Equipment Recovery and Evacuation.** The recovery and evacuation of equipment is essential to sustaining military operations. Even in an NBC environment, **units cannot consider equipment, especially NBC protective equipment, expendable once it becomes inoperative and contaminated.** The feasibility of recovering equipment that is contaminated must be carefully considered in every case. **The item must be decontaminated and recovered, if practical.** If the situation will not allow the equipment to be decontaminated and the contamination is severe enough to prevent recovery and evacuation, the location will be noted and reported for later recovery. Each Service component should develop procedures for the recovery and evacuation of contaminated equipment.

**d. Mortuary Affairs Policy, Standards, and Procedures.** In an NBC environment, **mass fatalities may result from a combination of effects** such as burns, fragmentation, internal damage from nuclear blast overpressures, radiation, disease from biological warfare, and the consequences of chemical agent exposure. **The geographic combatant commander will decide on the disposition of remains.** Contaminated remains may have to be buried in place following emergency burial procedures. If there are decontamination capabilities that will render remains harmless both internally and externally, **remains will be decontaminated when time and available assets permit.** **However, if they cannot be decontaminated, they are buried at the site of recovery** and the site is clearly marked accordingly. In instances of mass fatalities, the geographic combatant commander, on

advice of the Joint Mortuary Affairs Office (JMAO), gives permission for **mass burials of fatalities.** The JMAO will direct and control later disinterments. For detailed instructions on handling contaminated remains, see Joint Pub 4-0, “JTTP for Mortuary Affairs in Joint Operations,” and Service manuals FM 10-63, AFM 143-3, and FMFM 4-8.

**e. Emergency Destruction and Evacuation of US Nuclear Munitions and Captured NBC Munitions**

- Plans for destruction or disablement of biological and chemical munitions must **minimize the risk of release of agents.** Options for emergency disposition of these munitions, in order of preference are:
  - **Evacuation** to safer location.
  - **Render unserviceable** in accordance with explosive ordnance disposal (EOD) procedures.
  - **Mark and abandon** (record the location).
- The evacuation of NBC munitions requires the **establishment of transportation procedures.** In accordance with Joint Pub 4-0, “Doctrine for Logistic Support of Joint Operations,” the geographic combatant commander will usually be supported by technical representatives from the **Army Materiel Command** and the **United States Transportation Command.** Department of Energy could also play a role in this mission. The requirement for the prior notifications contained in PL 91-121 as amended are applicable. When WMD are evacuated from an outside the continental United States location, the NCA will direct the appropriate coordination with the host or allied nation through the Department of State.

- **Enemy NBC munitions** that are in danger of being recaptured or that pose a unique challenge to safety **may require destruction**. Procedures similar to those for friendly munitions will be followed. Service EOD units will prepare technical intelligence reports on all captured NBC munitions and fuzing systems.

## 5. Supply Support

**The geographic combatant commander is responsible for effective coordination of supply support among the Service components.** When practical to improve economy of effort, common item support may be assigned to a Service component commander, normally the predominant user. The geographic combatant commander is also responsible for the **allocation of critical supply resources** within the command.

a. **General Supply Operations.** Supply points will issue **protective masks and overgarments** as well as **protective shelters** to help prevent or limit casualties from NBC warfare. **Supply units will package protective clothing as complete sets of MOPP equipment** to support a predetermined number of Service members. Decontamination supplies may be issued in preconfigured “push” packages.

b. **Water Production for Decontamination.** Decontamination places excessive demands on the water supply system. **Water support does not maintain contingency stocks of water to accommodate the demands of an NBC environment.** Water supply units will produce potable water and can decontaminate water to acceptable levels for decontamination of personnel and unit equipment. **Potable water is not required for decontamination;** however, potable water may have to be used if nonpotable water is not available. Units must use their organic equipment to transport water.

## 6. Transportation

**An NBC environment will increase the importance of alternative modes and routes.** This makes centralized movement control imperative. **Highway regulation point teams** from movement control centers will use NBC and intelligence reports to **monitor contaminated routes** and **regulate traffic** on MSRs. As necessary, they will recommend diverting supply convoys to alternate routes. Coordination is made using the services of the Joint Movement Center.

## 7. Host-Nation Support

**NBC defense operations must be coordinated with multinational forces and HNs** to augment US capabilities. Existing HNS systems and capabilities should be used. HNS forces for NBC **warning, reporting, and decontamination** may be under the control of US chemical units. The overall goal is **maximum effectiveness of NBC defense efforts** in the theater.

## 8. Multinational Support and Friendly Forces Considerations

Customarily, logistic support is a national responsibility. **US forces may provide the support to or receive support from an allied or coalition nation.** A factor that multiplied the effectiveness of the logistic effort in Operation DESERT STORM was the support provided to different nations.

a. **Timely Coordination of Requirements.** The geographic combatant commander will almost always be **providing support to or receiving support from allied or coalition nation(s).** Agreements to provide or receive support must be accomplished as early as possible to aid detailed planning.

b. **Standardization and Interoperability of Logistic Support.** In planning and executing multinational operations, the geographic combatant commander and our allies can achieve **cost savings and increased effectiveness** by implementing standardization and interoperability of allied logistic support. An effective realignment of logistic support from a national to an area concept requires an **alliance or coalition-wide emphasis on standardization and interoperability**.

### 9. Nuclear Survivability and NBC Contamination Survivability Standard

Mission critical equipment should meet all **Nuclear Survivability (NS) and NBC Contamination Survivability (NBCCS) standards**. NS and NBCCS standards are designed to ensure that US equipment is **hardened to exposure** to specific WMD effects, **compatible** enough to be used in MOPP IV, and **decontaminatable** so that it

can be purged of an absorbed agent and returned to service without danger to the equipment operators.

### 10. Environmental Considerations

**Environmental considerations differ among theaters** because some environments are more vulnerable to the impact of NBC warfare than others. The impact on the environment is not directly proportional to the amount of flora and fauna present. Some deserts have a more delicate ecosystem than the most intricate rain forest. **A potential source of contamination** that must be addressed during NBC defensive operations **is the spread of contamination** during maneuver, decontamination, or other NBC operations. In peacetime, environmental concerns are dealt within diplomatic circles, but outside the US, DOD is required to comply with **environmental standards of general applicability** by Executive Order 13088.



## CHAPTER V

### MEDICAL SUPPORT

*“Even in theory the gas mask is a dreadful thing. It stands for one’s first flash of insight into man’s measureless malignity against man.”*

Reginald Farrer  
*The Void of War*

#### 1. Purpose

This chapter provides **medical support considerations** for planning and conducting joint NBC defense operations.

#### 2. Overview

**Medical support for NBC defense operations will be performed during any phase of military operations.** The combatant commander should plan for these medical aspects in the portions of campaign plans and orders that address NBC defense in the theater.

#### 3. Health Service Support (HSS)

**HSS remains a Service responsibility**, as outlined in Joint Publication 4-02, “Doctrine for Health Service Support in Joint Operations.” As more nations develop and use WMD, the probability of US forces encountering these weapons will increase. **Medical planning** is one aspect of meeting this challenge. Because of the large number of casualties resulting from the use of such weapons, and the special handling required that can drain medical resources, **the combatant commander must plan to use directive authority to ensure the proper coordination of health service to the force**, to include adequate shelter, food, medical prophylaxis, and fluids.

a. **Defensive Measures.** There are a number of interrelated defensive measures that should be included in the planning aspects associated with HSS in an NBC environment.

These include **military surveillance of key sectors** to deter an attacker disseminating chemical or biological agents from a ship-, aircraft-, or ground-based source; **medical defensive measures** to protect personnel at risk against exposure, infection, or intoxication; **physical defensive measures** to reduce the risk of personnel inhaling any chemical agent or biological aerosol that may be present; and **early detection**. Although the detection of a biological aerosol is not itself a countermeasure, effective detection plays a key role in enabling other countermeasures to be used efficiently.

b. **Medical Management.** The medical management of casualties resulting from use of WMD and, in particular, biological agents, is a problem of **managing large numbers of individuals with infectious disease or exposure to chemical agents and/or toxins and injuries resulting from nuclear weapons**. Medical units will require augmentation to decontaminate incoming casualties. **Each element of the medical treatment and evacuation process must be evaluated**, especially as it pertains to multinational and HN interrelationships. The fact that the source of the exposure may have been artificially created by deliberate, hostile means will not change the basic principles of treatment. For instance, in the event of a biological attack, the most important factor in providing operationally relevant information and adequate medical management will be the **rapid establishment of an accurate, specific identification of the agent**. In contrast to naturally occurring epidemics in which the



disease incidence increases over a period of weeks or months, **an artificially induced epidemic will peak in a few hours or days.** Since a biological attack may be silent or nearly so, the first indication of a problem may well be the appearance of a **wave of casualties** in which medical personnel are unable to differentiate natural disease epidemics from overt or covert enemy attacks. Onset of illness following exposure to toxic agents may range from minutes or as long as 3 weeks. Some potential biological agents are transmissible among humans, so **spread after the initial attack** may become an important planning consideration.

- There are **unique aspects of medical management** after biological attack that require special alertness and training. **Timely identification and communication of the threat** is essential for the theater force survival. Casualties may not occur at the same time as they would in the case of saturation bombing or a massive surprise attack with nerve agents. The degree of exposure to the agent and host resistance causes the onset of illness to be spread over a number of hours or days. An **increasing casualty load is anticipated** with relatively few initial casualties and a greater number over successive hours or days until a peak is reached. An exception to this aspect would be an attack with biological toxin(s) that might create an immediate and dramatic mass casualty situation.
- **Decontamination and collective protection** for NBC attacks are particularly important if the situation necessitated a **prolonged stay in a presumptively infected area.** Medical management must provide reasonably adequate shelter, establish uncontaminated food and water intake, and ensure specific treatment is available. **Demands for military medical support to neighboring civilian populations**

**following such an attack will probably be intense**, especially if the attack contaminated neighboring civilian populations with concentrations of very young, very old, and those already suffering from underlying disease or other forms of weakening stress. **Medical facilities security must also be planned.**

### 4. Medical Intelligence

**The Armed Forces Medical Intelligence Center can assist in the theater threat assessment** by evaluating the state of a potential adversary's BW effort. **Tactical medical intelligence units conduct investigations of disease** resulting from suspected enemy biological agent employment and can provide limited analysis of enemy drugs, serums, and antibiotics. **It is instrumental in gathering data** from the various medical units and nonmedical units. The importance of medical alertness cannot be overemphasized.

### 5. Preventive Medicine Principles

In an NBC environment, **preventive medicine services will be in great demand.** There is a possibility that many deaths would occur if an effective biological agent attack occurred. Demands for military medical support to both military and civilian populations will probably be intense. Preventive medicine personnel must assist the commander in **determining the health hazards associated with nuclear fallout and biological contamination**, such as safe food and water sources, **and in determining when to use prophylaxis, immunization, and other preventive measures** associated with NBC warfare. Preventive medicine personnel must **be aware of the NBC threat** in the theater and continually **update the informational data base** on diseases, potential disease vectors, and the susceptibility

## CHEMICAL AND BIOLOGICAL WARFARE—WWI AND WWII

One of the major weapons innovations of World War I, introduced by the Germans and imitated by the Allies, had been poison gas. The years between the wars had seen both efforts at international agreement to ban poison gas and continued production and experimentation with it. Aside from experimentation carried on in the Soviet Union with the approval of the latter, the Germans simply kept up with other powers in the 1920s and 1930s until major breakthroughs led to the development of nerve gases on an increasing scale during World War II. Tested on prisoners of war and on concentration camp inmates, nerve gases also claimed some victims as a result of accidents and errors in the production process but were never employed at the front.

The decision by Hitler not to use the nerve gases was made on the basis of several considerations. The one which we now know to have been false was the belief that the Allies also had nerve gases. Of great importance was the evident reality of great Allied air strength obviously capable of making good on the repeated public announcements that poison gas would be used in retaliation for any German use of it, either on the Eastern Front or anywhere else. An equally significant restraint on the Germans was their lack of gas masks of any sort for much of the country's civilian population.

The British built up substantial stocks of phosgene and mustard gas, both widely used in World War I. They had been willing to use this weapon in 1940 if the Germans succeeded in establishing a substantial beachhead in an invasion. In 1944, Churchill would urge the use of gas either against the sites from which the V-1s and V-2s were about to be launched or elsewhere in retaliation for these new forms of indiscriminate bombardment, but contrary advice from his own military Chiefs of Staff and the objections of the Americans prevented any such employment of poison gas.

The United States built up a very large stock of the gases used in World War I for employment in case either the Germans or the Japanese turned to this weapon. Although the possibility of the use of gas in combat was considered in the preliminary discussions of the invasion of Iwo Jima and the Japanese home islands in 1945, such projects were always vetoed by the President or dropped by the military on their own. The shipment of chemical warfare shells to the theaters of war for use if retaliatory employment proved necessary led to the greatest loss of life in a gas accident during the war. A German air force bombing raid on ships in the harbor of Bari in Italy on December 2, 1943, led to the destruction of one ship (among seventeen) which carried 100 tons of mustard gas in bombs; over a thousand Allied personnel and Italian civilians being killed as a result.

Far larger numbers had been killed both accidentally and intentionally by the Japanese, who had built up a large poison gas program beginning in the last months of World War I. They repeatedly used gas for experiments and in the war against China. Perhaps because this employment was almost all carried out before Japan attacked the United States, Britain, and the Netherlands, the Western Powers chose not to retaliate in kind. This subject still awaits further investigation. The employment by the Japanese of a German-invented gas grenade in the Imphal campaign in the summer of 1944 was seen as an isolated,

and quite possibly unauthorized, incident. Improper safeguards and processes left hundreds of former workers in the Japanese gas factory at Okunoshima in damaged health.

If a considerable amount of information about chemical warfare projects remains obscure, in part because records are still closed, this is even more the case for biological warfare. Even the World War I attempts by the Germans to spread the cattle and horse disease anthrax in the United States and Canada have been covered by a veil of obfuscation. Some work on biological warfare agents was done in the inter-war years in several countries and continued into the war years.

There was a program during World War II for the development of biological weapons in Great Britain, which had been inaugurated by Neville Chamberlain in response to German threats of secret weapons and was pushed forward with Churchill's full support. With some material assistance from the United States, this project was able to produce a small amount of anthrax (under the code name N) in 1943 and large amounts in 1944. The whole project was designed for deterrence and, if necessary, retaliation should the Germans resort to biological warfare. No quantities sufficient for use appear to have been made available during the war. There was substantial American research on bacteriological warfare agents, again for any necessary retaliation. Little is known in open sources about Soviet work in this field, whatever it may have been.

By far the most extensive work in the field of biological warfare appears to have been done by the Japanese. Established already in 1932 in Manchuria, the Japanese center for research and experimentation was employing thousands of workers in a massive installation operating under a 1936 formal Imperial order by the late 1930s. Huge quantities of poisonous bacteria were produced and tried out on human guinea pigs in tests which began in 1932, killed thousands, and were filmed for demonstrations to Japanese army officers. Delivering the biological warfare materials proved a major problem when the Japanese tried them out in their war with China and this use occasionally back-fired.

During the Pacific War, the experimentation was extended to American and British prisoners of war. Allied intelligence came to know about the Japanese program at least in outline from 1942 onward, although the British, unlike the Americans, discounted the evidence that was coming in. For obvious reasons, the Americans were especially concerned about the possible use of the Japanese balloon campaign as a carrier of bacteriological materials. The biological warfare agents were, however, not used against the Western Powers; in August 1945, the Japanese blew up the facilities, murdered the surviving prisoners, and tried hard to cover up the whole episode.

SOURCE: Gerhard L. Weinberg, *A World at Arms*,  
Cambridge University Press, 1994.

of troops to these diseases. In NBC conditions, diseases known to exist in the area may be manifested but not transmitted to our forces. **The appearance of a disease or vector not known to exist in the theater is an indication that biological warfare agents are being introduced into the area.** Following an effective NBC attack, the application of general preventive medicine principles will be important.

a. **The tendency of individuals in an emergency situation to become careless** regarding food and water sanitation, general hygiene, and other common disease control measures **could be a significant cause of secondary spread of disease.** The problems of maintaining safe water and food conditions will differ for military personnel deployed throughout the operational area and for the civilian population.

b. Following an NBC attack, **all food except canned or otherwise well-protected food should be thoroughly inspected** to ensure adequate protection was provided. Foods determined to be safe must be protected against secondary contamination. **Protective measures must be practiced by those who transport, store, prepare, and serve food,** as well as by those who consume the food. In addition, consideration must be given to applying **control measures** necessary to prevent contamination of food stuffs by insects, rodents, and other vectors.

c. It is difficult to maintain **satisfactory personal and area field sanitation,** particularly in unfamiliar climates. Strict measures are required for waste treatment and sewage. **Water surveillance and area water sanitation control measures must be instituted.** The best insurance of water sanitation is water purification or boiling.

However, water purification tablets and military systems for boiling or purifying large amounts of water for consumption and hygiene purposes are **not effective** against certain biological agents such as viruses, spores, or toxins.

d. Washing with soap and water is the most effective simple personal hygiene measure for the control of communicable diseases. It is the responsibility of each person to apply **standard individual protective and sanitary measures** as appropriate.

## 6. Patient Evacuation

**Forward evacuation within the combat zone is normally the responsibility of the respective component command** using organic Service-assigned assets, e.g., Army, Marine, Navy, SOF fixed- and rotary-wing aircraft. Air Force fixed-wing aircraft with specialized aeromedical evacuation crews can assist with forward evacuation if the terrain, distance, and other related factors are not conducive to using organic assets. **Movement of patients within the theater** is the responsibility of the geographic combatant commander. The Commander in Chief, US Transportation Command is responsible for establishing, operating, training, and maintaining the common-user aeromedical evacuation system for **movement between theaters and from theaters to the continental United States.** An NBC environment forces the commander to consider to what extent he/she will commit evacuation assets to the contaminated area. If a task force is operating in a contaminated area, most of the medical evacuation assets will be operating there. **There are three basic modes of evacuating casualties (personnel, ground vehicles, and aircraft) in the combat zone.** Cumbersome MOPP gear,

climate, increased workloads, and fatigue will greatly reduce personnel effectiveness. When evacuation personnel are sent into a radiologically contaminated area, the **operational exposure guide (OEG)** must be established. Based on the OEG, commanders decide which evacuation assets will be sent into the contaminated area. Every effort will be made to **limit the number of evacuation assets that are contaminated**. To ensure contamination of evacuation assets is limited, patients should be decontaminated before transport.

### 7. Patient Decontamination and Triage

The management and treatment of contaminated casualties will vary with the tactical situation and the nature of the contaminant. Each medical unit must have a plan that can be put into effect immediately. **Decentralization is necessary**—casualties must not be forced to wait at a central point for decontamination. **All medical units should have comparable sets of medical items and decontamination equipment** for treatment of contaminated patients originating in their area. **Decontamination of the patients serves two purposes:** it prevents the patient's system from absorbing additional contaminants, and it protects medical personnel treating the patient and other patients from contamination.

a. **Medical treatment facilities (MTFs) will establish decontamination areas.** When casualties arrive at the MTF, they must be seen at a triage point and directed to the proper area. The **triage officer** must determine if the patients have a surgical or medical condition that requires priority over decontamination.

b. **Ninety to ninety-five percent of all decontamination can be accomplished by removing the outer clothing and shoes.** This can usually be accomplished before admission without interfering with medical treatment.

Actions should be taken immediately to ensure all personnel suspected of being contaminated by a biological agent are cleaned and kept free of disease-producing organisms.

### 8. Medical Facilities

Because of the medical unit location, threat capabilities, and the unique aspects of NBC operations, **the following factors must be considered:**

a. **WMD are capable of producing mass casualties.** Even though few chemical casualties become fatalities, they require intensive HSS. In the first few hours after an NBC attack, medical facilities can be swamped with casualties who require lengthy hospitalization.

b. **At the same time the patient load is increasing, other factors combine to complicate HSS operations.** Operations in **MOPP gear** reduce individual and collective efficiency at a time when manpower requirements increase. **Patient decontamination** requires manpower and will reduce the number of personnel available to treat casualties. **Heat stress** in MOPP will require more frequent rest breaks, further reducing care capability. **Establishing and maintaining a facility with CPS** and continuously monitoring the air inside the shelter for contaminants calls for additional personnel. These procedures decrease the ability to treat patients as efficiently and effectively.

### 9. Impact on Health Services Support

The contaminated battlefield will be a difficult environment in which to operate. **Stress from MOPP, reduced visual and tactile senses** from protective equipment, **reduced communication capability**, and a **sense of isolation** are all detrimental to military operations. The HSS system has

several **unique aspects** that must be considered.

a. **Contamination may be transferred to the MTF** if patients are evacuated to MTFs without being decontaminated. **Patients must be decontaminated before they are admitted into the CPS.** This is required to prevent the medical staff from becoming casualties; ordinarily, the medical staff works without protective equipment.

b. **Many HSS assets are fixed or possess limited mobility.** They are often located near command, control, communications, and computers (C4) activities and main supply routes; hence, **they must continue to operate within the contaminated environment.** Treatment cannot cease while the unit relocates.

c. **Oxygen Production and Resupply. Production of liquid and gaseous oxygen normally will not occur in an NBC contaminated environment.** Although newer production plants have been designed for potential operation in such a state, generally production will be stopped until

air quality improves. Product transfer operations (gaseous and liquid) will also be curtailed unless medical and flight line requirements demand such. **Supply and medical units must develop plans to resupply critical gases and cryogenic liquids in the contaminated area** from primary and alternate sources. These sources include production and storage organic to the unit, from other Services, from HN support, and from commercial contracts.

## **10. Special Medical Augmentation for Operations in an NBC Contaminated Environment**

Decontamination operations are extremely resource intensive. It is unrealistic to expect that medical personnel will be able to manage both medical treatment and decontamination of patients. For this reason, **plans must address how decontamination will be accomplished.** Augmentation to provide decontamination support must also be addressed in planning.

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## CHAPTER VI

### TRAINING AND READINESS

*"Precisely because of the spread of dangerous military technologies, we must also extend the arms control process beyond the narrow confines of the superpowers. States like Iran, Syria, Iraq and Libya are working to develop the capacity to produce chemical arms and to acquire—in some cases produce—the ballistic missiles to deliver them. The danger is real and we have to get active now if we are to avert disaster."*

President George Bush  
August 2, 1988

#### 1. Purpose

This chapter provides **NBC training and readiness considerations**.

#### 2. Overview

**Training, readiness reporting, and environmental concerns** must be considered when discussing support for NBC defense.

#### 3. Joint NBC Training

Although individual training and exercises to test proficiency remain under the purview of the Services, **NBC defense will be integrated into individual and collective programs at all levels** and into higher echelon operational and tactical exercises, command post and other C4 system exercises, and joint and multinational training exercises. **The objectives of this training are to develop and evaluate the readiness** of US and multinational military forces and mission-essential civilians to operate in an NBC environment **and to ensure proficiency** with defensive NBC equipment, materials, and procedures. Training considerations, described below, are shown in Figure VI-1.

a. **Service Responsibilities.** Each Service will incorporate NBC defense training into its overall training plan for units and individuals. This training should not only



Figure VI-1. Joint NBC Training Considerations

acquaint personnel with **defensive measures** but also stress proficiency in the individual's **primary skill area** in an NBC environment. Training is the only counter to the degradation of job proficiency because of NBC protective equipment. **All personnel should be included in this training.** Rear area personnel, air and ship crews, tank crews (with filtered overpressure systems), and particularly those in high-level command or staff positions should not be exempt from NBC training.

b. **Joint and Multinational Exercises.** All appropriate joint and multinational exercises should incorporate **NBC situations** with prolonged operations in an



NBC environment. This joint training is the responsibility of the JFC.

**c. Exchange Programs. Exchange programs provide a mechanism for enhanced joint and multinational NBC training.** These exchange programs include reciprocal unit exchanges, personnel exchange programs, individual exchanges, and combination programs.

- **Reciprocal Unit Exchanges.** These programs allow each nation's forces to train with other nations in NBC tactics, techniques, and procedures. This program is a good vehicle to familiarize units in multinational NBC training. To do so would be an extension of the security assistance training programs. The proficiency of the units must be

**person from the HN is exchanged with a US member.** This program, like reciprocal unit exchanges, requires the exchanged personnel to be of comparable proficiency in their area of expertise.

- **Individual Exchanges.** This is **similar to the personnel exchange program.** However, it is different in that it is a temporary duty program conducted in-theater. **This program gives commanders greater flexibility** because the command will not lose personnel for extended periods, and it allows commanders to expose larger portions of the force to the program.
- **Combination Programs.** Commanders should consider **combining security assistance efforts with joint or**



*Exchange Programs include joint and multinational training in NBC tactics, techniques, and procedures to provide joint commanders greater flexibility in the application of forces.*

comparable to preclude exchanging fully trained US forces for untrained HN forces.

- **Personnel Exchange Programs.** This is a one to three year program where a

**multinational exercises** to obtain maximum benefit for all concerned. For example, exchange of key personnel during exercises will gain more in terms of interoperability than exchanges during normal operational periods.

#### 4. Readiness Reporting

**The need for readiness reporting is important for the combatant commander** to exercise directive authority for logistics or if NBC would materially affect COA or organization of the theater.

a. **NBC readiness reporting conforms with CJCS and Service requirements.** Units designated as reporting units in CJCS MOP 11 will report chemical and biological defense equipment and training status as a part of the **Status of Resources and Training System (SORTS)** in accordance with Joint Pub 1-03.3, “JRS, Status of

Resources and Training System (SORTS),” and Service directives. **SORTS is the single, automated report that provides** the NCA, Joint Staff, combatant commanders, and Services with **authoritative identification, location, and resource information on operational units** within the Armed Forces of the United States.

b. SORTS supports, in priority order, the information requirements of users for the following activities: **crisis response planning; deliberate or peacetime planning; and management responsibilities** to organize, train, and equip forces used by the combatant commands.

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**APPENDIX A**  
**NUCLEAR, BIOLOGICAL, AND CHEMICAL DEFENSE**  
**PLANNING RESPONSIBILITIES, GUIDANCE, AND**  
**OPERATIONS APPENDIX TO AN OPLAN**

**ANNEX**

- A**      Treaty Obligations History
- B**      Responsibilities for NBC Defense Planning
- C**      Planning Guidance for NBC Defensive Operations
- D**      Nuclear, Biological, and Chemical Defense Operations; Riot Control Agents  
and Herbicides Appendix to an Operations Annex

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# ANNEX A TO APPENDIX A

## TREATY OBLIGATIONS HISTORY

### 1. Nuclear Treaties and Agreements

Although the potential use of nuclear weapons remains a viable, strategic deterrent option, treaties and international agreements affect their proliferation, control, and testing. These treaties and agreements range from obligations with environmental and technology transfer considerations and bilateral agreements between the United States and other countries, including the former Soviet Union, which focus on restraining the development of nuclear warheads and launchers, to the Strategic Arms Reduction Treaties I and II, which focus on reducing and limiting strategic offensive nuclear arms.

### 2. Geneva Protocol of 1925

This protocol prohibits the use in war of asphyxiating, poisonous, or other gases and of bacteriological methods of warfare. The prohibition is accepted as part of international law. The language bans the use of chemical weapons in war. Most parties interpret the protocol as a prohibition only of the first use of chemical agents in war. It does not ban the development, production, and stockpiling of these weapons. In 1974, the US Senate gave its advice and consent to the ratification of the Geneva Protocol of 1925 subject to the reservation that the United States would not be bound by the provisions with respect to an enemy state if such state, or any of its allies, fails to respect the prohibitions laid down in the protocol. On 22 January 1975, the President likewise approved the protocol subject to the same reservation.

This reservation is the legal basis for the US policy that the United States will not be the first to use chemical weapons in warfare and that the United States may use chemical weapons in retaliation to an enemy's first use of chemical weapons. The protocol entered into force with respect to the United States on 10 April 1975 upon depositing the US ratification with France.

### 3. Reports to Congress (Public Law 91-121, 19 November 1969)

This law directs the Secretary of Defense to submit an annual report to Congress setting forth the amount spent during the preceding year for research, development, testing, and evaluation of all lethal and nonlethal chemical and biological agents. It further mandates that none of the funds authorized to be appropriated by this act may be used for transportation, deployment, storage, disposal, delivery systems, and production of lethal binary chemical munitions unless certain conditions should occur and are so certified by the President to Congress.

### 4. Presidential Statement on Chemical and Biological Weapons (25 November 1969)

This statement reaffirms the renunciation of the first use of chemical weapons and extends the renunciation to the first use of incapacitating chemicals. It also renounces the use of lethal biological agents and weapons and confines biological research to defensive measures such as immunization and safety.

## **5. Biological Weapons Convention (10 April 1972)**

Under the terms of the convention, the parties undertake not to develop, produce, stockpile or acquire biological agents or toxins “of types and in quantities that have no justification for prophylactic, protective and other peaceful purposes,” as well as weapons and means of delivery.

## **6. Renunciation of Certain Uses in War of Chemical Herbicides and Riot Control Agents (Executive Order No. 11850, 8 April 1975)**

This order renounces, as a matter of national policy, first use of herbicides in war except in specified defensive uses and first use of riot control agents in war except in specified defensive military modes to save lives.

## **7. Department of Defense Authorization Act, 1985 (Public Law No. 98-525, 1984)**

This law directs that the President establish a “Chemical Warfare Review Commission.” Its purpose is to review the overall adequacy of the chemical warfare posture of the United States with particular emphasis on whether the US should produce binary chemical munitions.

## **8. US-Soviet Chemical Weapons Agreements (1989-90)**

These agreements, which consist of the 1989 Memorandum of Understanding (MOU) and the Bilateral Destruction Agreement (December 1990), establish the national commitments to the destruction and nonproduction of chemical weapons and measures to facilitate the multilateral

convention on banning chemical weapons. The “1989 MOU” or “The Wyoming MOU” was a confidence building measure that was divided into two phases. Phase I, which began in December 1989, included a basic exchange on the size, composition, and location of CW stockpile facilities, as well as reciprocal visits to CW production, storage and destruction sites, and civil chemical industries. Phase II will include a detailed data exchange and a series of inspections. The second agreement, signed 1 June 1990, is known as the “Bilateral Destruction Agreement.”

## **9. Statement by the President on Chemical Weapons Initiative (13 May 1991)**

This statement commits the United States to the success of the Chemical Weapons Convention (CWC)—a multilateral treaty that bans the production, possession, transfer, and use of chemical weapons. Its salient point was the formal forswearing of chemical weapons use for any reason, including retaliation, against any state, to be effective once the convention enters into force.

## **10. The Chemical Weapons Convention, 1993**

The CWC, originally signed by 65 nations in Paris in January 1993, bans the acquisition, development, production, transfer, and use of chemical weapons throughout the world. It also provides for the destruction of all chemical weapons stocks and production facilities within 10 years after the agreement takes effect. Further, it requires the monitoring of national chemical industries to ensure compliance, through both routine and so-called challenge inspections. The convention will take effect for the United States in 1995, if ratified.

## ANNEX B TO APPENDIX A

### RESPONSIBILITIES FOR NBC DEFENSE PLANNING

The following is a synopsis of the responsibilities for NBC defense planning at the various echelons in addition to those outlined in Annex F, JSCP.

#### a. **Combatant Commands**

- Defensive posture necessary to permit military operations in an NBC environment consistent with the anticipated threat.
- Implementation of nuclear detonation detection and reporting, chemical and biological detection and reporting, and radiation monitoring as prescribed in Joint Pub 1-03.7, "JRS, Nuclear Weapons Reports."
- Procedures for verifying enemy use of CBW.
- Support of NBC defense operations of multinational forces, as appropriate.
- Acquisition and reporting of foreign information and intelligence on NBC activities.
- Primary and alternate means of communications with operational

procedures to be used during and immediately following a chemical or biological attack.

- Targeting procedures for enemy NBC means.
- Procedures for requesting the use of RCAs and herbicides.

#### b. **Services**

- Support NBC defense, RCA, and herbicide operations in accordance with assigned functions and with the plans and requirements developed by the combatant commanders.
- Ensure adequate NBC defense for component forces.
- Inform the Chairman of the Joint Chiefs of Staff and the component commands of any inability to support the plans and requirements of unified and specified commands.

c. **Agencies.** As directed in the Intelligence Priorities for Strategic Planning.



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# ANNEX C TO APPENDIX A

## PLANNING GUIDANCE FOR NBC DEFENSIVE OPERATIONS

### 1. Purpose

This annex provides guidance to the geographic combatant commander for the preparation of plans for the conduct of NBC defense operations and for the use of RCAs and herbicides.

### 2. General

US policy is to deter WMD use by attaining and maintaining the military capabilities to deny an enemy a significant military advantage from such use. Key objectives are to stem the proliferation of nuclear weapons and technology and eliminate the threat of both biological and chemical weapons' use by achieving a worldwide verifiable ban on their development, production, and stockpiling. Annex F to the JSCP contains current guidance for NBC operations.

### 3. Intelligence

For potential enemy chemical and biological capabilities, see Annex F to JSCP and National Intelligence Estimates.

### 4. Capabilities

Not applicable.

### 5. Planning Guidance

In addition to the requirements contained in the NBC Defense Operations appendix to the Operations annex, plans will include the following elements, as appropriate:

a. Rules of engagement (ROE).

b. A comprehensive estimated types and quantities of RCAs and herbicides required

and the means necessary to move this materiel. Include RCA and herbicides requirements in a separate listing, if applicable.

c. Procedures for the use of RCAs in situations involving threats to the lives of civilians. (Authorization for such use must be obtained in advance in accordance with Annex F, JSCP.)

d. A summary of special logistic matters pertaining to NBC defense operations, such as the following:

- Requirements for individual and collective protection.
- Issuance of protective clothing.
- Medical support requirements, to include immunization (vaccine and toxoid) or chemical prophylaxis (e.g., Pyridostigmine Bromide).
- Transportation requirements.
- Escort requirements.
- Decontamination requirements.
- Shelter requirements.
- Guidance for civilians and dependents.
- OPSEC measures to protect RCAs and herbicides during storage and movement, as required.
- Detection and reconnaissance requirements.

e. Provisions for the establishment and operation of an NBC warning and reporting

system. The system will provide for the flow of NBC strike data from lower echelons to the NCA and the Chairman of the Joint Chiefs of Staff, and will interface with multinational forces.

f. Positive, automatic procedures for the verification of enemy use of NBC. An absolute determination of enemy use of NBC will affect ROE and definitely affect the protective posture of friendly personnel and allies. Service components may have organic detection units and equipment but the Army component, as executive agent for chemical and biological warfare, will normally deploy the necessary laboratories and teams. Geographic combatant commanders, subordinate JFCs, and their staffs must emplace the necessary communications and procedures to ensure the timely flow of this crucial information.

g. NBC capability of multinational forces. The US supports and encourages an adequate multinational NBC defense capability. Because of the degree of sophistication of the protective equipment and warning systems in an NBC environment, it is imperative that the combatant commander be aware of the protective capabilities of the multinational forces. Under certain circumstances, US protective materiel may have to be made available to the multinational force.

h. Information regarding foreign NBC capabilities. Many of the components of chemical weapons are quite innocuous by themselves, so the NBC surveillance system must be comprehensive. As can be

ascertained from the discussion of the threat in Chapter I, many countries have the potential to obtain NBC weapons.

i. Designation of a dedicated communications system to transmit NBC warning data. Warning messages should be in strict compliance with the US Message Text Formatting Program and kept as brief as possible to facilitate transmission, especially if an existing operations net is used instead of a dedicated system. A standardized theater alarm system, which is integrated with the multinational system, should be implemented. In the absence of guidance, different area commanders or Service components may devise their own alarm system.

j. Guidance on targeting of enemy NBC delivery means. This information is normally treated as a priority matter in the air operations center, fire support centers, and other target planning cells in the theater. The geographic combatant commander normally will provide guidance regarding the priority of such targets. It is difficult to determine whether enemy artillery positions, ships, or air bases are preparing to launch an NBC attack. The use of special handling procedures, special security precautions, or protective clothing take on great significance for intelligence operators trying to discern enemy NBC plans. HUMINT data fed to an all-source center for analysis is often the most effective targeting procedure.

k. The use of RCAs and herbicides as described in detail in Annex F to the JSCP.

**ANNEX D TO APPENDIX A**  
**NUCLEAR, BIOLOGICAL, AND CHEMICAL DEFENSE**  
**OPERATIONS; RIOT CONTROL AGENTS AND HERBICIDES**  
**APPENDIX TO AN OPERATIONS ANNEX**

**SECURITY CLASSIFICATION**

Issuing Headquarters  
Place of Issue  
Date

Appendix \_\_ to Annex \_\_ to \_\_\_\_\_ OPLAN (U)

Nuclear, Biological, and Chemical Defense Operations; Riot Control Agents and Herbicides (U).

( ) References: List standing instructions regarding defense against NBC weapons.

1. ( ) Situation

a. ( ) Enemy. Refer to Annex B.

(1) ( ) Capabilities. Estimate enemy capabilities to employ NBC weapons. Summarize or refer to available delivery means, available munition stocks, defensive equipment, order of battle, defensive support (such as decontamination of combat support units), probable capabilities, areas the enemy is likely to subject to chemical or biological threat, and similar data.

(2) ( ) Courses of Action (COAs). Identify the possible enemy COAs using NBC weapons that could interfere with the accomplishment of the mission or affect the implementation of the plan.

b. ( ) Friendly. Estimate the NBC defensive capability of multinational forces, government agencies, and civilian populations that may affect the accomplishment of the mission. Stipulate participation of allied forces, particularly whether they will be using chemical munitions and agents.

c. ( ) Assumptions. List the assumptions on which NBC defense planning is based.

2. ( ) Mission. During war, the use of RCAs and herbicides requires a Presidential decision. Such use should, therefore, be treated as an operational contingency that may or may not be authorized. Planned NBC defense operations encompass several options that the force commander should be prepared to undertake. Examples of mission statements that may be included here are to:

- a. ( ) Maintain the optimum posture for NBC defense against enemy employment consistent with other mission requirements.
- b. ( ) Employ RCA or herbicides in wartime, as required, only when authorized by the President to support the concept of operations in the Basic Plan.

### 3. ( ) Execution

- a. ( ) Concept of Operations. Describe NBC defense concept of operations.
- b. ( ) Tasks. List the specific tasks assigned to each major subordinate commander.
- c. ( ) Coordinating Instructions. In the final subparagraph, provide guidance and establish procedures applicable to NBC defense. Examples are the following:
  - (1) ( ) Determination of enemy use.
  - (2) ( ) Procedures for requesting additional allocations of RCAs and herbicides.
  - (3) ( ) Coordination of the safety of friendly forces, including safety criteria.
  - (4) ( ) Requirements and responsibilities for post-strike analysis.
  - (5) ( ) Procedures for warnings and reports of enemy chemical or biological weapons employment.

### 4. ( ) Administration and Logistics

- a. ( ) Supply. List the procedures and responsibilities for supply of NBC defense equipment. Include intratheater receipt, pre-positioning, requisitioning, issue, accountability, and denial or evacuation procedures.
- b. ( ) Storage and Transportation. List procedures, locations, and responsibilities for storage and transportation of NBC defense equipment.
- c. ( ) Support for Multinational Forces. List procedures and responsibilities for providing NBC defensive logistic support to multinational forces, if applicable. Provide for necessary multinational force familiarization or training.
- d. ( ) Health Services. Outline procedures and responsibilities for providing health services support in the NBC environment envisioned in the Basic Plan. Refer to Annex Q for details of health service support.

### 5. ( ) Command and Control

- a. ( ) Release Procedures. Explain specifically the procedure for obtaining conditional release authority and approval for all RCA and herbicide operations. Provide for appropriate delegation of authority to use RCA and herbicides upon approval.

b. ( ) Command, Control, Communications, and Computers (C4). Refer to Annex K for general C4 requirements. Identify any special C4 requirements associated with reporting enemy use of NBC weapons or the C4 of military RCA and herbicide operations used by this command.

SECURITY CLASSIFICATION

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- f. Joint Pub 2-0, “Doctrine for Intelligence Support to Joint Operations.”
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- q. FM 100-10, "Combat Service Support."
- r. FM 100-16, "Support Operations: Echelons Above Corps."
- s. FM 100-30, "Nuclear Operations."
- t. FM 101-5, "Staff Organization and Operations."
- u. AR 350-42, "Nuclear, Biological, and Chemical Defense."
- v. TRADOC PAM 11-9, "Blueprint of the Battlefield."

### 5. US Navy

- a. NWP 1, “Strategic Concepts of the US Navy.”
- b. NWP 2, “Organization of the US Navy.”
- c. NWP 3, “Naval Technology.”
- d. NWP 62-1(D), “Surface Ship Survivability.”
- e. NSTM, Chapter 070, “Shipboard Radiological Defense.”
- f. NSTM, Chapter 470, “Shipboard BW/CW Defense and Countermeasures.”
- g. NBC, “Warfare Defense Ashore.”

### 6. US Marine Corps

- a. FMFM 7-11D, “NBC Protection.”
- b. FMFM 7-11E, “NBC Decontamination.”

### 7. US Air Force

- a. AFM 1-1, “Basic Aerospace Doctrine of the United States Air Force.”
- b. AFR 355-1, “Disaster Preparedness Planning and Operations.”
- c. AFR 355-3, “Air Force Personnel Shelter Programs.”
- d. AFR 355-8, “Mission Oriented Protective Posture: Minimizing Performance Degradation During Chemical Warfare Operations.”
- e. AFR 360-1, “Airborne Operability Planning and Operations.”
- f. AFR 360-2, “Commanders Airborne Operability Planning Guide.”

# APPENDIX C

## ADMINISTRATIVE INSTRUCTIONS

### 1. User Comments

Users in the field are highly encouraged to submit comments on this publication to the Joint Warfighting Center, Attn: Doctrine Division, Fenwick Road, Bldg 96, Fort Monroe, VA 23651-5000. These comments should address content (accuracy, usefulness, consistency, and organization), writing, and appearance.

### 2. Authorship

The lead agent for this publication is the US Army. The Joint Staff doctrine sponsor for this publication is the Director, J-5, Strategic Plans and Policy.

### 3. Change Recommendations

- a. Recommendations for urgent changes to this publication should be submitted:

TO: CSA WASHINGTON DC//DAMO-FDQ//  
FROM: JOINT STAFF WASHINGTON DC//J5/J7-JDD//

Routine changes should be submitted to the Director for Operational Plans and Interoperability (J-7), JDD, 7000 Joint Staff Pentagon, Washington, D.C. 20318-7000.

- b. When a Joint Staff directorate submits a proposal to the Chairman of the Joint Chiefs of Staff that would change source document information reflected in this publication, that directorate will include a proposed change to this publication as an enclosure to its proposal. The Military Services and other organizations are requested to notify the Director, J-7, Joint Staff, when changes to source documents reflected in this publication are initiated.

- c. Record of Changes

CHANGE NUMBER	COPY NUMBER	DATE OF CHANGE	DATE ENTERED	POSTED BY	REMARKS

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- a. Additional copies of this publication can be obtained through Service publication centers.
  
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- c. Additional copies should be obtained from the Military Service assigned administrative support responsibility by DOD Directive 5100.3, 1 November 1988, "Support of the Headquarters of Unified, Specified, and Subordinate Joint Commands."

By Military Services:

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| Navy:         | CO, Navy Aviation Supply Office<br>Distribution Division (Code 03443)<br>5801 Tabor Avenue<br>Philadelphia, PA 19120-5000 |
| Marine Corps: | Marine Corps Logistics Base<br>Albany, GA 31704-5000                                                                      |
| Coast Guard:  | Coast Guard Headquarters, COMDT (G-REP)<br>2100 2nd Street, SW<br>Washington, D.C. 20593-0001                             |

- d. Local reproduction is authorized and access to unclassified publications is unrestricted. However, access to and reproduction authorization for classified joint publications must be in accordance with DOD Regulation 5200.1-R.

# GLOSSARY

## PART I—ABBREVIATIONS AND ACRONYMS

AOR	area of responsibility
BW	biological warfare
C2	command and control
C4	command, control, communications, and computers
C4I	command, control, communications, computers, and intelligence
CBW	chemical and biological warfare
CJCS	Chairman of the Joint Chiefs of Staff
COA	course of action
CPS	collective protection shelter
CW	chemical warfare
CWC	Chemical Weapons Convention
DOD	Department of Defense
EMP	electromagnetic pulse
EOD	explosive ordnance disposal
EPW	enemy prisoners of war
HN	host nation
HNS	host-nation support
HSS	health services support
HUMINT	human intelligence
JFC	joint force commander
JMAO	Joint Mortuary Affairs Office
JOPES	Joint Operation Planning and Execution System
JSCP	Joint Strategic Capabilities Plan
MOPP	mission oriented protective posture
MOU	memorandum of understanding
MSR	main supply route
MTF	medical treatment facilities
NBC	nuclear, biological, and chemical
NBCCS	NBC contamination survivability
NCA	National Command Authorities
NEO	noncombatant evacuation operations
OEG	operational exposure guide
OPLAN	operation plan
OPSEC	operations security

## Glossary

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RCA	riot control agent
ROE	rules of engagement
SORTS	Status of Resources and Training System
USSOCOM	US Special Operations Command
WMD	weapons of mass destruction

## PART II—TERMS AND DEFINITIONS

**avoidance.** Individual and/or unit measures taken to avoid or minimize nuclear, biological, and chemical (NBC) attacks and reduce the effects of NBC hazards. (Joint Pub 1-02)

**biological agent.** A microorganism that causes disease in personnel, plants, or animals or causes the deterioration of materiel. (Joint Pub 1-02)

**biological defense.** The methods, plans, and procedures involved in establishing and executing defensive measures against attacks using biological agents. (Joint Pub 1-02)

**biological operation.** Employment of biological agents to produce casualties in personnel or animals and damage to plants or materiel; or defense against such employment. (Joint Pub 1-02)

**biological threat.** A threat that consists of biological material planned to be deployed to produce casualties in personnel or animals and damage plants or other materiel. (Joint Pub 1-02)

**campaign.** A series of related military operations aimed at accomplishing a strategic or operational objective within a given time and space. (Joint Pub 1-02)

**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. (Joint Pub 1-02)

**chemical ammunition.** A type of ammunition, the filler of which is primarily a chemical agent. (Joint Pub 1-02)

**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,” which will be used to include all types of chemical munitions/agents collectively. 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. Also called CW. (Joint Pub 1-02)

**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. Combatant commands typically have geographic or functional responsibilities. (Joint Pub 1-02)

**combatant command (command authority).** Nontransferable command authority established by title 10 (“Armed Forces”), United States Code, section 164, exercised only by commanders of unified or specified combatant commands unless otherwise directed by the President or the Secretary of Defense. Combatant command (command authority) cannot be delegated and is the authority of a combatant commander to perform those functions of command over assigned forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction over all aspects of military operations, joint



training, and logistics necessary to accomplish the missions assigned to the command. Combatant command (command authority) should be exercised through the commanders of subordinate organizations. Normally this authority is exercised through subordinate joint force commanders and Service and/or functional component commanders. Combatant command (command authority) provides full authority to organize and employ commands and forces as the combatant commander considers necessary to accomplish assigned missions. Operational control is inherent in combatant command (command authority). Also called COCOM. (Joint Pub 1-02)

**combatant commander.** A commander in chief of one of the unified or specified combatant commands established by the President. (Joint Pub 1-02)

**contamination control.** Procedures to avoid, reduce, remove, or render harmless, temporarily or permanently, nuclear, biological, and chemical contamination for the purpose of maintaining or enhancing the efficient conduct of military operations. (Joint Pub 1-02)

**defoliating agent.** A chemical that causes trees, shrubs, and other plants to shed their leaves prematurely. (Joint Pub 1-02)

**herbicide.** A chemical compound that will kill or damage plants. (Joint Pub 1-02)

**host nation support.** Civil and/or military assistance rendered by a nation to foreign forces within its territory during peacetime, crisis or emergencies, or war based on agreements mutually concluded between nations. (Joint Pub 1-02)

**joint force commander.** A general term applied to a combatant commander, subunified commander, or joint task force commander authorized to exercise combatant command (command authority) or operational control over a joint force. Also called JFC. (Joint Pub 1-02)

**munitions.** Materiels used in war, especially weapons and ammunition. (Approved for inclusion in the next edition of Joint Pub 1-02)

**nonpersistent agent.** A chemical agent that when released dissipates and/or loses its ability to cause casualties after 10 to 15 minutes. (Joint Pub 1-02)

**nuclear, biological, and chemical capable nation.** A nation that has the capability to produce and employ one or more types of nuclear, biological, and chemical weapons across the full range of military operations and at any level of war in order to achieve political and military objectives. (Joint Pub 1-02)

**persistent agent.** A chemical agent that when released remains able to cause casualties for more than 24 hours to several days or weeks. (Joint Pub 1-02)

**riot control agent.** A chemical that produces temporary irritating or disabling effects when in contact with the eyes or when inhaled. (Joint Pub 1-02)

**subordinate command.** A command consisting of the commander and all those individuals, units, detachments, organizations, or installations that have been placed under the command by the authority establishing the subordinate command. (Joint Pub 1-02)

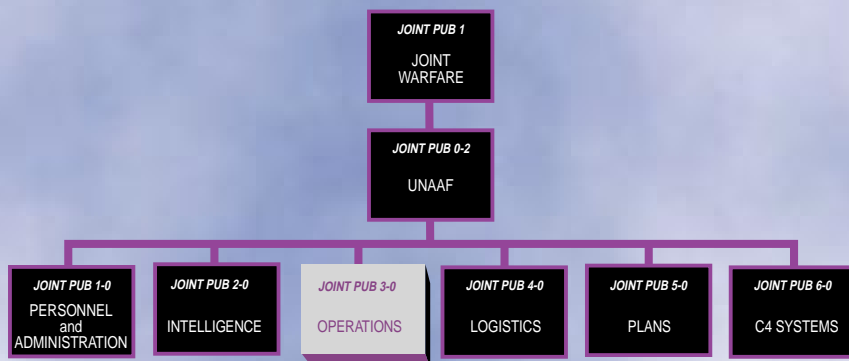
**weapons of mass destruction.** In arms control usage, weapons that are capable

of a high order of destruction and/or of being used in such a manner as to destroy large numbers of people. Can be nuclear, chemical, biological, and radiological

weapons, but excludes the means of transporting or propelling the weapon where such means is a separable and divisible part of the weapon. (Joint Pub 1-02)

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# JOINT DOCTRINE PUBLICATIONS HIERARCHY



All joint doctrine and tactics, techniques, and procedures are organized into a comprehensive hierarchy as shown in the chart above. **Joint Pub 3-11** is in the **Operations** series of joint doctrine publications. The diagram below illustrates an overview of the development process:

