

LESSON PLAN

**PART I
COVER SHEET**

LESSON TITLE: Biological Warfare Agents and Defense Actions

TRAINING METHOD: Lecture

REFERENCES: AFM 105-7, Field Behavior of NBC Agents
AFM 355-6, Technical Aspects of Biological Defense
AFR 355-7, Potential Military Chemical/Biological Agents and Compounds
FM 3-5, NBC Decontamination
Joint Pub 3-11, Joint Doctrine for Nuclear, Biological, and Chemical (NBC) Defense

AIDS AND HANDOUTS: PIN 606038DF (C Block), C 3 - Biological Warfare Agents and Defense Actions.

LESSON OBJECTIVE: Given a lecture on biological warfare (BW) agents, the student, during the final course exam, must correctly answer questions that demonstrate mastery of four samples of behavior listed below:

SAMPLES OF BEHAVIOR:

1. Identify the difference between the two primary classifications of BW agents (pathogens and toxins).
2. Identify the uses for biological warfare BW agents.
3. State the U.S. policy concerning the use of BW agents.
4. Identify the general characteristics of BW agents.
5. Identify the dissemination methods used for BW agents.
6. State the protective measures required against BW agents.

ORGANIZATIONAL PATTERN: Topical

SUGGESTED COURSE(S) OF INSTRUCTION: NBC Defense Training

STRATEGY: Many students don't understand the full implications or end results from an attack with biological warfare agents. The instructor needs to stress that most of the effects of biological warfare agents can easily be controlled by maintaining good physical health, ensuring sanitary living conditions, and keeping your immunizations current.

LESSON OUTLINE:

- MAIN POINT 1. OVERVIEW
- A. Classification
 - B. Uses
 - C. Employment Concepts
- MAIN POINT 2. U.S. POLICY
- A. Geneva Protocol of 1925
 - B. Presidential Statement on Chemical and Biological Weapons (1969)
 - C. Biological Weapons Convention (1972)
- MAIN POINT 3. GENERAL CHARACTERISTICS OF BW AGENTS
- A. Low Agent Requirement
 - B. Delayed Action Effect
 - C. Difficult to Identify
 - D. Survivability
 - E. Covert Usage
 - F. Physiological Actions
- MAIN POINT 4. DISSEMINATION METHODS
- A. Aerosols
 - B. Vectors
- MAIN POINT 5. BASIC PROTECTIVE MEASURES
- A. Health
 - B. Hygiene
 - C. Sanitation
 - D. Protective Equipment
 - E. Immunizations
 - F. Immediate Decontamination

PART II
TEACHING PLAN
INTRODUCTION

- ATTENTION:** Nations have used biological warfare agents in the past, and we cannot ignore the possibility they may use them in future conflicts.
- MOTIVATION:** Biological warfare started in ancient times. Poisoning of water supplies with rotting carcasses was a common practice. In the 1300's, corpses of plague victims were catapulted over walls into cities as a means to wage war. There are unconfirmed reports of more recent use of BW agents in places such as Afghanistan and Southeast Asia. You must be ready to protect yourself at all times.
- OVERVIEW:** This lecture covers the most important aspects of antipersonnel biological warfare agents, including:
- ⇒ the classification and uses of BW agents.
 - ⇒ U.S. policy concerning BW.
 - ⇒ general characteristics of BW agents.
 - ⇒ dissemination methods.
 - ⇒ basic protective measures.
- TRANSITION:** We will begin by discussing the definition of BW agents:

BODYMAIN POINT 1.
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 in conjunction with conventional combat power.

A. CLASSIFICATION

A. Biological Warfare (BW) agents can be classified as pathogens, toxins, or other agents of biological origin, such as bioregulators/modulators (BRMs)

PATHOGENS

⇒ Pathogens are disease-producing microorganisms, such as bacteria, fungi, or viruses.

TOXINS

⇒ Toxins are poisons naturally produced through the activities of living organisms. They are organic chemical compounds that come from a variety of biological sources to include microorganisms such as pathogens. Throughout this lesson, we will concentrate on the characteristics of actual pathogens.

BRMS

⇒ BRMs are biochemical compounds that occur naturally in organisms. Currently there is little information on these as BW agents.

B. USES

B. The enemy can use BW agents to target personnel, plants, animals, or materials. Food and industrial products can be rendered unsafe or unfit for use by contamination or by the effects resulting from contamination.

C. EMPLOYMENT
CONCEPTS

C. BW is considered a WMD. Some agents, including infectious pathogens 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 Command, Control, Communications, Computers, and Intelligence (C4I) or other critical targets.

TRANSITION:

Because of their potentially fatal effects, the U.S. has developed an extensive policy regarding the use of BW agents.

MAIN POINT 2. U.S.
POLICY

Our current policy concerning the use of BW agents by U.S. forces is simply stated -- "NO USE". Let's look at some historical policies that affect BW.

A. GENEVA
PROTOCOL OF 1925

A. The Geneva Protocol, or treaty, of 1925 was the first significant policy affecting WMD. This protocol prohibits the use in war of asphyxiating, poisonous, or other gases and bacteriological methods of warfare. 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. However, the United States declared that they may use chemical weapons in retaliation to an enemy's first use of chemical agents.

B. PRESIDENTIAL
STATEMENT ON
CHEMICAL AND
BIOLOGICAL
WEAPONS (1969)

B. A Presidential Statement on Chemical and Biological Weapons in 1969 renounced the use of lethal biological agents and weapons and confines biological research to defensive measures such as immunization and safety.

C. BIOLOGICAL
WEAPONS
CONVENTION (1972)

C. Under the terms of the Biological Weapons Convention of 1972, the parties agreed not to develop, produce, stockpile or acquire biological agents or toxins, as well as weapons and means of delivery, for use in war.

“NO USE!!!”

The bottom line is that the U.S. will not use biological agents, including toxins or any method of biological warfare, under any circumstances.

TRANSITION:

Does this mean that our adversary will not strike with BW agents? We will continue this lesson by talking about the general characteristics of BW agents.

MAIN POINT 3.
GENERAL
CHARACTERISTICS
OF BW AGENTS

Certain characteristics of biological agents make them viable weapons. The first step in preparing a defense is to understand the nature of the threat. Let's discuss the general characteristics of BW agents.

A. LOW AGENT
REQUIREMENT

A. Pathogens are living agents. Under favorable conditions, pathogenic microorganisms can reproduce and multiply in the host. Therefore, a small number of pathogens may constitute a grave risk to the health of a person. Some contagious pathogens spread from individual to individual; therefore, personnel not in the initial area of attack could become casualties. Following large-scale dissemination of a biological agent, an initial outbreak of disease of epidemic proportion might occur.

B. DELAYED ACTION
EFFECT

B. Pathogens often have a delayed action effect. A lag time or incubation period, often several days long, must elapse between the time the target is exposed to an agent and the time the first disease symptoms appear. Effects might be either lethal or incapacitating.

C. DIFFICULT TO
DETECT AND IDENTIFY

C. The identification of microorganisms is difficult and slow because their presence cannot be detected by the unaided senses. They are hard to detect because of their slow action and they have effect similar to common or local diseases. At present, the capabilities of detection, even with special instruments, is very restricted.

D. SURVIVABILITY

D. A given amount of biological agent may theoretically be many times more dangerous than an equal amount of chemical agent. However, from a practical standpoint, the activity of a biological agent is strictly limited by its ability to survive dissemination and to maintain its virulence under exposure to the environment. There are four significant weather conditions which directly affect a biological agent aerosol: sunlight, relative humidity, wind, and air stability.

E. COVERT USAGE

E. BW agents lend themselves well to covert use because the small amounts of material needed are easily concealed, transported, and used in sabotage operations. BW agents are also the least expensive of the WMD. An enemy with a modest biological research or production base; such as in the pharmaceutical or brewing industry, can produce biological agents.

F. PHYSIOLOGICAL
ACTIONS

F. The clinical effects of toxins may closely resemble those of chemical warfare agents. Most toxins cause casualties in one of two ways:

- ⇒ affecting the nervous system.
- ⇒ cellular destruction or interference affecting digestive, respiratory, or circulatory systems.

MAIN POINT 4.
DISSEMINATION
METHODS

BW agents can be classified as antipersonnel (humans), antianimals (animals used for food, transportation), and antiplant (plants used for food, clothing, and industrial products) and antimaterial. Two primary ways of utilizing BW agents are through the use of aerosols and vectors.

A. AEROSOLS

A. Biological agents may be disseminated as aerosols, liquid droplets, or dry powders. The state in which an agent normally exists determines its use, duration of effectiveness, and physiological action. For example, live microorganisms usually grow in a moist environment. In general, agents disseminated as a dry powder will survive longer than those disseminated as wet aerosols. Aerosols are the most common means of delivery.

B. VECTORS

B. A vector is a carrier of the biological agent used to transmit disease. Examples of vectors include:

- ⇒ Mosquitoes - the virus of yellow fever is transmitted by the bite of a mosquito.
- ⇒ Flies - typhoid fever, bacillary, and Asiatic cholera are examples of diseases which may be caused by flies.
- ⇒ Fleas - the common rat flea is the chief vector of bubonic plague.
- ⇒ Lice - the human body louse is the vector for the rickettsiae which cause epidemic typhus and trench fever.

TRANSITION:

We now know the general characteristics of BW agents and how they are disseminated. Now let's discuss some basic protective measures.

MAIN POINT 5.
PROTECTIVE
MEASURES

Protective measures increase your chances of survival. Some basic protective measures include:

- ⇒ good health.
- ⇒ good hygiene.
- ⇒ proper sanitation.
- ⇒ your individual protective equipment (i.e. protective mask and suit).
- ⇒ and keeping your immunizations current.

A. HEALTH

A. Poor physical health reduces your body's ability to resist and fight infections. Regular exercise and balanced meals build and maintain your body's natural resistance to diseases.

Thoroughly wash all fruits and vegetables before eating. Ensure that all foods, especially meats, are thoroughly cooked. Drink only from approved water sources because untreated water may contain disease-causing bacteria.

B. HYGIENE

B. Poor personal hygiene increases your chance of infection. An unclean body provides an ideal breeding ground for disease causing bacteria, germs, and parasites such as fleas and ticks. Washing with soap and water is an effective means of preventing or destroying areas in which these agents breed.

C. SANITATION

C. Unsanitary living conditions also serve as an ideal breeding ground for disease, especially with the use of vectors. Animals and insects thrive in unsanitary conditions, and if left uncontrolled, the spread of disease increases rapidly.

D. PROTECTIVE EQUIPMENT

D. Your individual protective equipment such as your mask and overgarment provide protection against all biological warfare agents.

E. IMMUNIZATIONS

E. It's important to keep your immunizations up-to-date at all times. This greatly reduces your chances of disease caused by BW agents.

F. IMMEDIATE
DECONTAMINATION

F. You probably will not know immediately when you have become contaminated. However, if you know or suspect toxins or other biological agents are present, remove the contamination with soap and water. If water is not available, use your M258A1 kit in the same manner as described for chemical agent decon.

CONCLUSION

SUMMARY:

We have just discussed biological warfare agents and defense actions. The main topics were:

- ⇒ the classification and uses of BW agents (pathogens and toxins).
- ⇒ U.S. policy concerning BW (No Use!).
- ⇒ general characteristics of BW agents.
- ⇒ dissemination methods (aerosols and vectors).
- ⇒ basic protective measures.

REMOTIVATION:

Now that you have a basic understanding of biological warfare agents and how they might affect personnel, you can now better defend yourselves against this type of warfare.

CLOSURE:

This concludes this lesson on biological warfare agents and defense actions.

TRANSITION:

(Develop locally to transition to the next topic.)

PART III
EVALUATION
STUDENT PERFORMANCE STANDARDS

TEST ITEMS

1. LESSON OBJECTIVE: Identify the difference between the two primary classifications of BW agents (pathogens and toxins).

QUESTION: (Multiple Choice) Which of the following statements are true concerning BW agents?

- a. Toxins are poisons naturally produced through in living organisms.
- b. BRMs are biochemical compounds that occur naturally in organisms.
- c. Pathogens are disease-producing microorganisms, such as bacteria, fungi, or viruses.
- d. All of the above.

KEY: d

REFERENCE: Main Point 1

2. LESSON OBJECTIVE: Identify the uses for BW agents.

QUESTION: (Multiple Choice) Which of the following can be affected by biological warfare agents?

- a. Plants.
- b. Animals.
- c. Personnel.
- d. All the Above.

KEY: d

REFERENCE: Main Point 1

3. LESSON OBJECTIVE: State the U.S. policy concerning the use of BW agents.

QUESTION: (True or False) The U.S. policy concerning the use of biological warfare agents is simply stated as "No Use".

- a. True.
- b. False.

KEY: a

REFERENCE: Main Point 2

4. LESSON OBJECTIVE: Identify the general characteristics of BW agents.

QUESTION: (Multiple Choice) Which of the following statements concerning general characteristics of BW agents are false?

- a. Low agent requirement - a small number of pathogens may constitute a grave risk to the health of a person.
- b. Difficult to detect and identify - at present, the capabilities of detection, even with special instruments, is very restricted.
- c. Delayed action effect - biological agents have a delayed action effect in that a lag or incubation period, often of several days, must elapse between the time the target is exposed to an agent and the time the first disease symptoms appear.
- d. Physiological actions - most toxins cause casualties in one way: affecting the nervous system similar to chemical warfare nerve agents.

KEY: d

REFERENCE: Main Point 3.

5. LESSON OBJECTIVE: Identify the dissemination methods used for BW agents.

QUESTION: (Multiple Choice)

What are the most common means of delivery for biological warfare agents?

- a. Vectors only.
- b. Aerosols only.
- c. Both aerosols and vectors.
- d. None of the above.

KEY: b

REFERENCE: Main Point 3

6. LESSON OBJECTIVE: State the protective measures required against BW agents.

QUESTION: (Multiple Choice)

Which of the following conditions DOES NOT cause the spread of infection from biological warfare agents?

- a. Poor physical health.
- b. Poor personal hygiene.
- c. Up-to-date immunizations.
- d. Unsanitary living conditions.

KEY: c

REFERENCE: Main Point 5

QUESTION 2: (True or False)

Washing with soap and water is an effective means of preventing or destroying areas where biological warfare agents breed.

- a. True.
- b. False.

KEY: a

REFERENCE: Main Point 5

PART IV
RELATED MATERIALS

RTP C2 - Lethal Chemical Warfare Agents and Defense Actions

RTP C9 - M17 Mask and Accessories

RTP C10 - MCU-2/P Series Mask and Accessories

RTP C11 - Groundcrew Chem-Defense Ensemble

RTP F15 - Wartime Decontamination of Chemical/Biological Agents

TRAINING PACKAGE COMMENT REPORT

RTP #	RTP DATE
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