

LESSON PLAN

PART I
COVER SHEET

LESSON TITLE: Lethal Chemical Warfare Agents and Defense Actions

TRAINING METHOD: Lecture

REFERENCES: AFR 355-7, Potential Military Chemical/Biological Agents and Compounds
AFM 160-11, Treatment of Chemical Agent Casualties and Conventional
Military Chemical Injuries
AFM 105-6, Field Behavior of NBC Agents
T.O. 11-1-35, General Information for Chem/Bio Munitions and Related
Equipment
T.O. 11C15-1-3, Chemical Warfare Decontamination, Detection, and
Disposal of Decontaminating Agents
Joint Pub 3-11

AIDS AND HANDOUTS: PIN 606038DF (C Block), C 2 - Lethal Chemical Warfare Agents and
Defense Actions.
Yellow GAS Marker from NBC Marking Kit.

LESSON OBJECTIVE: Given a lecture on lethal chemical warfare agents and defense actions, the student, during the final course exam, must correctly answer questions that demonstrate mastery of at least four samples of behavior listed below:

SAMPLES OF BEHAVIOR:

1. Explain the purpose of lethal chemical warfare agents.
2. Describe the U.S. policy concerning the use of lethal chemical warfare agents.
3. Identify the delivery methods used for lethal chemical warfare agents.
4. Identify the types and characteristics of lethal chemical warfare agents.
5. Explain protective measures against lethal chemical warfare agents.
6. Describe chemical agent contamination avoidance measures used to protect personnel and equipment.

ORGANIZATIONAL PATTERN: Topical

SUGGESTED COURSE(S) OF INSTRUCTION: NBC Defense Training

STRATEGY: Many students don't realize the full implications or end results of a chemical warfare agent attack. The instructor needs to stress the potential harm of such an attack. During Main Point 4, the instructor must emphasize the importance of receiving nerve agent antidote and chemical symptom training during unit self-aid buddy care training. Contamination avoidance is by far the best protective measure and chemical decontamination may not be necessary if sound avoidance measures are followed. If students understand how serious lethal chemical warfare agents can be, their attention and participation will be greatly enhanced.

LESSON OUTLINE:

- MAIN POINT 1. OVERVIEW
 - A. Purpose
 - B. Employment Concepts
 - C. Principles of NBC Defense

- MAIN POINT 2. U.S. POLICY CONCERNING CHEMICAL AGENTS

- MAIN POINT 3. CHEMICAL AGENT DELIVERY METHODS AND FORMS
 - A. Delivery Methods
 - B. Physical Forms

- MAIN POINT 4. CHEMICAL AGENT TYPES AND PHYSIOLOGICAL EFFECTS
 - A. Nerve Agents
 - B. Blister Agents
 - C. Blood Agents
 - D. Choking Agents

- MAIN POINT 5. PROTECTIVE MEASURES
 - A. Warning
 - B. MOPP Levels
 - C. Protective Equipment
 - D. Personal Decontamination

- MAIN POINT 6. CONTAMINATION AVOIDANCE
 - A. Protecting Equipment/Materials
 - B. Protecting Personnel
 - C. Marked Areas

PART II
TEACHING PLAN
INTRODUCTION

ATTENTION:

Chemical warfare (CW) agents are designed to inflict serious injury, kill, or deny access to critical equipment and facilities.

MOTIVATION:

The use of CW agents during a conflict is a real threat. Materials and technology required for manufacturing CW agents are available to almost every nation in the world. The information you will receive will help you understand different agent types and symptoms, and how to reduce or prevent contamination of yourself and critical equipment.

OVERVIEW:

During this session we will cover:

- ⇒ the purpose and employment concepts of CW agents.
- ⇒ the U.S. policy concerning their use.
- ⇒ delivery methods and forms of agents.
- ⇒ CW agent types and physiological effects.
- ⇒ basic protective measures against CW agents.
- ⇒ contamination avoidance measures.

TRANSITION:

We will begin by discussing the purpose of CW agents.

BODY**MAIN POINT 1.
LETHAL
CHEMICAL
WARFARE
AGENTS**

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. PURPOSE

A. Chemical agents are man-made substances used to attack various organs of the body, preventing those organs from functioning normally. The results can be disabling, incapacitating, or fatal.

**B. EMPLOYMENT
CONCEPTS**

B. The 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 Command, Control, Communications, Computers, and Intelligence (C4I), and degrading combat potential, to include the use of CW agents to restrict the use of terrain, facilities, and equipment.

C. PRINCIPLES OF
NBC DEFENSE

C. NBC defense requires an understanding of the three primary principles:

- ⇒ avoidance
- ⇒ protection
- ⇒ decontamination

We will cover each of these principles throughout this lesson.

TRANSITION:

Because of their potential fatal effects, the U.S. has developed an extensive policy regarding the use of CW agents during conflicts.

MAIN POINT 2. U.S.
POLICY
CONCERNING
CHEMICAL
AGENTS

The U.S. seeks to achieve a verifiable, worldwide ban on the manufacturing and use of CW weapons. The U.S. policy is to deter CW weapons use by denying the enemy a significant military advantage for their use.

“NO FIRST USE”

U.S. CW weapons deterrence includes a viable NBC defense capability and a credible retaliatory capability. This policy is based on the premise of "NO FIRST USE":

- ⇒ U.S. Armed Forces will not use lethal CW agents on a "First Strike" basis.

- ⇒ The U.S. will strictly reserve the right to retaliate, using lethal or non-lethal CW agents against an enemy force that has used them on U.S. Forces.
- ⇒ The authority to order or approve retaliatory CW strikes rests with the President of the United States.
- ⇒ The U.S. will avoid risk to civilian populations to the maximum extent possible.

TRANSITION:

Now let's discuss what methods are used to deliver CW agents and the typical forms of agents.

MAIN POINT 3. CHEMICAL AGENT DELIVERY METHODS AND FORMS

Delivery methods and forms depend on chemical characteristics of the agents as well as tactical objectives.

A. DELIVERY METHODS

A. CW agents can be delivered in almost any weapon available, including bombs, rockets, mortars, missiles, non-explosive cluster munitions, land mines, or grenades. They also can be delivered by aircraft with spray tanks or munitions with spray capability.

B. PHYSICAL FORMS

CW agents can be delivered in the form of liquids, gels, vapors, gasses, or powders. Aerosols, liquids, and gels vary in appearance and texture. Some gasses or vapors are invisible and odorless, others have a distinct aroma.

The physical form by which the agent is delivered is dictated by its type, delivery method, and its persistency.

TRANSITION:

Now lets discuss agent types and their physiological effects.

MAIN POINT 4.
CHEMICAL AGENT
TYPES AND
PHYSIOLOGICAL
EFFECTS

There are four types of CW agents that we are most concerned with; Nerve, Blister, Blood, and Choking.

INSTRUCTOR'S NOTE: Stress to the students that nerve agent antidote and agent symptoms are taught during unit self-aid buddy care training.

A. NERVE

A. Nerve agents can be delivered by most weapons systems. In a heavily splashed or thickened liquid, or granulated dust form, they can persist for several days. They are considered a threat to fixed military installations and forward battle areas.

QUICK ACTING
CASUALTY AGENTS

When inhaled, ingested, or absorbed into the body, nerve agents affect the chemical balance within the nerve tissues of the body. Nerve agents are considered quick-acting casualty agents.

SYMPTOMS CAN
OCCUR WITHIN
MINUTES

Symptoms of nerve agent poisoning depend on the dosage received, how they entered the body, and the physical condition of the person. Symptoms can appear within minutes and death can occur shortly thereafter.

Symptoms of exposed or unprotected personnel include:

- ⇒ dim or distorted vision
- ⇒ runny nose
- ⇒ drooling
- ⇒ tightness in the chest
- ⇒ difficulty in breathing
- ⇒ excessive sweating
- ⇒ nausea
- ⇒ vomiting
- ⇒ involuntary urination and defecation
- ⇒ twitching or jerking
- ⇒ confusion and drowsiness
- ⇒ convulsions
- ⇒ coma
- ⇒ cessation of breathing
- ⇒ death

B. BLISTER

Personnel require mask and chemical overgarment for protection.

B. Blister agents can be delivered by most weapons systems. They are most often found in liquid, gas, and powder forms. In areas that have been heavily splashed with liquid, the agent can persist for days or even weeks. Blister agents are considered a threat to fixed military installations and forward battle areas.

When inhaled, ingested, or absorbed into the body, blister agents damage and/or destroy body tissues they come in contact with.

SYMPTOMS
TYPICALLY DON'T
APPEAR FOR SEVERAL
HOURS

Symptoms of blister agent poisoning depend on the dosage received, how they entered the body, the amount of time the agent was present on the tissue, and the physical condition of the person.

Symptoms typically don't appear for several hours after contact; with the exception of Phosgene Oxime (CX) and Lewisite (L), which produce immediate stinging.

Symptoms include:

- ⇒ skin and eye irritation.
- ⇒ difficulty in breathing along with irritation (and eventual blistering) in the respiratory tract.
- ⇒ water blisters, with the exception of CX, which causes a welt (similar to a bee sting).
- ⇒ secondary infection is common because of damage to the cell tissue and its inability to repair itself.

Personnel require a mask and chemical overgarment for protection.

C. BLOOD

C. Blood agents can be delivered by most weapons systems. The physical state is initially a colorless liquid; which evaporates very quickly, or a gas. Because of their physical state, blood agents are non-persistent and are mainly considered a threat to forward battle areas only.

AFFECTS ABILITY TO
TRANSFER OXYGEN

When inhaled, blood agents affect the ability of the blood to transfer oxygen to the cells of the body.

Symptoms of poisoning depend on the type of agent, the quantity inhaled, and the physical condition of the person. The agent can be identified by the symptoms:

D. CHOKING

SYMPTOMS DEPEND
ON DOSAGE AND
PHYSICAL CONDITION

- ⇒ Hydrogen Cyanide (AC) causes a rapid increase in respiration.
- ⇒ Cyanogen Chloride (CK) slows down respiration.
- ⇒ Additionally, CK is irritating to the eyes and causes choking. In high concentrations, symptoms appear within seconds and death within minutes to exposed or unprotected personnel.

Personnel require a mask for protection.

D. Choking agents can be delivered by most weapons systems. Initially, the physical state a colorless oily liquid; which evaporates very quickly, or a gas. Choking agents are also non-persistent and mainly considered a threat to forward battle areas.

When inhaled, choking agents damage the lungs, causing the membranes to swell and the lungs become filled with liquid.

Symptoms of poisoning depend on the dosage received and the physical condition of the person.

- ⇒ Immediately after exposure, coughing and wheezing are likely; however, if exposed to low concentrations, there may be no ill effects for several hours.

⇒

⇒ In severe cases, the lungs fill with fluid and the person dies from lack of oxygen, this is also known as "Dry land Drowning."

Personnel require a mask for protection.

TRANSITION:

Now that you are aware of the harmful effects of chemical warfare agents, we will discuss some basic protective measures.

MAIN POINT 5. PROTECTIVE MEASURES

Protective measures increase your chances of survival. These protective measures can be separated into four categories: Warning, MOPP levels, protective equipment, and personal decontamination.

A. WARNING

A. The Air Force uses standardized Alarm Warning Signals to warn personnel of the current threat. Become familiar with them, their meaning, and your response to each signal.

<p>INSTRUCTOR'S NOTE: RTP C5 covers USAF alarm signals and actions.</p>
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B. MOPP LEVELS

B. Mission Oriented Protective Postures (MOPP) levels work hand-in-hand with Alarm Warning Signals to balance the individual protection required when the threat of chemicals is present.

C. PROTECTIVE
EQUIPMENT

INSTRUCTOR'S NOTE: RTP C12 covers mission oriented protective postures.

C. Individual chemical protective equipment is your best personal protection against lethal chemical warfare agents. A properly fitted mask and overgarment are the most important pieces of equipment you have. Knowing how to properly don these items is of the greatest importance for your personal safety.

D. PERSONAL
DECONTAMINATION

D. Personal decontamination ranges from washing with ordinary soap and water to using dedicated decontamination kits. These kits are capable of removing liquid nerve and blister agents from skin and equipment.

INSTRUCTOR'S NOTE: F-block RTPs are available for the M258A1, M291, and M295 decon kits.

TRANSITION:

Now that we've talked about equipment and personal decontamination, let's look at some basic contamination avoidance measures.

MAIN POINT 6.
CONTAMINATION
AVOIDANCE

All materials can be contaminated with liquid chemical agents. Contamination avoidance measures eliminate much of the danger and risk to personnel and equipment. One measure is simply avoiding contaminated equipment and areas.

A. PROTECTING
EQUIPMENT/
MATERIALS

A. Before an attack, use anything available to protect equipment from chemical agent contamination. Use plastic sheets, tarps, or anything else to cover equipment. Park vehicles in hangars, garages, in covered areas, or even under trees. Keep all doors, windows, and canopies closed to keep liquid chemicals out of vehicles, aircraft, and shelter interiors.

B. PROTECTING
PERSONNEL

B. Covered areas provide personnel protection from falling liquid chemicals. If possible, take cover before an enemy attack. A building or overhang that sheds liquids such as rain water will also protect you from liquid agents.

USE WHATEVER IS
AVAILABLE

If you're caught in an open area during an attack, take the best cover available in your immediate area. A poncho, paper, cardboard, or any other expedient chemical contamination cover may be your only available protection. **USE WHAT'S AVAILABLE!!** Something is better than nothing at all.

C. MARKED AREAS

C. Markers warn personnel of chemical agent contamination and are posted for your protection. The warning marker for chemical contamination is a yellow triangle with red lettering saying "GAS." Stay alert for marked areas when traveling outside of your protective shelter.

INSTRUCTOR'S NOTE: Show a yellow "GAS" marker from the NBC marking kit.

BYPASS
CONTAMINATED
AREAS

If possible, bypass contaminated areas rather than going through them. If mission permits, avoid handling anything contaminated or suspected of being contaminated. Avoid leaning against, kneeling on, or sitting in contaminated areas.

USE YOUR
PROTECTIVE
EQUIPMENT

Your individual protective equipment will protect you in liquid contaminated areas. So, continue doing mission critical tasks, if required.

CONCLUSION

SUMMARY:

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

- ⇒ the purpose and employment concepts of lethal chemical warfare agents.
- ⇒ the U.S. policy concerning chemical warfare.
- ⇒ chemical agent delivery methods.
- ⇒ lethal chemical warfare agent types and their physiological effects
- ⇒ basic protective measures.
- ⇒ chemical contamination avoidance measures.

REMOTIVATION:

The difference between life and death could be determined by your actions while in a chemically contaminated environment. Remember what we discussed today. Nations who use chemical warfare agents have but one basic goal: To take you out of action! Apply what you have learned today to minimize the possibility of it happening to you.

CLOSURE:

This concludes this lesson.

TRANSITION:

(Develop locally to transition to the next topic.)

PART III
EVALUATION
STUDENT PERFORMANCE STANDARDS

TEST ITEMS

1. LESSON OBJECTIVE: Explain the purpose of lethal chemical warfare agents.

QUESTION: (True or False)

Chemical agents are man-made substances used to attack various organs of the body, preventing those organs from functioning normally.

- a. True.
- b. False.

KEY: a

REFERENCE: Main Point 1

2. LESSON OBJECTIVE: Describe the U.S. policy concerning the use of lethal chemical warfare agents.

QUESTION 1: (True or False)

The U.S. deters enemy use of chemical warfare agents by promoting the "First Strike" capabilities of the U.S. Armed Forces.

- a. True.
- b. False.

KEY: b

REFERENCE: Main Point 2

QUESTION 2: (Multiple Choice)

Who has the authority to order or approve retaliatory chemical warfare agent strikes ?

- a. Wing Commanders.
- b. Joint Chiefs of Staff.
- c. Installation Commanders.
- d. The President of the United States.

KEY: d

REFERENCE: Main Point 2

3. LESSON OBJECTIVE: Identify the delivery methods used for lethal chemical warfare agents.

QUESTION: (Multiple Choice)

Which of the following can be used to deliver chemical warfare agents ?

- a. Land mines.
- b. Bombs and rockets only.
- c. Aircraft with special spray tanks attached.
- d. All of the above.

KEY: d

REFERENCE: Main Point 3

4. LESSON OBJECTIVE: Identify the types and characteristics of lethal chemical warfare agents.

QUESTION: (Multiple Choice)

Which two chemical agents are considered the most persistent ?

- a. Blood and Blister.
- b. Nerve and Blister.
- c. Choking and Nerve.
- d. Blood and Choking.

KEY: b

REFERENCE: Main Point 4

5. LESSON OBJECTIVE: Explain protective measures against lethal chemical warfare agents.

QUESTION: (Multiple Choice)

What is your BEST protection against lethal chemical warfare agents?

- a. Decontamination kits.
- b. Alarm warning signals.
- c. Mission Oriented Protective Postures.
- d. Individual chemical protective equipment.

KEY: d

REFERENCE: Main Point 5

6. LESSON OBJECTIVE: Describe chemical agent contamination avoidance measures used to protect personnel and equipment.

QUESTION 1: (Multiple Choice)

Before an attack, which of the following measures can be used to protect equipment from chemical attacks?

- a. Covering with plastic sheets and/or tarps.
- b. Keeping all doors, windows, canopies, etc. closed.
- c. Parking vehicles in hangars or garages.
- d. All of the above.

KEY: d

REFERENCE: Main Point 6

QUESTION 2: (True or False)

The warning marker for chemically contaminated areas is a blue triangle with red letters saying "Chemicals".

- a. True.
- b. False.

KEY: b

REFERENCE: Main Point 6

PART IV
RELATED MATERIALS

RTP C3 - Biological Warfare Agents and Defense Actions

RTP C5 - USAF Alarm Signals and Actions

RTP C12 - Mission-Oriented Protective Postures

RTP F5- M258A1 Decontamination Kit

RTP F7 - M291 Skin Decontaminating Kit

RTP F9 - M295 Equipment Decontamination Kit

TRAINING PACKAGE COMMENT REPORT

RTP #	RTP DATE
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