

Report Date: 25 Apr 2012

**Summary Report for Individual Task
031-627-3039
Identify Components of Chemical or Biological (CB) Dissemination Devices
Status: Approved**

DISTRIBUTION RESTRICTION: Approved for public release; distribution is unlimited.

DESTRUCTION NOTICE: None

Condition: You are a CBRN Officer/Noncommissioned Officer (NCO) operating in a field environment. Your unit has been directed to occupy an area where chemical agents may be used. You have Field Manual (FM) 3-11.9 available. Some iterations of this task should be performed in MOPP.

Standard: Identify components of chemical or biological (CB) dissemination devices, to include all avenues of dissemination in accordance with (IAW) FM 3-11.9, Appendix L.

Special Condition: None

Special Standards: None

Special Equipment:

Safety Level: Low

MOPP: Sometimes

Task Statements

Cue: None

DANGER
None

WARNING
None

CAUTION
None

Remarks: None

Notes: None

Performance Steps

1. Define Inhalation (Aerosol) Route of Entry (ROE). Finely divided particles, liquid or solid; including dust, fog and smoke; and airborne suspension of particles containing the agent, with entry through the respiratory tract. It is the primary route of entry for biological agents.

Note: Dissemination refers to intentional release of an agent by an adversary, so that it will reach the portals of entry (routes of entry into the body) of target personnel in a viable and virulent state.

a. Identify six characteristics of aerosol dissemination.

- (1) Difficult to detect.
- (2) Capable of penetration in the same manner as a gas.
- (3) Difficult to diagnose.
- (4) Increases severity and mortality rate.
- (5) Capable of massive overdose.
- (6) Increases susceptibility.

b. List three methods for forming aerosol particles:

- (1) Generators.
- (2) Sprayers.
- (3) Explosive force within munitions.

c. List all meteorological and pathogen conditions that affect stability and non-stability (aerosol decay rate) of the agent.

- (1) Size of particles and settling speed of smaller particles. If there are currents, the slower settling of the small particles (1-to 5-microns) decreases the fallout quantity.
- (2) Impaction. Atmospheric objects in the agent pathway decrease the amount of agent that impacts.
- (3) Ultraviolet (UV) radiation. UV radiation from sunlight kills microorganisms. Upon direct contact, the low penetrating power of UV radiation kills most pathogens in a relatively short period of time.
- (4) Wind direction and speed. High wind speed and direction such as 8 to 18 knots carries the agent over extensive areas during the agent survival period. However low wind speed lengthens the time the aerosol is on the target and increases the inhaled dose in target personnel.
- (5) Relative humidity and evaporation. Disseminating the agents during conditions of high relative humidity reduces the rate of evaporation and reduces dehydration. In contrast, low relative humidity is conducive to the stability of some biological agents.
- (6) Temperature. Temperatures above 170F degrees kill viral, rickettsiae, and vegetative bacterial agents. Subfreezing of liquid-form aerosol preserves the agent and decreases the rate of decay.
- (7) Air stability conditions. Includes inversion, neutral and lapse conditions.

(a) Inversion and neutral conditions keep the cloud at a height conducive to inhalation by target personnel.

(b) Lapse condition with turbulence diffuses the cloud to higher altitudes and reduces the coverage area.

(8) Precipitation. Heavy and prolonged precipitation will substantially reduce the number of agent particles in the air.

(9) Terrain. Ground contour of rough terrain creates wind turbulence, affecting vertical diffusion and temperature.

2. Define Percutaneous ROE: penetration of the skin by anthropod vectors, injection, and absorption.

a. List five types of Athropod Vectors (insect carriers) that transfer pathogens to man through breaks in the skin.

(1) Mosquitoes, by their bite transmit from man to man; vectoring yellow fever, dengue fever and encephalitis.

(2) Flies, by sucking and piercing the skin of man or animals (and also transfer pathogens to food and water); vectoring typhoid, dysentery, cholera, African sleeping sickness, and tularemia.

(3) Lice, are parasites which infect by sucking; vectoring epidemic typhus and trench fever.

(4) Fleas have mouthparts that pierce the skin; vectoring typhus.

(5) Ticks and mites are parasitic; vectoring typhus, Rocky Mountain spotted fever, tularemia, and Colorado tick fever.

b. List two examples of Injection ROE through the skin.

(1) Umbrellas; (e.g., an unsuspected injection of pelletized Ricin).

(2) Flechette; (e.g., the M1 biodart).

c. Describe Absorption. Biological and chemical agents may be absorbed through the skin or placed on the skin to do damage to the integument.

3. Define two Oral ROE.

a. Ingestion of contaminated food.

b. Ingestion of contaminated water. (It is difficult to contaminate chlorinated water, rivers, lakes or reservoirs due to dilution).

4. Describe Covert Dissemination: The hidden release of an agent.

a. List three reasons for success of covert dissemination devices.

(1) Detection of agent is difficult.

(2) Large variety of potential agents.

(3) Only a small amount of material is required to infect.

b. Identify two covert targets within the body.

(1) Respiratory tract.

(2) Digestive tract (through food and water supply).

(Asterisks indicates a leader performance step.)

Evaluation Preparation: Setup:

Brief Soldier:

PERFORMANCE MEASURES	GO	NO-GO	N/A
1. Defined Inhalation (Aerosol) Route of Entry (ROE). Finely divided particles, liquid or solid; including dust, fog and smoke; and airborne suspension of particles containing the agent with entry through the respiratory tract. It is the primary route of entry for biological agents.			
a. Identified six characteristics of aerosol dissemination.			
(1) Difficult to detect.			
(2) Capable of penetration in the same manner as a gas.			
(3) Difficult to diagnosis.			
(4) Increases severity and mortality rate.			
(5) Capable of massive overdose.			
(6) Increases susceptibility.			
b. Listed three methods for forming aerosol particles:			
(1) Generators.			
(2) Sprayers.			
(3) Explosive force within munitions.			
c. Listed all meteorological and pathogen conditions that affect stability and non-stability (aerosol decay rate) of the agent.			
(1) Size of particles and settling speed of smaller particles.			
(2) Impaction.			
(3) UV radiation.			
(4) Wind direction and speed.			
(5) Relative humidity and evaporation.			
(6) Temperature.			
(7) Air stability conditions, including inversion, neutral and lapse conditions.			
(8) Precipitation.			
(9) Terrain.			
2. Defined Percutaneous ROE: penetration of the skin by arthropod vectors, injection, and absorption.			
a. Listed five types of Athropod Vectors (insect carriers) that transfer pathogens to man through breaks in the skin.			
(1) Mosquitoes.			
(2) Flies.			
(3) Lice.			
(4) Fleas.			
(5) Ticks and mites.			
b. Listed two examples of Injection ROE through the skin.			
(1) Umbrellas; (e.g., an unsuspected injection of pelletized Ricin).			
(2) Flechette; (e.g., the M1 biodart).			
c. Described Absorption. Biological agents may be absorbed through the skin or placed on the skin to do damage to the integument.			
3. Defined two Oral (ROE).			
a. Ingestion of contaminated food.			
b. Ingestion of contaminated water.			
4. Described Covert Dissemination.			
a. List three reasons for success of covert dissemination devices.			
(1) Detection of agent is difficult.			
(2) Large variety of potential agents.			
(3) Only a small amount of material is required to infect.			
b. Identified two covert targets within the body.			
(1) Respiratory tract.			
(2) Digestive tract (through food and water supply).			

Supporting Reference(s):

Step Number	Reference ID	Reference Name	Required	Primary
	FM 3-11.9	POTENTIAL MILITARY CHEMICAL/BIOLOGICAL AGENTS AND COMPOUNDS	Yes	Yes

Environment: Environmental protection is not just the law but the right thing to do. It is a continual process and starts with deliberate planning. Always be alert to ways to protect our environment during training and missions. In doing so, you will contribute to the sustainment of our training resources while protecting people and the environment from harmful effects. Refer to FM 3-34.5 Environmental Considerations and GTA 05-08-002 Environmental-Related Risk Assessment.

Safety: In a training environment, leaders must perform a risk assessment in accordance with FM 5-19, Composite Risk Management. Leaders will complete a DA Form 7566 COMPOSITE RISK MANAGEMENT WORKSHEET during the planning and completion of each task and sub-task by assessing mission, enemy, terrain and weather, troops and support available-time available and civil considerations, (METT-TC). Note: During MOPP training, leaders must ensure personnel are monitored for potential heat injury. Local policies and procedures must be followed during times of increased heat category in order to avoid heat related injury. Consider the MOPP work/rest cycles and water replacement guidelines IAW FM 3-11.4, NBC Protection, FM 3-11.5, CBRN Decontamination. Everyone is responsible for safety. A thorough risk assessment must be completed prior to every mission or operation.

Prerequisite Individual Tasks : None

Supporting Individual Tasks :

Task Number	Title	Proponent	Status
031-627-3036	Identify Components of an Improvised Chemical or Biological (CB) Weapons Lab	031 - CBRN (Individual)	Reviewed

Supported Individual Tasks :

Task Number	Title	Proponent	Status
031-504-1001	Emplace a Chemical-Agent Alarm	031 - CBRN (Individual)	Approved
031-503-1036	Maintain Your Assigned Protective Mask	031 - CBRN (Individual)	Superseded
031-503-1037	Detect Chemical Agents Using M8 or M9 Detector Paper	031 - CBRN (Individual)	Superseded
031-503-1039	Identify Chemical Agents Using an M256-Series Chemical-Agent Detector Kit	031 - CBRN (Individual)	Approved
031-503-3004	Supervise the Crossing of a Contaminated Area	031 - CBRN (Individual)	Approved
031-503-1011	Identify Personal Protective Equipment (PPE)	031 - CBRN (Individual)	Approved
031-503-1021	Mark CBRN Contaminated Areas	031 - CBRN (Individual)	Superseded
031-503-1035	Protect Yourself from Chemical and Biological (CB) Contamination Using Your Assigned Protective Mask	031 - CBRN (Individual)	Superseded
031-506-1052	Protect Yourself and Others From Chemical and Biological (CB) Injury/Contamination by Using a Collective Protection Shelter	031 - CBRN (Individual)	Approved
031-503-1013	Decontaminate Yourself and Individual Equipment Using Chemical Decontaminating Kits	031 - CBRN (Individual)	Superseded
031-503-1019	React to Chemical or Biological (CB) Hazard/Attack	031 - CBRN (Individual)	Superseded
031-504-1004	Operate the Improved Chemical-Agent Monitor (ICAM)	031 - CBRN (Individual)	Approved
031-509-4001	Plan Biological Detection Operations at the Brigade Level	031 - CBRN (Individual)	Approved

031-509-4002	Perform Biological Vulnerability Analysis	031 - CBRN (Individual)	Approved
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Supported Collective Tasks :

Task Number	Title	Proponent	Status
03-6-0080	Plan Biological Surveillance and Sampling Operations	03 - CBRN (Collective)	Approved
03-3-0019	Identify Biological Surveillance Sites	03 - CBRN (Collective)	Approved

ICTL Data :

ICTL Title	Personnel Type	MOS Data
AOC 74A - Chemical Officer - 1LT	Officer	AOC: 74A, Rank: 1LT
ALC CTL 2011	Enlisted	MOS: 74D, Skill Level: SL3