DEFENSE INTELLIGENCE AGENCY

WASHINGTON, D.C. 20340-5100

FOIA-00128-2022
U-24-9091/IMO-2 (FOIA) February 20, 2024

Mr. John Greenewald
27305 W. Live Oak Rd., Suite #1203
Castaic, CA 91384-4520

Dear Mr. Greenewald,

This responds to your Freedom of Information Act (FOIA) request, dated April 6, 2022, that you submitted to the Defense Intelligence Agency (DIA) for information concerning: ***Armed Forces Medical Intelligence Center, Defense Intelligence Agency, Defense Intelligence Reference Document PC-1610-12-94 (SECRET), Subject: "Biological Warfare Concepts: A Tutorial" (U), July 1994.*** I apologize for the delay in responding to your request as DIA continues its efforts to eliminate the large backlog of pending requests.

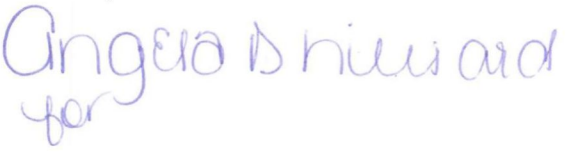
A search of DIA's systems of records located one document (five pages) responsive to your request.

Upon review, while considering the foreseeable harm standard, I have determined that some portions of the document must be withheld in part from disclosure pursuant to the FOIA. The withheld portions are exempt from release pursuant to Exemptions 3 and 6 of the FOIA, 5 U.S.C. § 552 (b)(3), and (b)(6). Exemption 3 applies to information specifically exempted by a statute establishing particular criteria for withholding. The applicable statute is 10 U.S.C. § 424. Statute 10 U.S.C. § 424 protects the identity of DIA employees, the organizational structure of the agency, and any function of DIA. Exemption 6 applies to information which if released would constitute an unwarranted invasion of the personal privacy of other individuals. DIA has not withheld any reasonably segregable non-exempt portions of the records.

If you have additional questions/concerns you may:

Contact the FOIA Public Liaison	Email: FOIA1@dodiis.mil Phone: 301-394-6253
File an administrative appeal (must be submitted within 90 days of the date on the letter) please contact us via one of the following and use FOIA-00128-2022 when referencing your case)	Email: FOIA1@dodiis.mil Mail: Defense Intelligence Agency ATTN: IMO-2C (FOIA) 7400 Pentagon Washington, DC 20301-7400
For mediation services, you may contact the Office of Government Information Services (OGIS) at the National Archives and Records Administration to inquire	Email: ogis@nara.gov Phone: 202-741-5770 Toll-Free 1-877-684-6448 Facsimile: 202-741-5769 Mail: Office of Government Information Services National Archives and Records Administration 8601 Adelphi Road-OGIS College Park, MD 20740-6001

Sincerely,



Cheryl Cross-Davison
Chief, Records and Open Government

Defense Intelligence Reference Document

July 1994
PC-1610-12-94

Biological Warfare Concepts: A Tutorial (U)

Defense Intelligence Reference Document

Biological Warfare Concepts: A Tutorial (U)

Information Cutoff Date: 21 January 1994

This is a Department of Defense Intelligence Document
Prepared by:

(b)(3) 10 USC 424 (b)(6)

Defense Intelligence Agency

PC-1610-12-94

~~Classified by multiple sources; declassify on OADR~~

DIA TASK UNIT PT1610-01-04L

(U) The initial symptoms of inhalation anthrax are mild and nonspecific, resembling an upper respiratory infection such as a common cold. However, serious respiratory distress, fever, and shock ensue within 3 to 5 days of initial exposure; death occurs shortly thereafter (Table 2). Only a few cases of naturally occurring inhalation anthrax are reported worldwide each year. Such outbreaks usually are associated with persons who work in wool or leather factories. These facilities provide favorable conditions for aerosolizing spores from the wool and hides of animals that were infected with anthrax at the time of slaughter. In laboratory primates, inhalation anthrax can be treated with antibiotics only if they are administered prior to onset of symptoms. In factory workers, the disease is prevented by vaccination prior to exposure to the spores. Dried *B. anthracis* spores are one of the most threatening BW agents.

(U) Although other bacterial pathogens, such as the causative agents of plague and tularemia, also are excellent BW agents, these agents do not produce spores. Plague is caused by the bacterium, *Yersinia pestis*; in nature, it is harbored in wild rodents or other animals and passed among these rodents and to humans through the bites of infected fleas. Delivery of the plague organism as a BW aerosol will result in lung infections and, subsequently, a disease known as pneumonic plague. This form of the disease is extremely contagious; transmission to another person is rapid, as coughing or even speaking produces an aerosol of bacteria-containing sputum that is highly infectious when inhaled by others. To prevent death, this form of plague must be treated with antibiotics within 24 hours of exposure.

~~(S)~~ Tularemia, also known as rabbit fever, is caused by the bacterium, *Francisella tularensis*. Wild animals such as rabbits and beavers are the natural reservoir of *F. tularensis*. It also is found in some tick species that transmit the causative agent between animals. Tularemia organisms often are transmitted to humans who handle the blood or tissue of infected animals. The tularemia organism does not survive in laboratory cultures more than a few days. However, it can be stabilized for up to 4 years by a process known as lyophilization (freeze-drying). If the bacterium is inhaled, pneumonia-like symptoms are seen. The incubation period varies between 1 and 10 days, and fatality rates approach 10 percent.

Viruses

(U) Viruses are a group of minute infectious agents that exist as particles rather than as complete cells. Particle sizes of viruses range from 20 to 400 nanometers. Viruses must live and reproduce as parasites within a host cell. Like bacteria, viruses are widely dispersed throughout the environments of all living organisms, and some can cause disease in or death of

Table 2
(U) Characteristic Human Response to Selected Bacteria, Viruses, and Toxins Categorized as Traditional BW Agents

Biological Agents	Effective Human Dose	Epidemic Potential	Time to Effect/Effect
Plague	approximately 3,000 organisms	Very high	1-5 days/lethal
Anthrax	greater than 8,000-10,000 spores*	Negligible	1-5 days/lethal
Tularemia	10-100 organisms	Negligible	1-10 days/incapacitant, lethal
Smallpox	1-10 virus particles	Very high	6-12 days/lethal
Venezuelan equine encephalitis virus	1-10 virus particles	Possible	2-5 days/ incapacitant
Botulinum toxin	0.0048 mg	None	<1-2 days/lethal
Staphylococcal enterotoxin	0.039 mg	None	1-6 hours/incapacitant
Saxitoxin	less than 0.1 mg	None	Minutes/lethal

* 8,000 to 10,000 spores were required to kill 50 percent of the monkeys in a laboratory trial. The human lethal dose is unknown.

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their plant or animal hosts. A host cell infected with a single virus particle may provide an environment for replication of thousands of new virus particles. Infection by a single virus particle begins a process in which each new virus particle can, in turn, infect other host cells, eventually weakening or killing the host organism.

(U) In nature, viruses can be transmitted by several means, including physical contact with an infected individual (as in smallpox), inhalation of an aerosol (as in influenza), or through the bite of an infected insect (as in Venezuelan equine encephalitis). Although aerosol transmission is not the most common natural means of transmission to humans, several incapacitating (chikungunya, Venezuelan equine encephalitis) or lethal (Marburg, Ebola) viruses are highly infectious when dispersed as aerosols. Viruses such as Marburg and Ebola cause hemorrhagic fever or internal bleeding that frequently leads to death in human hosts. Figure 2 illustrates hemorrhagic (internal bleeding) symptoms in a patient infected with Ebola virus.

(U) The potential of smallpox for causing epidemics has been a human concern since antiquity. A virus known as *Variola major* causes smallpox. In 1977, the World Health Organization successfully eradicated smallpox, of which the natural reservoir was humans, by using established quarantine procedures, disease-reporting regimes, and a highly effective vaccine. The disease is highly contagious, especially during the first week the pox appears. It is transmitted by close contact with infected individuals or intermediate materials such as linens or towels that the infected individual has handled. Smallpox has a relatively long incubation period; symptoms can occur up to 10 or 12 days following exposure. If a case of this disease were to appear anywhere in the world, the result would be an international public health emergency. Nevertheless, there is evidence that, despite the worldwide eradication of this highly contagious and fatal disease, some countries have continued to develop the smallpox virus as a BW weapon. The only medical defense against this agent or any other virus would be pre-exposure vaccination. However, vaccines have not been developed against some viruses that are potential BW agents.

Toxins

(U) For present purposes, toxins are defined as poisonous substances derived from living organisms. This definition distinguishes them as biological rather than as chemical warfare (CW) agents. (Details regarding CW agents manufactured specifically for use in weapons are included in this tutorial only for comparison with biological agents.)

(U) Unlike chemical agents, biological toxins differ widely in their effects on different organisms. The elapsed time from initial exposure to onset of symptoms or death also varies greatly among toxins. Some

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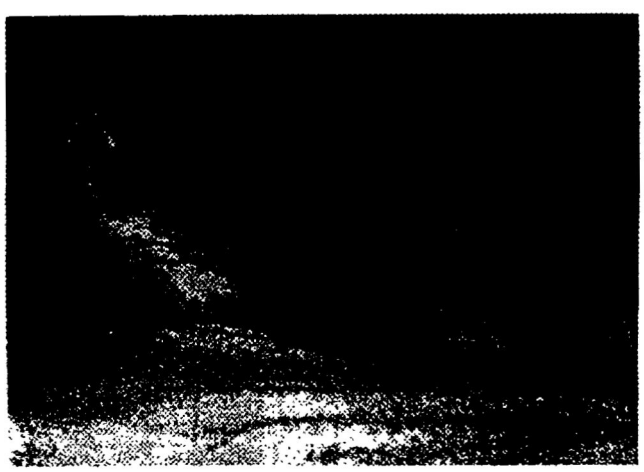

Figure 2. (U) Hemorrhagic Symptoms in a Patient Infected with Ebola Virus

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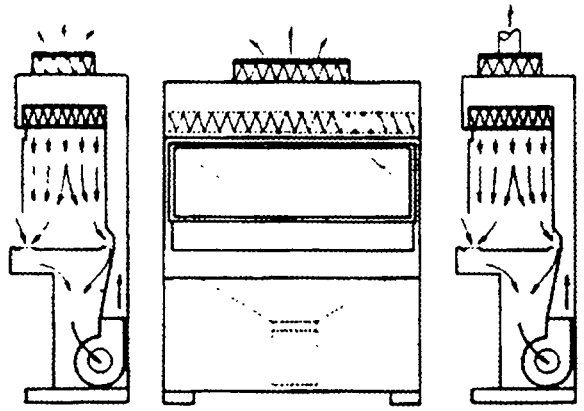
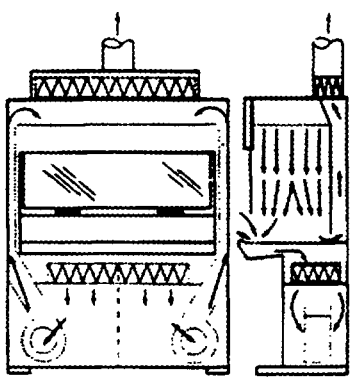
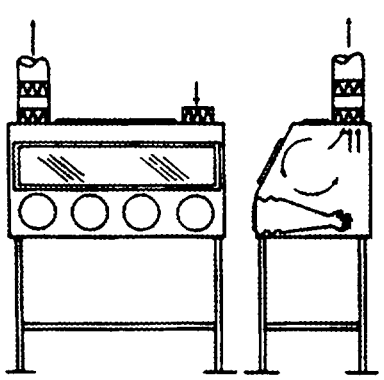


Class I biological safety cabinet



Class II biological safety cabinet



Class III biological safety cabinet

Figure 7. (U) Air Flow and Filter Configurations of Biological Cabinets

Delivery Systems and Weapons for BW Agents

(U) Biological weapons can provide an inexpensive means to produce attrition of enemy personnel over limited or wide geographic areas. For tactical purposes, vulnerable targets include reserve and support units, logistical complexes, lines of communication, transportation centers, training areas, airstrips, and beaches. Strategic targets include personnel in urban areas, manufacturing complexes, troop training or staging areas, anti-aircraft defenses, key ports, rail centers, R&D centers, oil fields, and missile sites. Some infectious agents, such as the causative agents of anthrax and tularemia, are potentially effective over thousands of square miles and would be formidable strategic BW weapons. The utility of toxins such as botulinum toxin, on the other hand, is limited to relatively small geographic areas or within buildings, making them more suitable for tactical BW or terrorist use.

(U) Many systems have been developed specifically for or could be adapted to delivery of BW agents. Spray tanks developed for BW agents include standard wing tanks for aircraft, remotely piloted vehicles, or cruise missiles. Some spray tank configurations are illustrated in Figure 8.

Table 4
(U) Infectious Organisms as Possible BW Agents and Likely Method of Production

Agent	Disease	Production Method
Bacillus anthracis	anthrax	fermentation
Brucella spp.	brucellosis	fermentation
Coxiella burnetii	Q fever	chicken eggs
Francisella tularensis	tularemia	fermentation
Pseudomonas mallei	glanders	fermentation
Variola major virus	smallpox	tissue/cell culture
VEE virus	Venezuelan equine encephalitis	eggs/tissue/cell culture
Yersinia pestis	plague	fermentation
Ebola virus	hemorrhagic fever	tissue/cell culture
Marburg virus	hemorrhagic fever	tissue/cell culture

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