

# PROMETHEUS COUNCIL

## Biological Attack

Nature is full of horrifying diseases, most cannot get to a human without the help of humans who discover ways to intensify these bacteria and virus and then develop ways to deliver them to the populations. There are hundred of bacteria, viruses, and chemicals that could be used to attack people, but the military has chosen to develop only a handful because they meet criteria involving ease of production, stability, and ability to infect.

Biological agents can be adapted and used as weapons. Often they include anthrax (sometimes found in sheep), tularemia (or rabbit fever), cholera, encephalitis, the plague (sometimes found in prairie dog colonies), and botulism (found in improperly canned food).

Biological agents pose very serious threats given their fairly accessible nature, and the potential for their rapid spread. The potential for devastating casualties is high in a biological attack. These agents are disseminated in the following ways: by the use of aerosols (spray devices), oral (contaminating food or water supplies), dermal (direct skin contact with the substance) exposure, or injection.

There are four common types of biological agents: Bacteria, Viruses, Rickettsia, and Toxins.

### **Bacteria and Rickettsia**

Bacteria are single-celled organisms that multiply by cell division and can cause disease in humans, plants, or animals. Although true cells, rickettsias are smaller than bacteria and live inside individual host cells. Examples of bacteria include anthrax (*Bacillus anthracis*), cholera (*Vibrio Cholerae*), plague (*Yersinia Pestis*), tularemia (*Francisella Tularensis*); and example of rickettsia is Q fever (*Coxiella Burnetii*).

Anthrax is often associated with cattle, sheep, and horses serving as hosts. Handling of contaminated hair, wool, hides, flesh, or other animal substances can lead to contracting Cutaneous (dermal) anthrax. However, the purposeful dissemination of spores in aerosol, such as for attack purposes, is another way people could contract it and cause a more dangerous form of the disease.

### **Virus**

Viruses are the simplest type of microorganisms. They lack a system for their own metabolism and therefore depend upon living cells to multiply. This means that a virus will not live long outside of a host. Types of viruses that can serve as biological agents include smallpox, Venezuelan equine encephalitis, and the viral hemorrhagic fevers such as the Ebola and Marburg viruses, and Lassa fever.

### **Toxins**

Toxins are toxic substances of natural origin produced by an animal, plant, or microbe. They differ from chemical agents in that they are not manmade and typically they are much more complex materials. Toxins, in several cases, are easily extracted for use as a weapon, and, by weight, usually are more toxic than many chemical agents.

The four common toxins thought of as potential biological agents are botulism (botulinum), SEB (staphylococcal enterotoxin B), ricin, and mycotoxins. Ricin is a toxin derived from the castor bean plant, available worldwide. And is commonly used in rat poison.

The primary routes of exposure for biological agents are inhalation and ingestion. Skin absorption and injection also are potential routes of entry, but are less likely.

The indicators of a biological attack may take days to weeks to manifest, and typically there will be no characteristic signatures, because biological agents are usually odorless and colorless. Because of the delayed onset of symptoms, the number of victims and the areas affected may be greater due to the migration of infected individuals. On the other hand, some effects may be very rapid (as short as four to six hours).

### **Anthrax**

Anthrax is relatively easy to grow, stable, and has a good ability to infect people. Cutaneous (through skin) is 20% fatal if untreated, and untreated inhalation anthrax is 90% fatal. Anthrax lives in the ground in rural areas and typically infects only grazing animals. It takes approximately 10000 or more anthrax spores to create an infection in humans. Each spore is approximately 1 micron long.

In weapon form, anthrax spores must be converted to dry powder one to five microns in size so it can be inhaled. It usually attacks the lungs, but can also enter the body through cuts or undercooked meat. Once someone is infected, anthrax is not contagious from human to human, and antibiotics are effective against it.

There is some genetically altered anthrax, against which there is no vaccine or antibiotic.

### **Botulism Toxin**

Manufactured as a biological agent, but it is most often found while eating improperly canned food. Pound for pound it is the most toxic substance on earth. This becomes extremely critical in survival environments where cleanliness may not be so prevalent. Properly cooking meats becomes extremely critical. It is better to have slightly burned meat than suffer botulism.

### **Influenza**

Influenza kills about 20000 Americans in a typical year, and the influenza is similar to the flu.

### **Smallpox**

Is a very contagious virus that is fatal in 33% of the cases. There is concern that some biological research scientists have genetically altered this already deadly strain with Venezuelan equine encephalomyelitis and with the Ebola virus. These would increase the lethality to virtually 100%.

Smallpox can be spread by inhaling the spores and by touching something that has been contaminated.

Two species occur naturally, Variola Minor and Variola Major. Minor is relatively weak (aka: ALASTRIM) and rarely kills. Major is stronger and kills 20-40% in a natural strain.

Within these two species, each has three basic forms. In Discrete Type, pustules stand out on the skin as separate blisters. The patient has a good chance of survival.

In Confluent Type, pustules (blisters) merge into sheets. It is typically fatal.

In Hemorrhagic Type, the skin does not blister but remains smooth. It darkens until it can look charred and can slip off the body in sheets. (aka: BLACK POX).

This is more common among teenagers. It is unknown why. Often hemorrhagic smallpox victims bleed from the rectum and vagina, and occasionally the nose and tear ducts around the eyes.

Genomes of smallpox are 187000 letters and 200 genes. The virus uses a lot of this code to defeat the immune system of its host. By contrast HIV has only 10

genes.

After the blisters develop, the pus dries and becomes a flake – scab like when dry. Each flake contains hundreds of thousands of particles called VIRIONS. About 1000 virions span the thickness of a human hair. Humans are infected if 3-5 VIRIONS enter the lungs.

Vaccination wears off after 5 years. If a person can be vaccinated within 3-5 days of exposure of NORMAL smallpox; they have a good chance of not contracting smallpox. However, India-1 strain from Vopal, India, is exceptionally virulent in humans, as is the Rahima strain also from India.

IL-4 Smallpox is a theoretically genetically engineered smallpox, which can be easily created. (Having been engineered to affect mice and it works with devastating results). And would be super lethal in the humans with virtually 96% kill. The IL-4 gene in all mammals produces a protein called INTERLEUKIN-4 a cytokine (a signaling compound, released by cells, that circulates in the blood and lymph systems that regulates the immune system in the body by stimulating the production of antibodies) that serves as signals in the immune system.

The incubation period is 11-14 days. The small pox spore virus is approximately .20 Microns. In comparison, the Anthrax spore is 1 micron. (A paper envelope has microscopic holes up to 50 times larger than anthrax).

Smallpox can be attached to the anthrax spore (being 1/5 the size of anthrax, this method is called a Trojan Horse)

### **Tularemia (Rabbit Fever)**

Hemorrhagic Fever Viruses (aka: Filovirus or “Thread Virus”)

Family of Filoviruses

1. Marburg (mildest) Kill ratio 25%
2. Ebola Sudan, (mid-range) Kill ratio 50%
3. Ebola Zaire (aka:LASSA) (worst) Kill ratio 90%
4. MAYINGA N of the Ebola Zaire is the worst of the worst. It is fatal 100% of the time. The burn time (time for the virus to run its course in the human body) is so fast that no cure can be found. Hemorrhagic Fever Virus' kill between 10 – 14 days. The victim bleeds out.

Ebola Virus particle contains 7 large molecules, each a protein. Three of these proteins are vaguely understood and four are completely unknown. It targets the immune system for special attack.

Method of transmission is unknown, but it may be by direct contact with blood and/or bodily fluids.

It is a smart virus and adapts quickly as well as modifies its genetic makeup. It did change from direct contact with blood/body fluids to airborne transmission in the Reston case in the primates (monkeys) in Washington, D.C.

VII. Plague (found in Prairie dog colonies)

VIII. Q-Fever

IX. Typhus

X. Brucellosis

XI. Glanders

XII. Venezuelan Equine Encephalitis

XIII. Ricin Toxin

XIV. Botulinum Toxin

XV. Staphylococcal Enterotoxins

## Containment

**R-Zero:** Multiplier that the average number of new people who can catch the virus. Smallpox has a R-Zero between 3 and 20. Most say around 10. For every 1 person who has it, they will give it to 10 others before it is known.

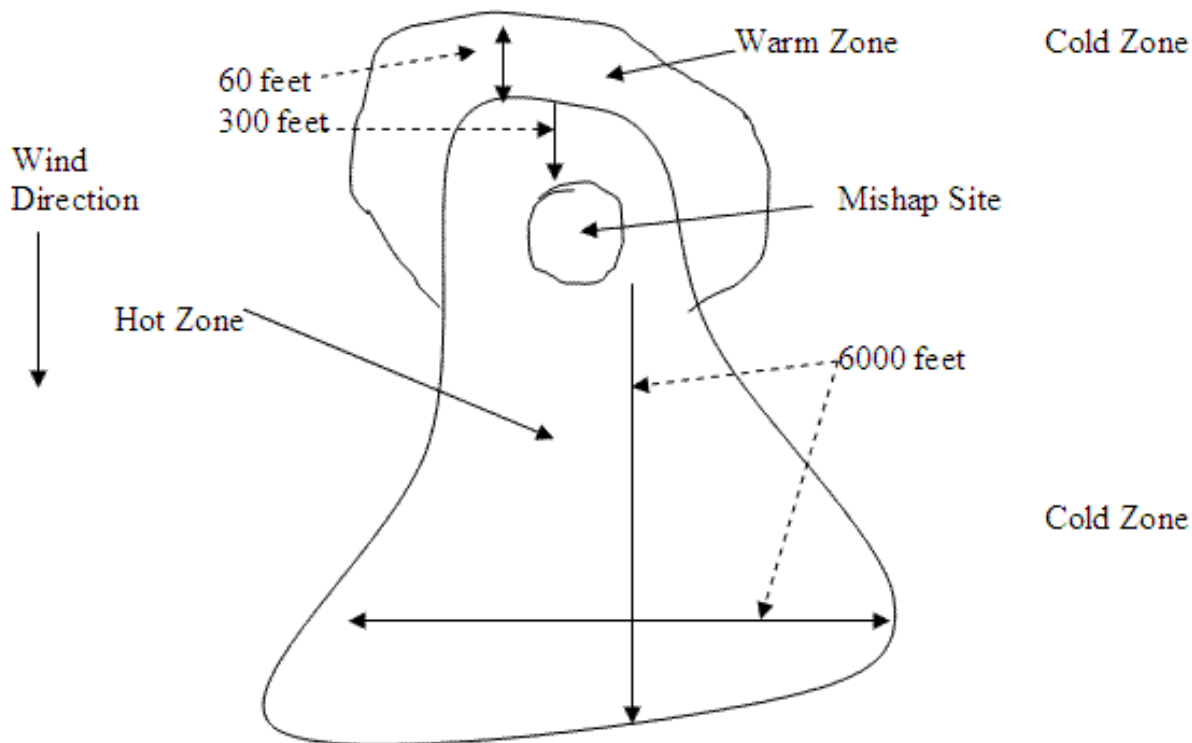
AIDS took 20 years to reach 50 million; Smallpox could reach this in ten to twenty WEEKS.

**RING CONTAINMENT:** Once the virus is started or discovered, EVERYONE on the outside is vaccinated. Since incubation periods are between 11 and 14 days, everyone within this ring that has been exposed must get vaccinated. Since modern transportation, many rings of containment must be done with all people in the containment area. When the next ring is found, the process is continued. There will be many containment failures.

**GENERAL CONTAINMENT:** Three classification standards exist; Hot Zone, Warm Zone and Cold Zone.

The Hot Zone is an exclusion zone and everyone possible must be kept out of the area, particularly those who are not wearing protective gear. The Warm Zone is a contamination reduction zone where individuals who are exiting the Hot Zone must pass through and goes through decontamination. The Cold Zone is for support personnel are to set up and assist those who must operate within the Hot and Warm Zones.

Sample site boundaries – open area



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