Biological Weapons

Biological weapons consist of *pathogenic* (disease causing) and biological, *microbes* (small organisms like germs or viruses, which can only be seen with special instruments). Examples of microbes would be *bacteria* (germs), viruses, and rickettsia. These microbes may be poisonous to people, animals, plants, and food supplies. Insects, ticks, rodents, agricultural pests, and even the surrounding air can carry these microbes.
The difference:

- Chemical agents cause direct injury.
- Biological weapons cause disease, which results in injury.

BACTERIA (GERMS)

The "bacteria caused" diseases produced by biological weapons that can be expected during wartime are bubonic plague, *malignant* (cancerous) anthrax, meliodosis, brucellosis, tularemia, and cholera.

CONTROL

- Disinfectants, boiling, and sunlight kill many biological weapons.
- Some forms, such as anthrax and tetanus, are transformed into spores which have a great resistance to disinfectants, boiling, and sunlight.
- Low temperatures and freezing do not affect bacteria. Bacteria are visible only under a microscope. Under ideal conditions, they can multiply by simple division every 20 to 30 minutes. This means the number would double every 20 to 30 minutes.

VIRUSES

The viruses that may be dispersed during wartime as a result of biological weapons are: smallpox, equine, encephalomyelitis, denque fever, yellow fever, and psittacosis. These microbes are the smallest organisms. Their size is approximately a hundred thousand times smaller than bacteria and they cannot be seen using an ordinary microscope. Unlike bacteria, viruses require living tissue to multiply. Viruses are also resistant to drying and freezing.

RICKETTSIA

The diseases caused by rickettsia that may be dispersed during wartime as a result of biological weapons are: Typhus, Q fever, Rocky Mountain Spotted Fever, and Tsutsugamushi disease. These microbes are approximately the same size as bacteria but require infected tissue to survive and reproduce.

FUNGI

Disease causing fungi that could be spread during wartime as a result of biological weapons are: coccidial mycosis, nocardiosis, and blastomycosis. Fungi are like bacteria but are resistant to sunlight and more resistant to disinfectants. Fungi are microbes that grow on *dead organic material* (any previously living material which has died). An example of a larger fungus would be a mushroom growing on your lawn.

TOXINS

The toxins that cause disease that could be spread during wartime as biological weapons are: botulism, tetanus, and diptheria. Some microbes themselves are not poisonous but produce toxins that are. There are over l, 000 toxins which can produce damage to people, animals, and plants, but only a few can be used as biological weapons.

ANIMALS

The diseases that may be dispersed during wartime as a result of biological weapons used against animals are: hoof-and mouth disease, large horn cattle plague, pig plague, African swine plague, malignant anthrax, glanders and brucellosis.

AGRICULTURE

The diseases that may be dispersed during wartime as a result of biological weapons used against agricultural products are: wheat rust, pyriculariosis, and potato phytophthora.

The choice of biological weapons depends on a number of factors such as: the immunity of the population to resist infection, the level of sanitary conditions, the state of preventative medical treatment and anti-epidemic decontamination facilities, the living conditions of the people at the target site, and the season of the year.

With biological *contamination* (infected or tainted), the sickness does not develop immediately. There is an incubation period in which the disease takes time to develop before disabling the person. The incubation period depends on the biological agent and the general physical condition of the person. Of particular importance are the diseases that can be transmitted from an infected person to a healthy person such as bubonic plague, cholera, and smallpox. The shelterist must consider this condition before taking any people into the shelter that were not part of the original group of shelterists.

PERSISTENCE

The time that the biological agent is active and dangerous varies greatly. The persistence varies from several weeks, if carried by mosquitoes, fleas, flies, and lice, to several years if carried by mites. Mites are the extreme because they are capable of bearing offspring with the disease, rather than dying from the disease themselves. Rodents, such as rats and mice, can carry fleas which spread the disease faster and farther, although these rodents die from the disease just as humans do. In postwar periods, insecticides can be used to control or eradicate the majority of insects that may be carrying the disease. Insects can also contaminate food, just as fallout does. The food that comes into contact with insects, insecticides, and fallout must be washed thoroughly. All dead bodies, whether animal or human, should be buried.

HOW THE DISEASE IS SPREAD

The method of spreading biological warfare agents is similar to the chemical warfare agents, except that drinking water supplies can be contaminated by putting contaminants into the water at the site.

PRIMARY INFECTIOUS BIOLOGICAL WEAPON PATHOGENS				
Pathogen	Average Incubation Time (Days)	Contagiousness	Observation Period (Days)	Quarantine Period and Condition
Bubonic Plague	1-3	Very dangerous	8	6 days
Anthrax	1-3	Not very dangerous	8	8 days-infection by *inhalation* (breathing in)
Rabbit Fever	3-6	Not dangerous	6	Not Applicable
Meliodosis	2-3	Dangerous	14	14 days-infection by contact
Malleomyces	2-3	Dangerous	14	l4 days-infection by contact
Cholera	1-3	Very Dangerous	--	6 days
Botulism Toxin	1-2	Not Dangerous	2	Not Applicable
Q Fever	10-20	Not Dangerous	26	Not Applicable

Rocky Mountain Spotted Fever	3-10	Not Dangerous	14	Not Applicable
Smallpox	13-14	Very Dangerous	--	17 days
Equine Encephalomyelitis	2-10	Not Dangerous	21	Not Applicable
Yellow Fever	3-6	Dangerous	12	12 days
Psittacosis	8-15	Dangerous	15	5 days-infection by contact
Coccidioidomycosis	10-14	Not Dangerous	l5	Not Applicable

***Most of this information is courtesy of US Government CDC*.** In times of an emergency much of this material may not apply when it comes to specialized care and testing. These are guidelines to help you when that care is not available. Some of this information is very technical and difficult to understand, but hopefully someone will be available for help in treatment and understanding.

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