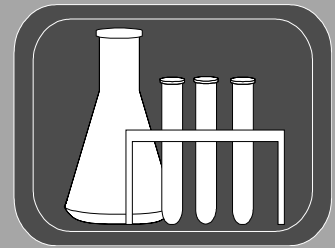


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Biological Warfare ^A short history



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By Colonel (P) Randall J. Larsen with Robert P. Kadlec, M.D.

Biological warfare (BW) began long before humans developed an understanding of bacteria, viruses, and toxins. The earliest accounts of BW are contained in ancient Greek, Persian, and Roman literature. While these incidents were isolated and limited in scope, such as poisoning adversaries' wells with cadavers, they demonstrate that some forms of biological warfare are possible by even the most low-tech societies.

One of the most infamous cases of primitive biological warfare occurred in the 14th Century. In 1346, after a three-year unsuccessful siege on the Crimean seaport of Caffa (present day Feodosija), the Mongols placed plague-infected cadavers on their catapults and flung them into the walled city. The cadavers proved considerably more effective than stones.

The plague quickly spread throughout the city and the Genoese inhabitants fled by sea, landing in Sicily, Sardinia, Corsica, and eventually Genoa. Several medical historians believe "Black Death," the pandemic that began in Genoa and spread throughout Italy and the entire European continent killing nearly one-third of the European population, actually began on the catapults at the siege of Caffa.

One of the first known uses of biological warfare in North America occurred in 1763, and was well documented in official correspondence between Sir Jeffrey Amherst, the British Commander-in-Chief of North America, and Colonel Henry Bouquet, the ranking officer for the Pennsylvania frontier.

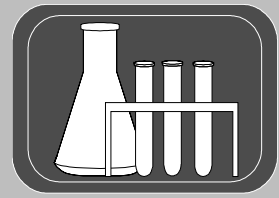
In the spring of 1763, Bouquet reported to his commander that he faced two serious problems: an outbreak of smallpox in his troops and Indian scalping parties that were "laying waste to the settlements, destroying the harvest and butchering men, women, and children." The letters that passed back and forth between these two officers detailed a plan to provide "peace offerings" to local Indian chiefs—blankets and handkerchiefs from the British smallpox hospital near Fort Pitt. Later that year and on into the next Spring, smallpox decimated several Ohio and Shawanoe tribes in Western Pennsylvania.

While it is not possible to prove by any scientific standard that the smallpox plague that ravaged these Indian tribes could be attributed to the actions of Colonel Bouquet, there is no question the officers conspired to attack the Indian population of western Pennsylvania with biological agents.

The first modern use of biological agents in warfare most likely occurred during World War I. According to the Stockholm International Peace Research Institute (SIPRI), Germany was accused of using cholera in Italy and plague in St. Petersburg in 1915. SIPRI also claims there was evidence that the Germans used glanders and anthrax to infect horses and cattle in Bucharest and Mesopotamia in 1916.

The first and possibly the only modern use of biological warfare in the United States also occurred during World War I. There is substantial evidence that

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German agents, working out of a small house in Silver Springs, Maryland, attempted to infect horses and mules with anthrax and glanders prior to their shipment to France. There is, however, no definitive evidence on the effectiveness of these biological warfare activities.

Despite the questionable effects of biological warfare in World War I, there was no question concerning the effects of chemical agents. As many as one million soldiers and civilians were killed or injured by chlorine and mustard gases. In response, 40 nations, including the United States, signed the Geneva Protocol of 1925 prohibiting the first use of chemical and biological weapons.

No restraints, however, were placed on research, development, weaponization, and stockpiling of chemical and biological agents, and during the world wars, the major powers, including the United States, Britain, and Japan, continued research and development efforts.

While there was no widespread battlefield use of biological agents during World War II, every major combatant had a biological warfare program. In the United States, the War Research Service (WRS) coordinated the work of biologists in 28 universities including Harvard, Columbia, Cornell, Notre Dame, and Stanford. In 1942, the British began testing anthrax bomblets on Gruinard Island off the coast of Scotland, and in 1943, British technicians were assisting in the development of anthrax bombs in the United States. By the end of the war, the United States had developed large-scale research, development, production, and weaponization facilities. The program included both anti-personnel and anti-crop agents.

Japan was the only nation that actually used biological weapons during World War II. In 1940, plague-infected fleas and grain (which attracted rats) were dropped from aircraft on 11 Chinese cities. Although there were some unverified reports of biological weapons use against Russian troops, there is no question about the large-scale laboratory and field testing on human subjects accomplished by the Japanese.

Between 1932 and 1945, Unit 731 (commanded by General Shiro Ishii) and Unit 100 conducted biological warfare research in Manchuria and China. During laboratory tests, human subjects were infected with plague, typhus, smallpox, yellow fever, tularemia, hepatitis, gas gangrene, tetanus, cholera, dysentery, glanders, anthrax, undulant fever, tick encephalitis, epidemic

hemorrhagic fever, cerebrospinal meningitis, and other diseases that resulted in the deaths of more than 10,000 individuals. Between 1940 and 1945, both units tested delivery systems for plague and anthrax on human subjects, including allied prisoners of war.

Numerous field tests were also conducted. Unit 731 distributed typhoid-laced dumplings to 3,000 Chinese prisoners of war and then freed them to return to their homes to determine if this would be an effective means to spread the disease.

During a five-month period in 1940, 70 kg of typhus rickettsia, 50 kg of cholera bacteria, and 5 kg of plague-infested fleas were spread through the Ning Bo community south of Hangzhou. More than 500 villagers perished during these tests, and plague epidemics, virtually unknown in this region, recurred in 1941, 1946, and 1947. A documentary film was made of the Ning Bo expedition by the Japanese Army.

By 1945, Unit 731 had stockpiled more than 400 kg of anthrax to be used in specially designed fragmentation bombs. General Ishii's plans to attack US forces with these bombs, which would have been delivered by large balloons, were canceled by the Japanese Army Chief-of-Staff and Surgeon General. In May 1945, General Ishii received approval to drop plague-infested fleas on the American airfield on Saipan. The operation, however, was foiled when an American submarine sunk the ship that was carrying the Unit 731 technicians to Saipan.

Unit 731 reached peak production in June 1945. General Ishii's facilities were producing plague, typhoid, cholera, and anthrax in quantities that could have infected half the population of the world. The new breeding machines were producing 100 million fleas every few days and Ishii's quartermaster was ordered to obtain sufficient grain by September to feed 3 million rats. However, on August 13, four days after an atomic bomb was dropped on Hiroshima and the Russians invaded Manchuria and Korea, Ishii ordered the destruction of all biological warfare facilities, bringing an abrupt ending to Japan's brief but nefarious history of biological warfare.

The details, or even the very existence of the Japanese biological warfare program was not widely known outside the BW community until the mid-1980s. The reason is simple. All information gathered by the US government following World War II was classified *Top Secret*. Once the information was analyzed,

however, it was evident that a major breakthrough had not been achieved by the Japanese (such as aerosol delivery) and that the effectiveness of the Japanese program was not considered militarily significant.

The security classification given to the Japanese biological warfare program resulted in some individuals, particularly within the academic community, doubting its existence when reports first emerged in the open press. This changed, however, in 1982, when the Japanese government released a report by the Social Welfare Ministry to the lower house of the Diet concerning the Imperial Army's Unit 731. State Minister Kumio Tanabe declared that experiments occurred "during the most extraordinary wartime conditions" and "were most regrettable from the viewpoint of humanity."

During the past several years, considerable information has become available through the Freedom of Information Act. Numerous detailed accounts have since been produced including documentaries by a Tokyo television station (which included interviews with former members of Unit 731), the BBC, "60 Minutes," and several books and journal articles by both Japanese and American historians.

From 1945 to 1969, the United States continued research and development efforts. Some individuals refer to the period between 1959 – 1969 as the "golden age" of biological warfare research. This rather macabre designation comes from the fact that major scientific advances were achieved in:

- Large-scale production of bacteria, viruses, rickettsia, and their metabolic byproducts (toxins)
- Stabilization and preservation in both liquid and dry forms
- Weaponization efficiencies (aerosol dissemination)
- Production safety

On 25 November 1969, President Nixon announced a unilateral ban on the use of biological agents and weapons. All future biological research was limited to defensive measures such as immunization, detection, and safety. Because the issue of toxins was omitted from the declaration (a technical oversight), a similar statement was issued on 14 February 1970, banning both biologically and chemically produced toxins.

By the summer of 1972, US stocks of biological warfare agents had been destroyed, and on 22 January 1975, President Ford signed the Biological Weapons Convention (BWC) prohibiting the development,

production, and stockpiling of bacteriological (biological) and toxin weapons.

The Soviet Union and 151 other nations also signed the BWC; however, Western intelligence agencies suspected that the Soviets were continuing to work on an offensive program. The highly classified nature of their program compounded by their "closed society" and the inherent difficulties of verification in the BW arena made it impossible for Western governments to obtain a "smoking gun."

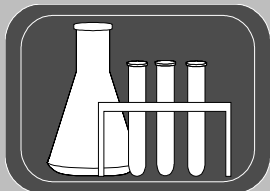
Further evidence emerged in the spring of 1979 when an outbreak of anthrax occurred in the city of Sverdlovsk, USSR, resulting in numerous deaths. Soviet officials acknowledged the incident, but blamed it on black market meat, a rather dubious claim, since local doctors were reporting severe pulmonary edema—symptoms not associated with ingested anthrax bacteria.

In 1989, the "smoking gun" was finally obtained. A Russian microbiologist, Vladimir Pasechnik, defected while attending a conference in London. His highly detailed, first-hand knowledge confirmed the West's worse fears. According to Pasechnik, the Soviets were deeply involved in research development, and production of an offensive BW program, including a genetically engineered, dry form of antibiotic-resistant super plague. Pasechnik also stated the Soviets had discussed providing BW agents to terrorist organizations.

Despite confrontations by both President Bush and Prime Minister Thatcher, President Gorbachev and Foreign Minister Shevardnadze strongly denied any Soviet involvement in illegal BW activities.

However, during a February 1992 visit to the United States, Russian President Boris Yeltsin acknowledged the Sverdlovsk incident was the result of an accidental release of aerosol anthrax spores from a nearby biological warfare production facility. And in September 1992, Deputy Foreign Minister Gregory Berdennikov said, "Activities banned by the convention (1972 Biological Warfare Convention) were in progress from 1946 until March 1992."

The bottom line on the Soviet/Russian BW program is that research, development, and production of offensive weapons continued 23 years after the US unilaterally banned such activity in 1969, a period in which an incredible revolution in biotechnology occurred. Most historians now agree the "gaps" of the 1950s and



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and missile gaps. Unfortunately, there is no question that a very real and serious gap in BW technology and capability exists today. Both the biotechnology and computer revolutions began in the 1970s. Being 23 years behind the Russians in BW research is somewhat comparable to being 23 years behind in computer technology.

Another recent occurrence of offensive BW activity was the Iraqi program. The Iraqis had undertaken a large-scale research program and were capable of producing weapons quantities of a wide variety of BW agents. The full story of Iraq's BW program has not yet been written.

The history of biological warfare provides several cogent lessons for the future.

- It dispels the myth, "since biological weapons have not been used before, they will not be used in the future." This section only highlighted a few examples of BW use. A complete account would require several hundred pages to document. Clearly, the Japanese used a wide variety of biological warfare agents during the 1940s, *and had they been able to develop an efficient aerosol dissemination system, the history of World War II would read quite differently today.*
- The siege at Caffa, with its possible links to the spread of Black Plague across the European continent and the smallpox plague that decimated Indians tribes in Western Pennsylvania can arguably be linked to primitive forms of biological warfare. These early incidents pale in comparison to those possible today.
- The difficulty of maintaining an international control regime to check the proliferation of offensive biological warfare capability is readily apparent. Without a "smoking gun," it is virtually impossible to prove

that a nation is actively engaged in an offensive, and therefore, illegal, BW program. Modern procedures allow for extremely rapid production of these agents. To go from legitimate "laboratory quantities" to "weapons quantities" is a matter of days or weeks, not years. In other words, the notion of a "biological warfare nonproliferation control regime" is arguably an oxymoron.

- Clearly, the history of biological warfare did not end with the unilateral disarmament of the US program, the Biological Weapons Convention of 1972, or the Cold War. Unfortunately, it seems quite possible that the most dramatic and catastrophic period of biological warfare awaits us in the 21st century.

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