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# ***Bioterrorism: menace of microbiological science***

**Air Vice-Marshal Bruce Short, AM, RFD (Retd)<sup>1</sup>**

Immediate Past Surgeon-General, Australian Defence Force



*In this paper, Bruce Short reviews the development of biological warfare technologies and the international safeguards and monitoring systems enacted since World War I. He describes some recent agents that have been weaponised by genetic engineering; outlines the Soviet experience with inhalational anthrax disease; discusses who the presumed terrorists of today are; and overviews recently developed global public health surveillance systems which may provide early warning of bioterrorism. As the threat posed by the possible existence and use of biological warfare agents is a substantial weapon in its own right, the spectre of bioterrorism is likely to continue unremitting.*

Biological warfare is not a new threat. Perhaps one of the earliest documented instances involved Hannibal the Great. Having fled to the court of King Prusias I of Bythynia, he was given command of the Bythynian naval forces. In 184 BCE<sup>2</sup>, King Eumenes II of Pergamum fought a small naval engagement with Prusias. Hannibal achieved a victory by allegedly throwing poisonous snakes onto the decks of the enemy ships. Snake venom toxin is regarded as a biological agent (Cary and Scullard 1984, 165; Hammond and Carter 2002, 5). Numerous other examples of the use of biological warfare have been recorded during the subsequent centuries.

The terminology used in relation to biological warfare can be confusing. Biological warfare, or germ warfare, is the deliberate use of microbial agents – which include bacteria, parasites of the genus *Rickettsia*, viruses and, to a lesser extent, fungi – as well as toxins, to produce death or short-term and long-term morbidity to humans, animals and plants, with a view to causing maximum public health chaos and economic disruption. The media have added to the opacity of the meaning with other terminologies: 'Bioarmageddon', 'Bioterror' and 'germ weapons' (Robertson 2000).

Biological Weaponry, or bioweapons, refers to munitions, equipment and other delivery systems including aerosols, aircraft, artillery and explosives, intended to disseminate biological agents.

The word, terrorism, was coined in 1793 as a reign of terror was perpetrated on the citizens of France by the Jacobins, led by Maximilian Francois Robespierre (Davies 1999, 698). It is now commonly used to describe attacks on the community launched by extremist groups to achieve political and social change and first appeared in this context in American newspapers in 1997 (Zubay *et al.* 2005, 327).

Biosecurity describes the efforts required by states to protect against attacks from forces using germ warfare, with a particular emphasis on securing a nation against bioterrorism. It not only incorporates security threats from biological warfare but also from naturally occurring infectious diseases (Fidler 2006, 197). Within the United States, biosecurity forms part of the larger strategy of strengthening homeland security in the prevention of attacks, the protection of citizenry and the national response to terrorist attack (Fidler 2006, 197).

## **Modern International Biological Warfare Programmes**

The sociologist, Jeanne Guillemin, groups modern international biological warfare programmes into three periods (Guillemin 2005, 75-91). Commencing in the 1920s, the initial offensive period was characterised by an international environment that permitted both development and production of biological agents and weaponry, whilst at the same time trumpeting condemnation. The French were the first to investigate the technologies of disease dissemination with new air power capabilities. Britain followed in 1940 with the establishment of Biology Department Porton at Porton Down, Wiltshire.

In 1942, George W. Merck, a chemist and president of Merck & Co., headed the new and innocuously named United States War Research Service, where early work centred on anthrax and botulism. The War Research Service later built many research facilities, the most notable at Camp Detrick, Maryland, where Theodore Rosebury, a microbiologist, became the director. By 1944, the United States had prepared only a few anthrax bombs for testing. Agents against plants were also analysed and ammonium thiocyanate was recommended for the decimation of Japan's rice crop. The United States Air Force commander later rejected the use of this crop defoliant on tactical grounds. In the end, American beliefs about the morality of biological warfare during World War II were never put to the test – instead senior advisers later sanctioned the atomic bomb. Meanwhile, and for reasons

<sup>1</sup>E-mail: shortb7j@bigpond.com

<sup>2</sup>Before the Christian era

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