

Editorial

Scientists against Biological Weapons

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The anthrax attack over the past few weeks, which targeted federal and media centres in the USA and probably few other countries appalled scientists. They are deceived, to witness their research and development in the field of infectious disease control been abused by governments and more recently by terrorist groups. They are also betrayed to find that, other groups are developing resistant genetically modified strains¹ while progress is made by many scientific groups in the field of biotechnology, vaccination, antimicrobials, environmental decontamination, etc. What is even more alarming and dangerous is that the USA terrorist anthrax attacks are carried out by individuals who are themselves scientist thus representing a great departure of all ethical standards in science.

There are many biological weapons threatening mankind such as anthrax, botulism, brucellosis and plaque. Among these, anthrax is the easiest to weaponize since the British government infected Gruinard, a tiny Scottish island, in 1942^{2,3}. Since then there has been a clandestine development by the superpowers of these weapons and today at least 17 nations are believed to have offensive biological weapons⁴. There were also incidents of accidental leaks of these weapons as well as their deliberate usage in areas of regional conflicts resulting in large numbers of deaths^{1,4-6}. Furthermore, the recent US anthrax attacks are not the first application of this lethal agent by a terrorist group. Aum Shinriko, a terrorist Japanese organisation responsible for the release of Sarin in Tokyo subway in 1995, dispersed anthrax aerosol on at least 8 occasions but for unclear reasons the attacks failed to produce illness⁷. Accordingly the potential use of these agent by similar groups continue to represent a potential threat to the stability and security of nations. The recent US cases is just one of these threats.

However, the international scientific community in a bid to create less dangerous world to mankind and the environment now has the opportunity to unit and makes their opinion known to governments and world authorities about weapons of mass destruction including biological agents. The scientists have a responsibility in tackling the threat of these weapons because they are the original inventors and developers of such weapons. They are responsible for establishing counter-measures for any mechanism to expand them as weapon⁸.

The objective of this paper is to outline the role of scientists against the application of biological weapons taking into account the recent USA anthrax attacks. This role

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involves the engagement and function of scientists as responsible group in influencing the geopolitical decision. The scientist have important role to play in politics, research and development, education and establishing ethical standard. It is important that these challenges are met at all fronts.

Scientists must dissociate their work from that of politicians and strategists but support policy-makers in negotiating an effective international agreement banning the development, production and use of all biological weapons. This could be accomplished with immediate effect at the Fifth Review Convention of the 1972 Biological Weapon Convention to be held in Geneva between 19 November and 7 December 2001. The original convention is now 29 years old during which many world events need to be considered including the Arab-Israeli conflict, both Gulf wars, the recent Afghanistan war and more recently the anthrax attacks in the USA and other countries. One hundred and forty four states and many independent organizations participate in this convention will debate issues related to bioware including the possible usage by terrorist groups^{9,10}. The scientists should enforce an international consensus on the superpowers and the 17 nations believed to have offensive biological programs to abide by the agreement. These nations pose a threat to their neighbours and to the world at large.

Unlike other international arm control pacts, the Biological Weapon Convention has no mechanism to establish and enforce an instrument of compliance, verification and inspection so that all signatories abide by the rule^{8,10}. However, for the last seven years the 144-nation group has been working on a document on this mechanism. It is expected from the Geneva convention that the world political powers helped by the scientific community to establish and put into practice an elaborate international verification system similar to that of the Chemical Weapons Convention of 1997⁸. This should apply to all involved parties namely the military facilities, biotechnology centres and civil manufacturing industry.

Biological weapons is controlled by the politicians who can order immediate or gradual halt as well as systematic destruction of stockpiles depending on their election mandate and philosophical approach to world peace. But the difficulty lies at the level of biotechnology centres (responsible for the development of bioware techniques) and the civil manufacturing industries (supplying the material and equipment) which are controlled by commercial interests of international conglomerates and shareholders. The support of later institutions is essential to ensure effective verification instrument that cannot be abused neither by governments or terrorist groups. However, since the decision for the ban within these institutions is difficult without government interference or international agreement. It is essential that the biotechnology, chemical and pharmaceutical industries negotiate with the Biological Weapons Convention the best ways to redirect the production of these commercial institutions towards beneficial applications without constraining the industries. This in line with earlier practice since the mid 1980s between the industry and the Chemical Weapons Convention and which resulted in the 1997 agreement.

Regrettably, on the last day of the Geneva convention, the US delegation suggested that the meeting be terminated and suspended until 11 November 2002⁹. They refused to sign a document to strengthen the treaty agreed upon in the summer of this year, claiming "it put national security at risk", a move predicated since July, 2001¹⁰.

Nonetheless, this obstructive move should not dissuade scientist since perseverance will ultimately lead to success.

The scientists have an important role in the implementation of the verification system of any agreement as well as compliance of nations and industries. Primarily by influencing the opinion and decision of policy makers and secondarily by directing their expertise and research into ethically scientific yet deterrent programs. This should not be seen as instigation for rebellion or refusing orders as may be interpreted in the military but an ethical obligations of scientists towards the welfare of human kind and environments rather than the warfare to destroy these. They should be engaged in providing methods of early diagnosis and detection of biowar weapons, development of vaccines and antimicrobial agents, use of molecular technique and genetic engineering to render the biological agent totally ineffective, provide protective and decontamination measures, prophylaxis, infection control measures etc. There is also a need for the development of enhanced computer models to investigate source and mode of dissemination of infectious agent and their effect on human body and the environment.

Scientists have educational responsibilities to discuss between the various scientific groups, issues of common interest, to strengthen the verification system and agree on research project aimed at making the world less dangerous. They must enlighten the policy makers and the public about the consequences of biowar. Moreover, the education of the public, intellectuals and professional societies about the dangers of these weapons is essential to serve as rallying measure and pressure groups against these weapons.

The anthrax attacks came immediately after the 11 September 2001 tragedy and both incidences led to ill media coverage resulting in misjudgements by many governments across the world against Arabs, Moslems and the Middle East. Scientists must therefore provide accurate and comprehensive information to the public and strive to neutralise any issue that touches the ethical, cultural and moral issues of any religion. They should resist mass accusation of certain race or ethnic groups. It is again regrettable to repeat that the individuals who carried out the anthrax attacks are scientists.

The use of biological wars is unethical and international treaties must be enforced to stop their application and proliferation. It is equally important to note that war itself is unethical to humanity and environment and that violence has never brought a long lasting peace to any conflict as that of direct dialogues. The ethical approach of scientists should be that no state, institution, or individual be admitted to the society of civilized world at large if it attempt to wage war or terror, let alone those of weapons of mass destruction.

There is no justification for the use of biological weapons by Governments or terrorist groups which would pollute our environment and ensure the ultimate extinction of the human race. It is worth noting here that WHO is spending billions of dollars to eradicate diseases such as poliomyelitis, smallpox, malaria, etc and at the same time allow the same governments to spend equal or more dollars to develop their biological war arsenals.

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