



# Frameworks for considering the bioweapons threat

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Last revision: 7 February 2005

Prepared for: New Defence Agenda, Brussels.

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## **Introduction**

The debate on the threat posed by the deliberate use of biological agents is often carried out among specialists from different disciplines. The intense focus on the subject matter tends to isolate it from the broader societal background, in the process making the threat absolute. As a consequence, the discussed scenarios often reflect what is scientifically or technically feasible, not what is probable. Concepts like ‘risk’ and ‘threat’ become confounded. Furthermore, the liberal use of the term ‘weapons of mass destruction’ not only focuses attention to the aftermath of an incident, it also suggests consequences virtually beyond human management.

Fear is the key. Lost is the notion that humans confront infectious disease daily. According to estimates by the World Health Organization, some 13 million people die from infectious disease alone each year. The figure represents one quarter of all fatalities worldwide. In other words, every two hours more people die than in the combined terrorist attacks on the Twin Towers in New York and the Pentagon on 11 September 2001. This comparison does not belittle the significance or the suffering of 9/11; it gives perspective to the challenges humankind faces every day—some manmade; some natural in origin. The seism of 26 December 2004 and the subsequent tsunami wiped out a quarter of a million lives in a matter of hours. International response was swift; with billions of dollars flowing in to rebuild the affected areas around the Indian Ocean. As we are writing this commentary, infectious disease specialists are worrying aloud whether the recurring outbreaks of avian flu in Southeast Asia and the indications that the virus may have mutated to cause human-to-human transmission is not the harbinger of another Spanish flu pandemic. In 1918 the Spanish flu killed more people worldwide than combat operations on all fronts during World War 1. Yet, pitiful is the money that is currently forthcoming to assist local chicken farmers change their breeding practices and build new, more sanitary infrastructure.

The framing of the security issues resembles the reaction to dynamite and a candle. A burning candle releases more energy than the detonation of a stick of dynamite. However, the explosion is compressed in time and therefore more intense, and people will react immediately to its consequences. Yet, a small fire can have profound consequences, as the great fire of London in 1666 reminds us. In summary, framing of the problem determines our perception of the threat posed by deliberate disease, and ultimately determines the policies to deal with it. This note lists some elements that consciously or unconsciously affect the nature of the debate, and may blind us to certain policy options or consequences.

## **A cold war mind set?**

During the cold war both superpowers actively considered biological warfare. They concentrated on a number of agents that from a military perspective offered a sufficient compromise between a number of characteristics, including infectiveness, controllability, ease of production, stability and resistance to environmental stress after release. These considerations led to the weaponization of certain pathogens, such as anthrax and smallpox. Simulations and experiments during the 1950s and 1960s suggested the potential for large numbers of casualties over large areas. However, considering the complexities involved in the research, development, production and dissemination of such agents, it still remains to be explained why they should be the prime choice for terrorists.

## **The ‘WMD’ characterization**

The characterization of deliberate disease as an act involving the release of a weapon of mass destruction feeds back into the cold war mind set. In one of the first resolutions adopted by a United Nations body, biological weapons were classified together with chemical and nuclear weapons as WMD. While the incidence of natural disease supports the idea of large number of casualties, in the policy debates the notion tends to narrow the focus of consideration.

First, the pathogens of primary concern are the ones developed for military use during the cold war. Since it is generally accepted that their development and production are complex—the Japanese cult Aum Shinrikyo, for instance, never managed to develop a viable agent—it follows that the threat scenarios leading to mass casualties must involve a state sponsor of terrorism. Based on available empirical data, such linkage is tenuous at best, and may produce misguided policy decisions, such as the invasion of Iraq.

Second, agents whose deliberate release may produce few or no human casualties fall outside the purview. In 1984, for example, the Rajneesh cult experimented with salmonella in an effort to influence local election by incapacitating sufficient residents of a small place in Oregon, USA. Huge economic damage to a society may also be caused by the resort to animal or plant pathogens. The damage not only concerns the economic sectors directly affected by the attack (farmers; food industry, transport), but may also be much more far-reaching and lasting (tourism, loss of international markets). The types of agents that might be considered for such attacks would pose limited personal risk to the perpetrator, can easily be cultivated by individuals with basic expertise in biology and their dissemination does not require advanced technology.

Third, the notion ‘weapon of mass destruction’ conveys a serious threat and creates a sense of fear. In a climate of fear, hoaxes can become just as effective as the actual release of agents, especially if the goal is to terrorize or create economic disruption. Each hoax needs to be investigated, and facilities and businesses must be evacuated and temporarily shut down, costing large amounts of money. A hoax does not involve an actual biological agent, so in a climate of fear the perpetrator easily achieves his goals at almost no expense and without personal risk.

### **Deliberate disease versus natural outbreaks**

Natural diseases have challenged human survival for millennia. They have wiped out entire civilizations or, as in the case of the Roman Empire, weakened it beyond viability. Deliberate disease is therefore considered beyond the pale; and demands strong reaction. However, it may be worth the while to take a step back and consider to what extent the effects on a society from deliberate disease and natural outbreaks differ from each other. Essentially, in both types of incidents the disease needs to be contained and the victims treated. However, at the current stage of preparedness some of the primary actors involved may differ considerably and create several dilemmas.

First, in the case of an unusual outbreak law enforcement agencies or even the military may become involved in the incident. Law enforcement officials have primary interest in collecting criminal evidence and seek to secure the area before such evidence is destroyed by first responders, thus compounding efforts to treat and evacuate the victims. Military personnel may be involved in the incident because of their specialized skills or equipment, but the characterization of the attack as an act of war or a threat to national security may have serious repercussions for the consequence management activities (as was the case during a suspicious plague outbreak in India in the mid-1990s).

Second, any incident involving a pathogen determined to be a high threat agent (anthrax, smallpox, plague, etc.) is framed as a national security matter. Yet, certain incidents involve little more than benign negligence (e.g., forgetting to report some vials with an agent of concern) or scientific arrogance (e.g., taking disease samples in the hand luggage on a plane). Resulting indictments for the possession or manipulation of WMD lift them far beyond the level of professional sanctions and may lead many scientists to abandon legitimate research on naturally occurring diseases (like plague is in many parts of the world.)

Third, investment in the overall health infrastructure may be reduced (e.g., as part of government budget cuts in health care), but on the other hand, scarce resources may be made available to protect or defend the population against very specific threat agents such as smallpox or anthrax, although the likelihood of terrorist incidents involving these patho-

gens is extremely remote. As a consequence of the 'WMD' mind set, the overall vulnerability of a society to emerging and reemerging diseases is thus heightened.

Fourth, the focus on certain types of agent contributes to the proliferation of high-containment laboratories and installations, with many more scientists and technicians acquiring the skills and expertise to safely manipulate those agents. While their research will produce new insights into those specific diseases leading to improved vaccinations or medication, the risk of mishaps—as indeed several have occurred in the USA over the past year or so—increases. In addition, as most of the incidents with a toxin or chemical agent involve acts of revenge against an individual or company, the potential of disgruntled disaffected member of the staff resorting to a pathogen increases too. As far as current assumptions go, the mail-delivered anthrax spores in the wake of the 9/11 attacks were produced by an expert from a US military biodefence facility. At the same time, support of research into naturally occurring diseases that actually kill tens, hundreds or thousands of people each year (West Nile virus, SARS, HIV/AIDS, Avian flu) pales in comparison to the upsurge in the funding of biodefence programmes.

In summary, it is absolutely necessary to calibrate the imperatives of preparedness, consequence management, criminal investigation and national security. The question, however, is whether the framing of health security in terms of terrorism or military threats actually contributes to the safety of societies across the world in the most adequate way. Viewing deliberate disease as a special case of the global challenge against infectious disease might actually suggest cost-effective policy measures that support national capabilities of disease surveillance, prevention and management. While the stick of dynamite may bring down the house, the flame of the candle may burn down a whole town.