



# **Biological Weapons**

## ***Their threat, their control and the need for stakeholder involvement***

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# What is biological warfare?

Intentional application against *humans*, *animals* or *plants* for hostile purposes of

- *Disease-causing micro-organisms* (e.g., bacteria);
- *Other entities that can replicate themselves* (e.g., viruses, infectious nucleic acids and prions)
- *Toxins*, poisonous substances produced by living organisms (and their synthetically manufactured counterparts), including
  - micro-organisms (e.g., botulinum toxin),
  - plants (e.g., ricin derived from castor beans), and
  - animals (e.g., snake venom)



# Main prohibitions against BW

- 1925 Geneva Protocol
  - Prohibits the use in armed conflict of chemical and biological weapons (CBW)
- 1972 Biological and Toxin Weapons Convention (BWC)
  - Comprehensive ban on development, production and possession of biological weapons (BW) and toxins
  - Ban on BW use in Geneva Protocol + Final Declaration of 4th Review Conference (1996)
- 1993 Chemical Weapons Convention (CWC)
  - Comprehensive ban on development, production, possession, and use of chemical weapons (CW)
  - The definition of chemical weapon also includes toxins
    - Links up with the BWC



# The BW threat spectrum

- War scenarios
- Terrorism
- Criminal acts
  
- Each will consider and have the availability of different biological or toxin agents, with different degrees of pathogenicity or toxicity
  - Depends on *intent*
  - Depends on *availability*
  - Depends on *technical skills* and *structure* of the organisation



# Alternative uses of biological agents

- Against humans
  - Potential for mass casualties exists, but not necessarily most likely scenario as agents difficult to acquire
  - Incapacitation
    - Wider range of agents available
    - Easier to collect from nature and cultivate
    - Delivery uncomplicated
    - Lower requirements for skills and functional specialisation
- Against animals and plants
  - Economic impact
  - Agents easier to acquire; less of a risk to perpetrator
  - Easy to deploy
    - Many vulnerabilities in the food chain
- Economic and societal disruption
  - Goal is to disrupt functioning of utilities, commercial enterprises, public agencies
  - Wider range of biological agents available
  - Exploitation of fear and lack of adequate preparations
  - Effectiveness of hoaxes





# Disease and warfare

- Before the 20<sup>th</sup> century, more people died from disease in war than from combat operations
  - Poor sanitary conditions; low quality nourishment
  - Poor knowledge of disease propagation
  - Limited forms of disease treatment; key types of medication not discovered until well into the 20<sup>th</sup> century
- Exploration and confrontation of cultures
  - Peoples living in isolation from Eurasian cultures were suddenly confronted with diseases they had never encountered before, e.g.
    - Indian civilisations of Central and South America following the Spanish conquests
    - Populations on Pacific Islands: for instance, *lilabalavu* in Fiji following the wrecking of the US schooner *Argo* in 1800. The series of epidemic outbreaks that followed reduced the Fijian population from about 210,000 to 85,000 in 1921.



# Deliberate disease

- Rare before knowledge of disease propagation
  - Some acts definitely contributed to epidemics, but may not have been intended to spread disease
  - Exploitation of prevailing conception of disease, but would not be considered biological warfare today
- Early intent
  - (Alleged) distribution of blankets infected with smallpox virus among American Indian tribes in the Great Lakes area (1763)
  - New Hebrides (Vanuatu):
    - 19<sup>th</sup> century: Freebooters would capture a native until he/she caught measles or whooping cough and then reintroduce them into their villages, leading to mass die-offs of natives.
  - Apparently an act of reprisal for refusal to subjugate to colonials or pirates
- Modern biological warfare
  - Acts of sabotage in World War 1
  - Major preparations during 1930s and World War 2
    - Japanese use and experiments during World War 2
  - Major BW programmes during the Cold War



# Perspectives on the BW threat

- Use of biological and toxin weapons has so far been extremely rare
  - Since 1975, > 100 persons have been killed through deliberate disease
    - Most cases involved toxins
    - Most cases were criminal in nature
  - Major terrorist BTW programmes have been total failures (Rajneesh Cult; Aum Shinrikyo)
  - However, anthrax letters (USA, 2001) demonstrate the potential for low-casualty — high-impact events
  - Most bioterror events do not involve actual agents (hoaxes)
- We have arrived in a post-proliferation stage
  - Biotechnology (equipment, processes, products, knowledge) has become universal
  - Developing countries (Cuba, India, Indonesia, Iran, Malaysia, Pakistan, etc.) have become original sources of innovation and, in some cases, technology exports



# Nature poses the greatest challenge

- **Infectious diseases are responsible for**
  - > 13 million deaths annually ( $\approx$  number of fatalities in the Twin Towers attacks on 9/11 every two hours)
  - $\frac{1}{4}$  of all deaths worldwide
  - $\frac{1}{2}$  of all deaths in developing countries
- **1918: Spanish Flu** caused more fatalities worldwide than World War 1
- **Emerging diseases:** SARS; West Nile Virus; Avian flu (H5N1 and H7N9), Zika
- **AIDS in Africa:** threat to social fabric of societies
- **Ebola in West Africa**
  - Pointed to shortcomings in international assistance
  - Impacted on consideration of implementation of BWC Article VII
- **Economic impact of non-human disease outbreaks:**
  - Swine Fever outbreaks in Taiwan (1994 – 2001)
  - Foot and Mouth Disease outbreak in the UK (2001)



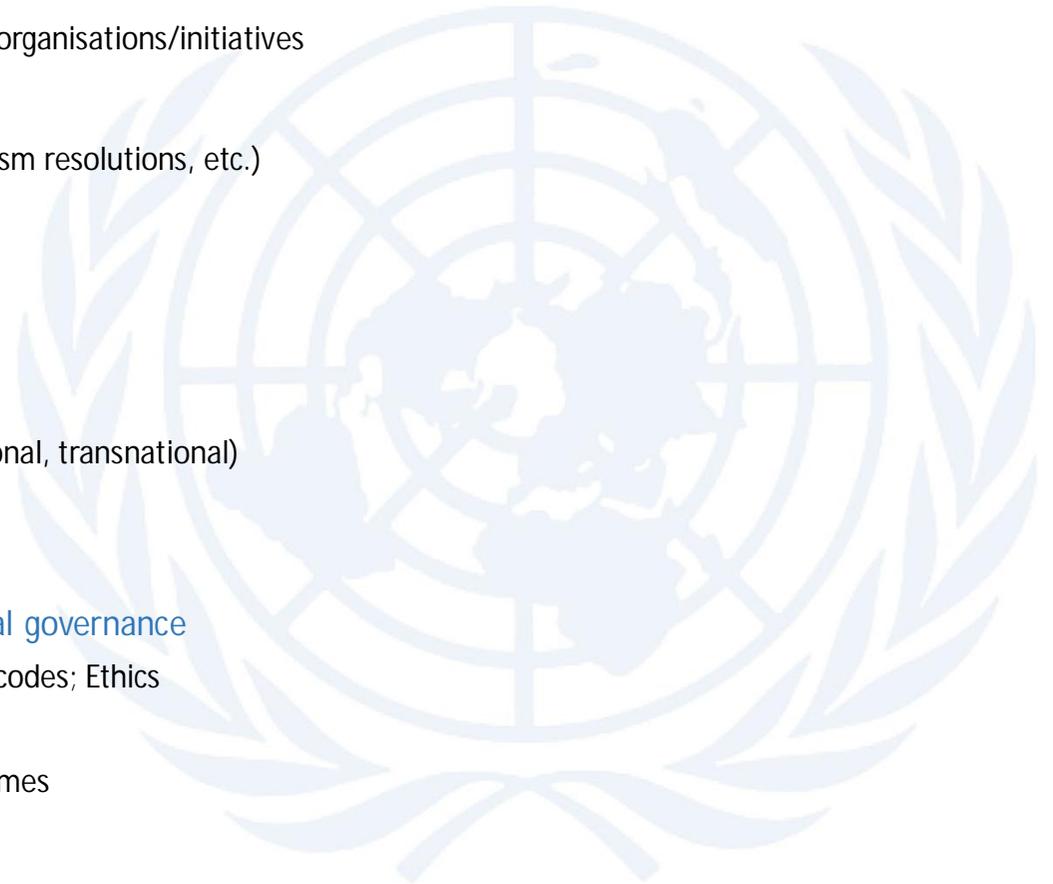
# Preventing biological weapons

- **Logical point of entry: weapons and their application**
  - However, treaties only govern inter-state behaviour
    - Biological warfare (states) / terrorism / crime
      - need for domestic (criminal, penal) legislation
    - *Prevention* of terrorism:
      - also responsibility of the individual
- **Possible additional points of entry**
  - Prevention of disease (irrespective of origin of outbreak)
  - Preserving biology and biotechnology for peaceful purposes (societal advancement, economic development, health security, food security, etc.)
  - Environmental security (impact of accidental or purposeful introduction of organisms in new biotopes or of modified organisms)



## Towards a multi-layered & multi-sectorial governance model?

- **Weapon control**
  - Multilateral agreements (Geneva protocol, BTWC, CWC)
  - Proliferation prevention arrangements (Australia Group, PSI, Global Partnership, etc.)
  - UN agencies: UNSC, UNODA, 1540 Committee, UNEP, UNDA, etc.
  - National laws and regulations (criminal, penal, trade, safety, etc.)
- **Disease prevention**
  - WHO, FAO, OIE + their regional organisations/initiatives
- **Crime and terrorism**
  - UNSC Resolutions (1540, terrorism resolutions, etc.)
  - Interpol, Europol, etc.
- **International transfers**
  - WTO, WCO, etc.
- **Economic actors**
  - Companies (national, multinational, transnational)
  - Research institutions
  - Individuals
- **Instruments of collective & individual governance**
  - Codes of conduct; Professional codes; Ethics
  - Awareness-raising & education
  - Whistle-blower protection schemes





# Contact

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