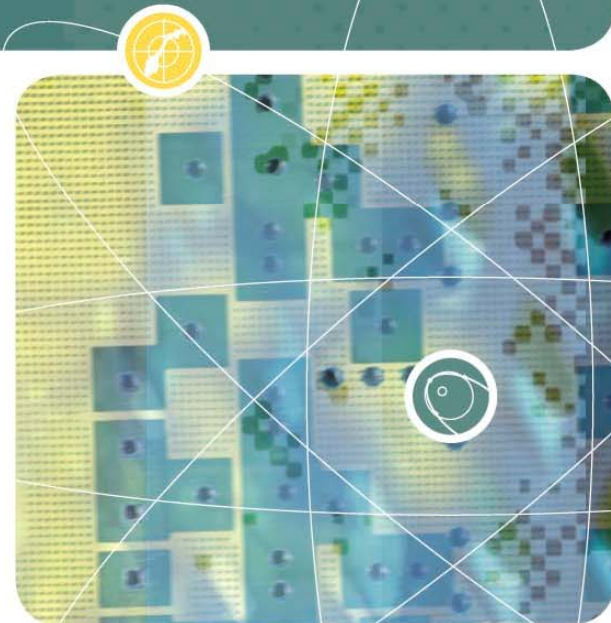


# Biological agents and terrorism – threat, risks and challenges

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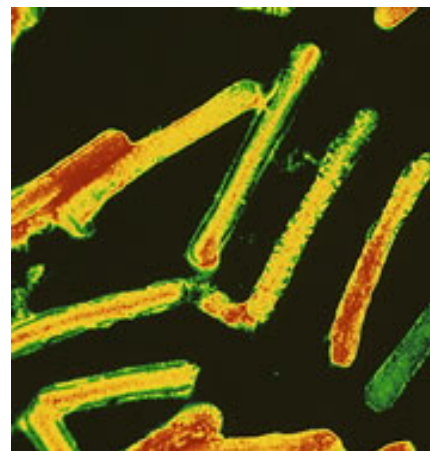


# Agenda

- **Definitions of agent and weapon**
- **The historical perspective**
- **Weapons and agents**
- **The threat**
- **The effectors in bioterrorism**
- **The risk and the challenges**

# Definitions

- **Biological agent:** microorganism that causes disease in man, plant or animals...
- **Biological weapon:** an item of materiel which projects, dispenses or disseminates a biological agent, including arthropod vectors
- **Biological operation:** the use of BW in a military setting



# History

- **Use of empirical knowledge to spread plague and smallpox**
- **Bacteriological sabotage with simple agent preparations during WW I**
- **Japanese, Soviet, US and UK biological weapons programmes for WW II**
- **Bioweapons as WMD during the Cold War**
- **Continued programmes in some countries in contravention of BTWC?**

# Bioagents into bioweapons

- **Bacillus anthracis with spores is top choice**
- **Botulinum toxin is second**
- **Smallpox, plague, Brucellosis, Rickettsial and viral agents, enterotoxins and others in arsenals**
- **Extensive and expensive research and development into virulence, stability, dissemination, viability and predictability**
- **Copied by some nations**
- **The poor man's nuclear weapon?**

# Bioagents for terrorism

- **Terrorism: an act designed to create terror**
  - **Method, not ideology**
  - **Tool in which the promise or threat of violence to create a fearful state of mind in a wide audience is central**
  - **Seemingly indiscriminate targeting**
- **Complete bioweapons difficult and unnecessary to achieve bioterrorism objectives**
  - **Use of bioagent with a less defined effect may satisfy definition of tool as long as it causes some disease and death and is attributable**

# Bioterrorism – the threat

- **The object of bioterrorism is to cause fear of death and disease**
- **Producing a viable and effective bioagent is demanding both scientifically and in terms of time and facilities**
- **Terrorist networks lack the stable environment both geographically and in terms of personnel necessary to be able to develop advanced bioagents for use in terrorism**
- **Terrorist networks like Al Qaida have stated a willingness to use bioagents**
- **Known and widely found bioweapon agents are a probable threat**

# Effectors

- **The best-known and most effective agent would seem to be *Bacillus anthracis*, the cause of anthrax**
  - familiar from bioweapons programmes
  - has caused disease and panic in earlier outbreaks
  - ubiquitous
  - fairly easy to isolate and grow in sufficient quantities
- **Botulinum toxin would be a goal**
  - “Most toxic substance known to man”
  - Appears in the most unexpected places as food-poisoning
  - Attractive, but very difficult to isolate, and could be blamed on natural causes





# Effectors (2)

- **Smallpox: difficult to acquire, very difficult to handle, single use only**
- **Salmonellae: not credible, far too common to cause sensation and rarely lethal enough**
- **Plague: easily acquired, difficult to grow and handle, low efficiency in outbreak would make effect questionable**
- **Viral haemorrhagic fevers: difficult to grow and difficult to use, but could be effective if technical hurdles are overcome**

# Risk is the product of probability and consequence



- A large-scale terrorist attack with an effective agent like smallpox is highly improbable
- A small-scale incident with an accessible bioagent and with limited distribution is more probable
- Higher risk is a small incident with attributable and familiar but rare agent
  - *Bacillus anthracis* is still the agent of choice
  - low number of actual cases
  - large psychological impact
  - may progress far before discovery due to lack of syndromic surveillance
- Highest risk is a natural outbreak of re-emerging disease

# Challenges

- **Syndrome and disease surveillance**
- **Recognition of new or rare syndromes or symptoms**
- **Improved interaction between health services and police**
  - **Police insight into medical findings**
  - **Medical insight into intelligence on terrorism**
- **Preparedness and incident training**
- **Logistics**

# Concluding remarks

- **There is a significant risk associated with bioterrorism (small-scale incident)**
- **Anthrax is still an effective agent, and difficult both to handle and treat**
- **Disease and syndromic surveillance is vital in combating all disease, not just bioterrorism**
- **Main focus is on Al Qaida, an organisation with little strength on the biomedical side.**
  - **Who else is out there?**