

# Assimilation of BW through State Offensive Programmes

## Lecture No. 6

# 1.Outline

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# 2.The CBW Prohibition

- Given the growth in molecular biology chemistry and biology are increasingly one subject
- Yet historically the prohibition of CBW has evolved through the 1925 Geneva Protocol on non-use being supported by two Conventions – the 1975 Biological and Toxin Weapons Convention (BTWC) and the 1997 Chemical Weapons Convention (CWC)
- These three international agreements are supported by a range of other policies such as export controls in what is called a ‘Web of Prevention’, but the international prohibition is not secure as there are weaknesses in the international agreements, particularly in the BTWC

# 3.Threats to the Prohibition Regime (i)

- Before World War I
  - “Armaments for what we would nowadays recognise as chemical warfare (CW) was under study in several countries prior to 1914, among them Britain, Germany and Japan. This early research appears to have been a low-key affair, driven more by general growth of industrial chemistry than by perceptions of military need: and such weapons as were designed aroused little military interest.”

# 4.Threats to the Prohibition Regime (ii)

- After World War I
  - “By mid-1918 a million people had become casualties of CW armament, and there were artillery units on both sides of the Western Front that were firing as much poison-gas shell as high explosive. CW weapons were starting to become what are today called ‘conventional’. They were being integrated into the prevailing doctrine, organisation and day-to-day routines of armed forces. They were now, in other words, firmly caught up in that process of ‘assimilation’ which is discernible in the history of most technologies, civil as well as military.”

# 5. Threats to the Prohibition Regime (iii)

- After World War II
  - “Thus the straightforward answers to our three questions\* are not in dispute. The major states that ended on the winning side after World War II had developed BW programs because such weapons were seen to be potentially important militarily for retaliation in kind, and they continued or restarted them for the same reason. The two states [South Africa and Iraq] definitely known to have begun offensive programs later in the century also had military reasons for their programs...”

# 6. Threats to the Prohibition Regime (iv)

- Considerations in the CWC negotiations
  - “The draft treaty...was a delicate structure in which compromises - on six central matters: the scope of obligations, verification of compliance...were balanced against one another...”
  - “...Potential parties were, in effect, being invited to decide... whether they would be better off inside that package of compromises than outside it...”

# 7. Threats to the Prohibition Regime (v)

- “...Any development or change that causes a state to question its continuing adherence to the CWC would be a challenge to the treaty. If major or many states were to start such questioning, the challenge would be serious....For each state party the constant question would be whether benefits flowing from the CWC regime continued to outweigh the attendant costs and to compensate for any penalties there might be to national interest: are we still better off inside the regime or outside it?”



# 8. Threats to the Prohibition Regime (vi)

- Significant threat list
  - New utilities for chemical weapons
    - Change in the nature of warfare
    - New knowledge in the life sciences
    - New weapons for counterterrorism
  - Proliferation of chemical weapons
  - Accommodation of national interests
  - Pernicious ignorance
  - Creeping legitimization

# 9.Threats to the Prohibition Regime (vii)

- General Rupert Smith's view of modern war
  - “The ends for which we fight are changing from the hard absolute objectives of interstate industrial war
  - We fight amongst the people
  - Our conflicts tend to be timeless
  - We fight so as not to lose the force
  - One each occasion new uses are found for old weapons...since the tools of industrial war are often irrelevant to war amongst the people
  - The sides are mostly non-state...”

# 10. Threats to the Prohibition Regime (viii)

- “...Conflicts these past two decades in the Balkans, the Caucasus, the Horn of Africa, Rwanda, Liberia, Sierra Leone, Angola, Sri Lanka, Afghanistan and post-invasion Iraq have eroded formerly clear distinctions between war, organised crime and large-scale erosion of human rights. These wars are fought by seeking political control through the displacement, or worse, of civilian populations and sowing the seeds of fear and hatred. Because chemical weapons can lend themselves particularly effectively to such objectives, they may conceivably have a greater affinity to the new wars than they did to the old. So notwithstanding the CWC, the weapons could have an expanding future...”

# 11. Threats to the Prohibition Regime (ix)

- “A second major source of new utility for chemical weapons is the propensity of knowledge newly gained in the life sciences to suggest novel modes of attack that could be the basis for militarily or politically attractive new forms of weapon. For example, if a new molecule is discovered that can exert novel disabling effects on the human body at low dosage, attempts to weaponize it may well ensue....The prospect is not necessarily remote...”

# 12. Assimilation in State Programmes (i)

- “Traditional BW agents are all naturally occurring organisms or their toxic products. From the perspective of a biological warfare scientist, traditional BW agents have serendipitously evolved a select group of traits: toxicity, stability, and ease of production....that aided researchers in choosing select organisms [but] also limited BW applications to the characteristics of available agents.”

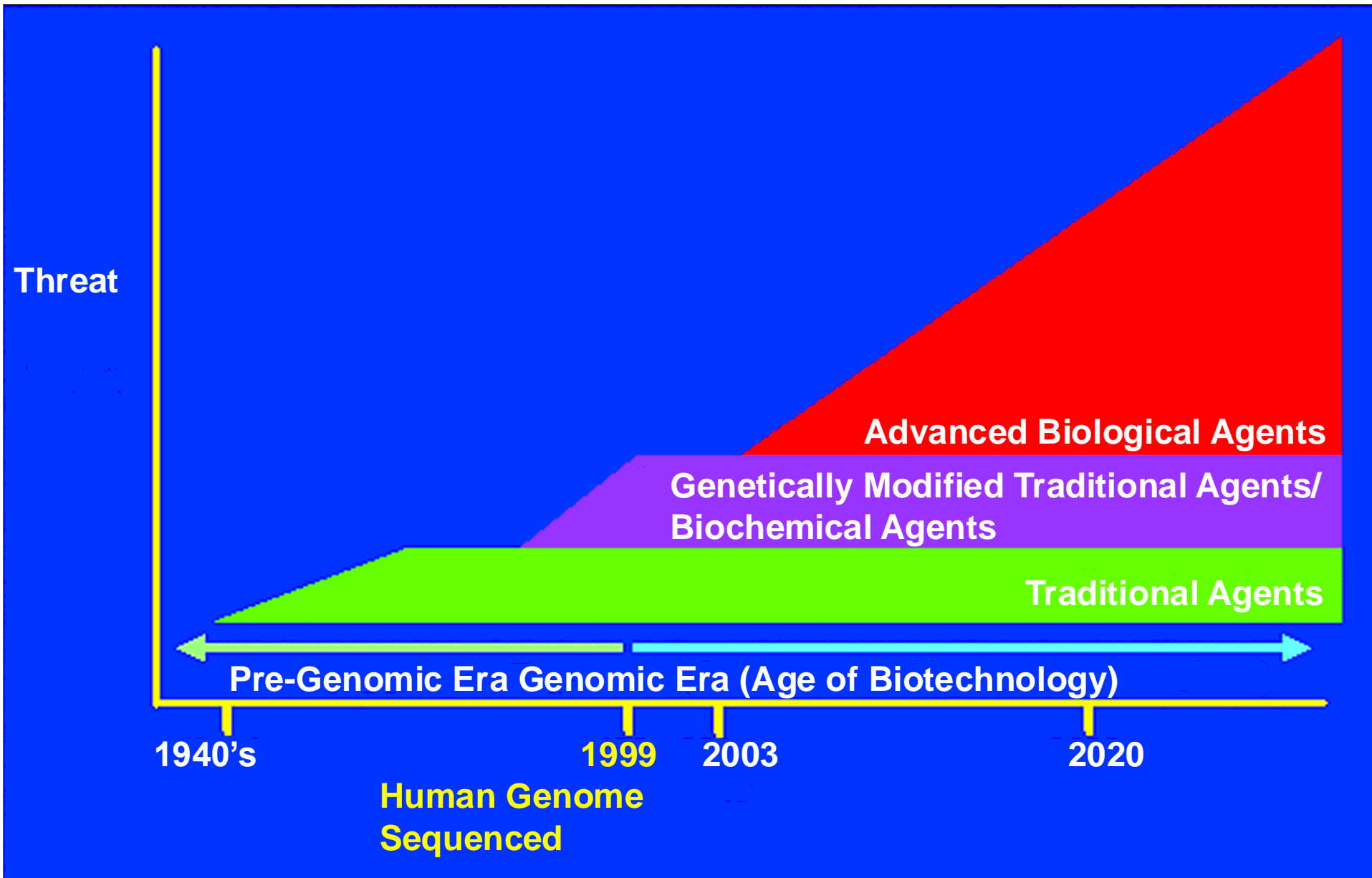
# 13. Assimilation into State Programmes (ii)

- “With the advent of recombinant DNA technology, researchers have developed standard methodologies for altering an organism’s genetic makeup. Application of this technology to enhance traditional biological warfare agents has led to the classification of genetically modified BW agents...Examples...include antibiotic resistance, increased aerosol stability, or heightened pathogenesis..”

# 14. Assimilation into State Programmes (iii)

- “Emerging biotechnologies likely will lead to a paradigm shift in BW agent development; future biological agents could be rationally engineered to target specific human biological systems at the molecular level. This is a departure from the traditional model of BW agent development, which is focused on the naturally occurring agent, not the target organism.”

# 15. Assimilation in State Programmes (iv)





# 16. Assimilation in State Programmes (v)

- Stages in the development of an offensive programme part (i)
  - “1. Establishment of one or more facilities and associated personnel with organisational and physical provisions for the conduct of work in secret;
  - 2. Research on microbial pathogens and toxins, including the isolation or procurement of virulent or drug-resistant strains;
  - 3. Pilot production of small quantities of agent in flasks or small fermenter systems;
  - 4. Characterization and military assessment of the agent, including its stability, infectivity, course of infection, dosage, and the feasibility of aerosol dissemination;
  - 5. Research, design, development, and testing of munitions and/or other dissemination equipment;
  - 6. Scale-up production of agent (possibly in several stages) and freeze-drying;”

# 17. Assimilation in State Programmes (vi)

- Stages in the development of an offensive programme part (ii)
  - “7. Stabilization of agent (e.g. through microencapsulation) and loading into spray tanks, munitions, or other delivery systems; and
  - 8. Stockpiling of filled or unfilled munitions and delivery vehicles, possibly accompanied by troop training, exercises, and doctrinal development”

# 18. Bioterrorism (i)

- Aum Shinrikyo and CBW
  - In 1995 a Japanese religious sect – Aum Shinrikyo – attacked the Tokyo subway system with *Sarin* gas killing 12 people and injuring approximately 1,000.
  - Aum had attempted to use biological weapons including *Anthrax and Botulinum Toxin* from 1990 to 1995, although the attempts failed due to technical inadequacies
  - A domestic law implementing the BTWC was enhanced to deal with bio crimes in Japan in 2001. However, difficulties to deal with bioterrorism still remain.

# 19. Bioterrorism (ii)

- *Salmonellosis* in Oregon
  - “This outbreak of salmonellosis, affecting at least 751 persons, was caused by intentional contamination of restaurant salad bars by members of a religious commune. It was the largest outbreak of foodborne disease...in the United States in 1984.
  - The source of the outbreak strain of *S. Typhimurium* was finally identified in October 1985. During a search by law enforcement agents, an Oregon Public Health Laboratory official found an open vial of commercial stock culture disks containing *S. Typhimurium* in a clinical laboratory operated by the religious commune...”

# 20. Bioterrorism (iii)

- A terrorist campaign
  - “...Attackers who use biological weapons probably can avoid prompt detection and stockpile or replenish resources that permit repeated attack. Making a gram of readily aerosolized anthrax spores in a weaponized 1-to-5 micron range is a technical challenge, but, once production is accomplished, it is a much lesser challenge to make 1 kilogram...”
  - “...Biological terrorism affords the possibility of repeated attack, undermining confidence and forcing ever-escalating investments of resources to achieve a modicum of defense...”

# Sample Questions

- 1. What is meant by the concept of the “assimilation” of a technology? How has that concept been applied to chemical and biological warfare?**
- 2. What is your assessment of the view that the nature of modern warfare is changing in ways that would increase the perceived utility of chemical and biological weapons?**
- 3. Outline the view put forward by Pero et al., of the possible impact of biotechnology in future biowarfare and biodefence. What is your assessment of their view?**
- 4. What would be the difficulties to effectively deal with BW-terrorism by the domestic application of the BTWC of 1972? Discuss the case of Aum Shinrikyo.**

# References

**(Slide 2)**

**International Committee of the Red Cross (2003)**  
***Biotechnology, Weapons and Humanity***. [cited 6  
November 2008]. Available from  
<http://www.icrc.org/Web/Eng/siteeng0.nsf/htmlall/bwh?OpenDocument>

**(Slide 3-4)**

**Perry Robinson, J.P. (1989) Supply, Demand and  
Assimilation in Chemical-Warfare Armament. In  
H.G.Brauch (Ed.) *Military Technology, Armaments  
Dynamics and Disarmament*. St. Martin's Press, New  
York. Available from [http://www.afes-  
pressbooks.de/html/hgb\\_books\\_15.htm](http://www.afes-pressbooks.de/html/hgb_books_15.htm)**

**(Slide 5)**

**Mark Wheelis, M., Rózsa, L., and Dando, M. R. (2006)  
*Deadly Cultures: Biological Weapons since 1945*,  
Massachusetts: Harvard University Press**

**(Slide 6-11)**

**Robinson, J. P. (2008) 'Difficulties Facing the Chemical  
Weapons Convention', *International Affairs*, 84 (2),  
223–239. Available from  
<http://www.wiley.com/bw/journal.asp?ref=0020-5850>**

**(Slide 9)**

**Smith, R. (2005) book *The Utility of Force: The Art of  
War in the Modern World*. New York: Penguin.**



**(Slide 12-15)**

**Petro, J. B., Plasse, T. R., and McNulty, J. A. (2003)**  
**'Biotechnology: Impact on Biological Warfare and**  
**Biodefense', *BioSecurity and Bioterrorism: Biodefense***  
***Strategy, Practice, and Science* 1(3), pp. 161-168.**  
**Available from**  
**[http://www.liebertonline.com/doi/abs/10.1089/1538713037](http://www.liebertonline.com/doi/abs/10.1089/153871303769201815)**  
**[69201815](http://www.liebertonline.com/doi/abs/10.1089/153871303769201815)**

**(Slide 16-17)**

**Office of Technology Assessment. (1993). *Technologies***  
***underlying Weapons of Mass Destruction* (Document No.**  
**OTA-BP-ISC-115). Washington, DC: U.S. Government**  
**Printing Office**

**(Slide 18)**

**Sugishima, M. (2003) Aum Shinrikyo and the Japanese Law**  
**on Bioterrorism *Prehospital and Disaster Medicine*, 18(3),**  
**179–183. Available from <http://pdm.medicine.wisc.edu/>**

**(Slide 19)**

**Török, T. J., Tauxe, R. V., Wise, R. P., Livengood, J. R., Sokolow, R., Mauvais, S., Birkness, K. A., Skeels, M. R., Horan, J. M., and Foster, L. R. (1997) 'A Large Community Outbreak of Salmonellosis caused by Intentional Contamination of Restaurant Salad Bars', *JAMA*, 278(5). pp. 389-95. Available from <http://www.ncbi.nlm.nih.gov/pubmed/9244330>**

**(Slide 20)**

**Danzig, R. (2003) *Catastrophic Bioterrorism – What is to be done?*, Washington, D.C.: Center for Technology and National Security Policy. Available from <http://www.ndu.edu/CTNSP/catastrophic%20bioterror.htm> at p. 2.**