

Controlling chemical and biological weapons

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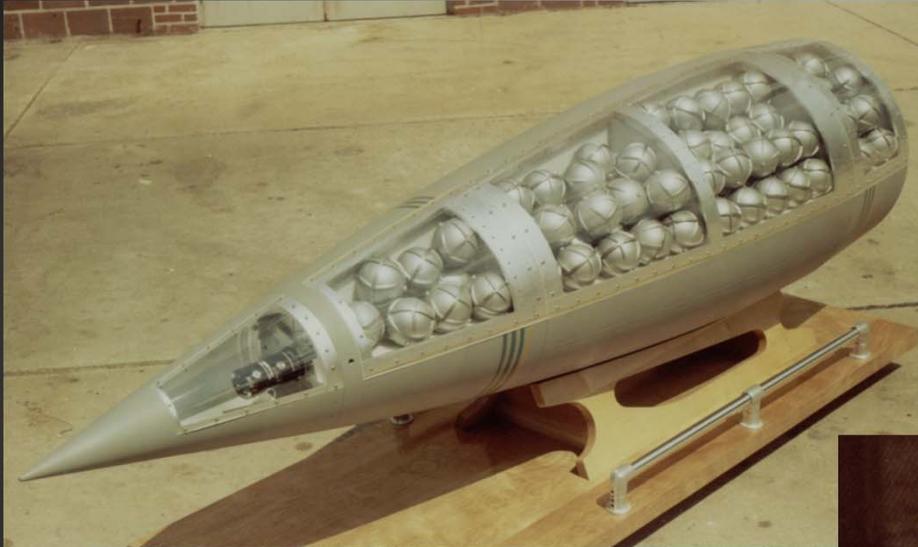
What is chemical warfare?

Intentional application for hostile purposes of toxic substances against humans and their environment

- *Blood agents*: prevention of oxygen transfer to tissues (e.g., phosgene)
- *Choking agents*: interfere with breathing (e.g., chlorine)
- *Nerve agents*: attack the central nervous system (e.g., sarin)
- *Vesicants*: produce blisters (e.g., mustard agents)

- *Incapacitating agents*: induce temporary physical disability or mental disorientation (e.g., LSD, BZ)
- *Irritating agents*: induce temporary irritation (e.g., tear gas)
- *Anti-plant agents*: herbicides, growth inhibitors, etc.

Chemical warfare



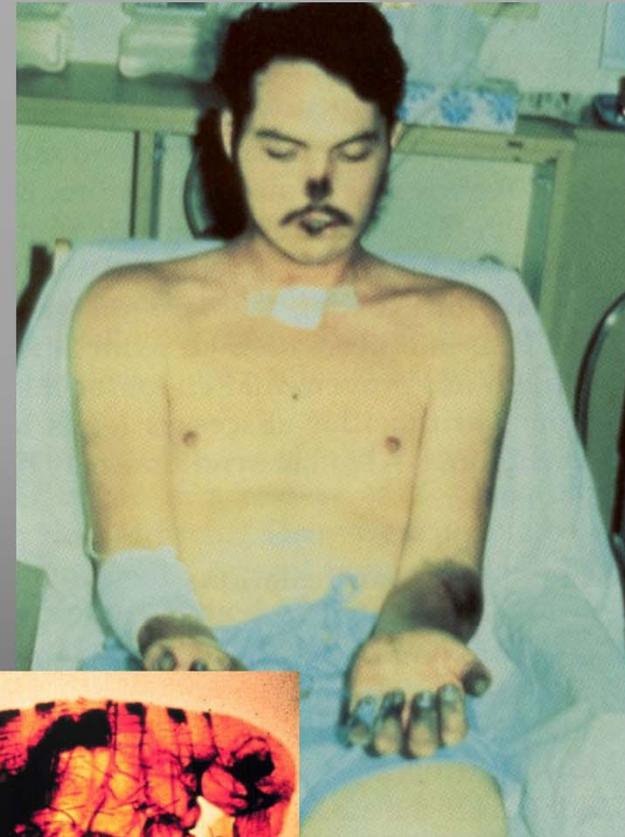
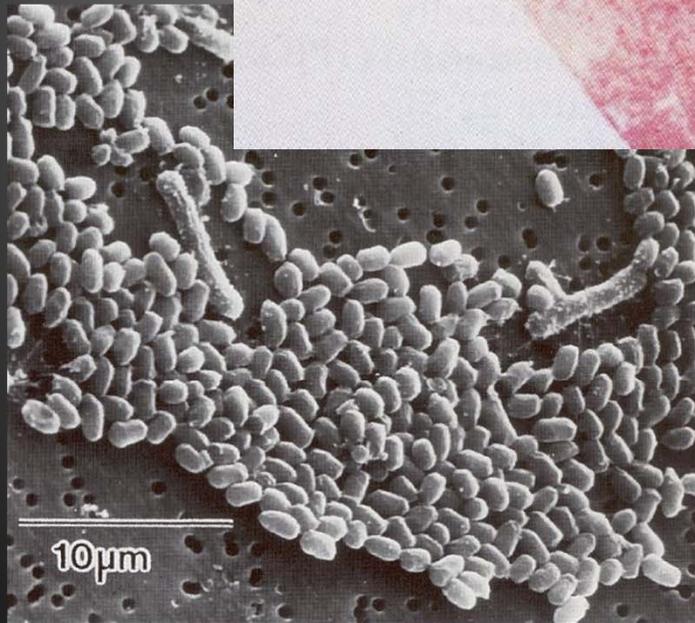
What is biological warfare?

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)

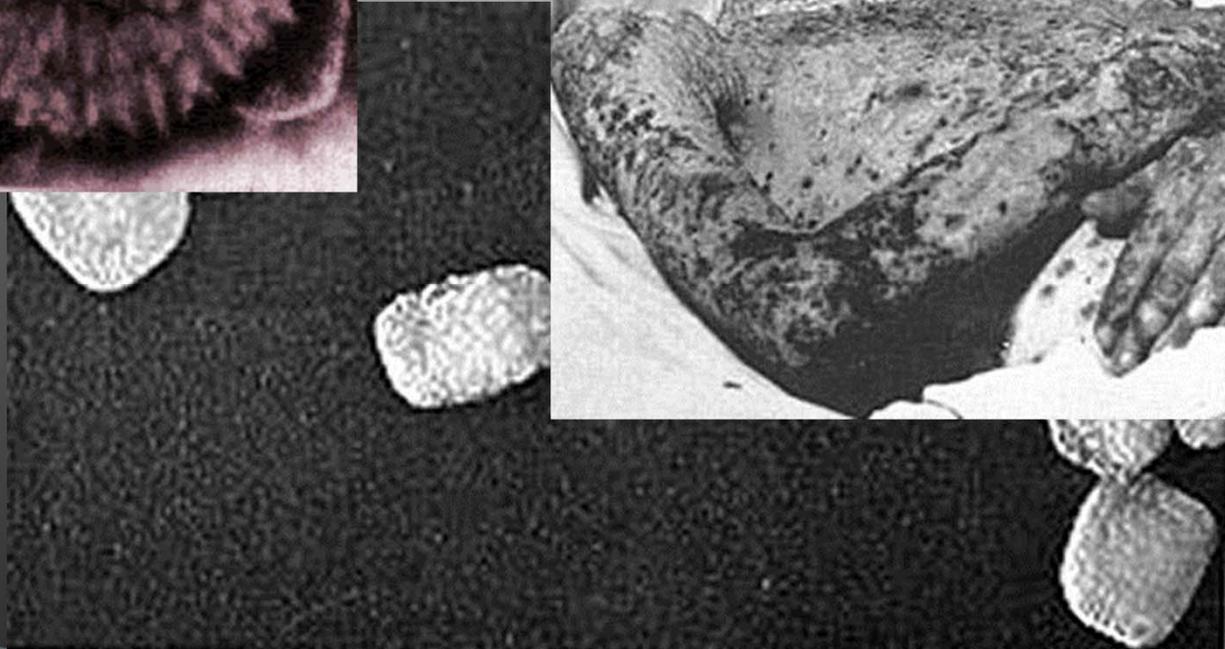
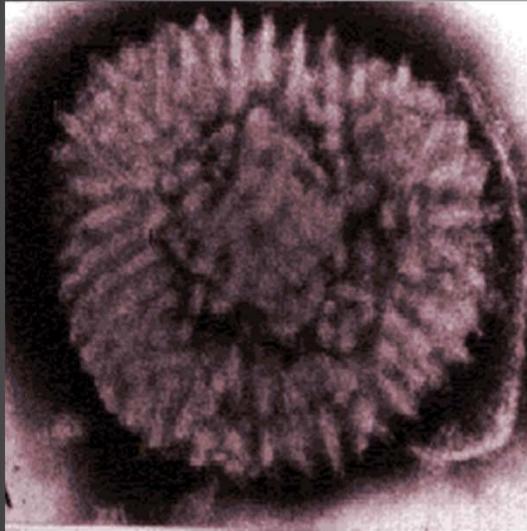
Visions of Biological Warfare

Anthrax



Plague

Visions of Biological Warfare — 2



Smallpox

The CBW threat

- ▶ War scenarios
- ▶ Terrorism
- ▶ Criminal acts

- ▶ Each will consider and have the availability of different CB agents, with different degrees of pathogenicity or toxicity
 - Depends on *intent*
 - Depends on *availability*
 - Depends on *technical skills* and *structure* of the organization

The CBW threat spectrum

- ▶ **Against humans**
 - Potential for mass casualties exists
 - Not necessarily most likely scenario: agents difficult to acquire
- ▶ **Against animals and plants**
 - Economic impact
 - Agents easier to acquire; less of a risk to perpetrator
- ▶ **Economic and societal disruption**
 - Wider range of CB agents available
 - Exploitation of fear and lack of adequate preparations
 - Effectiveness of hoaxes

Alternative use of CB 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 specialization

▶ 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 CB agents available
 - Several can be commercially obtained
- Exploitation of fear and lack of adequate preparations
- Effectiveness of hoaxes

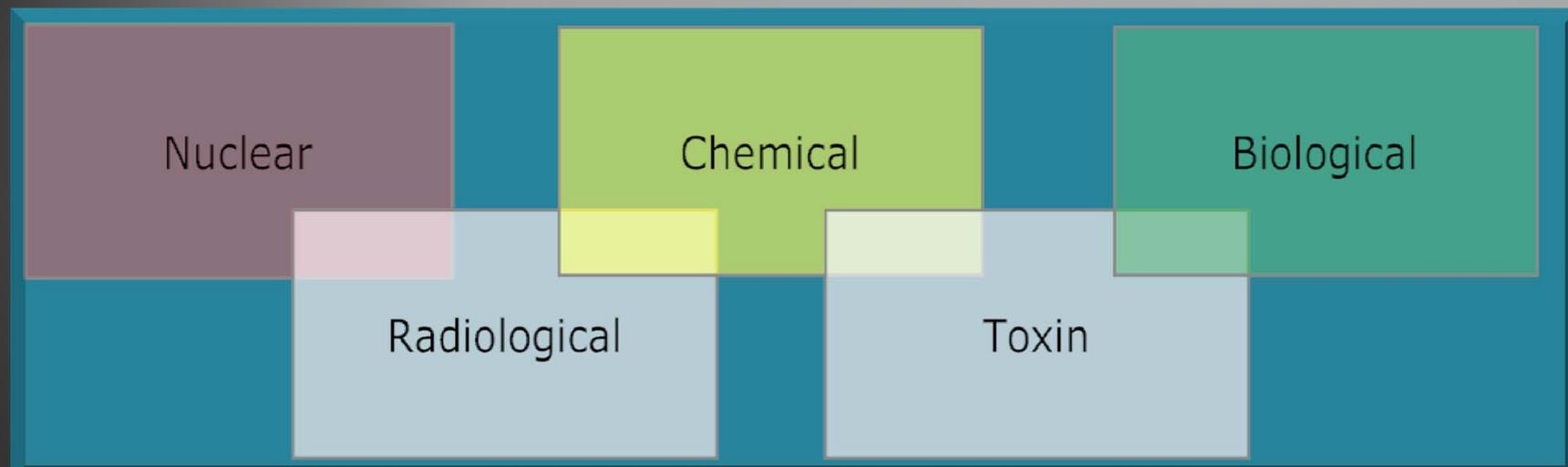
Principal cases of CB terrorism

- ▶ **1984 (USA): Rajneesh cult**
 - Goal: influence local elections
 - Use of salmonella (food poisoning)
 - Over 750 people incapacitated
 - Solution poured over food in salad bars
 - Outcome: failure
 - test run
 - attack on eve of elections did not take place
 - Cult basically dissolved

- ▶ **1990–95 (Japan): Aum Shinrikyo**
 - Goal: Take over government of Japan
 - Development of wide array of weaponry + large military force
 - CB agents intended to destabilize society (provocation of Armageddon)
 - Major CB research, development and production programme
 - Sarin attacks in Matsumoto (1994) and Tokyo (1995); assassination attempts with VX
 - Matsumoto: 7 fatalities; about 600 injured
 - Tokyo: 13 fatalities; 5500 other casualties (a large majority psychological distress)
 - Outcome: failure
 - Strategic goals never attained
 - Both sarin attacks were tactical operations to thwart threats against cult
 - Biological weapon programme never produced a usable agent, even on research level
 - Cult dismantled; leaders arrested and tried

- ▶ **2001 (USA): mail-delivered anthrax spores**
 - Perpetrator presumed, but still uncertain; agent from US bio-defence laboratory
 - Goal: unknown, speculation about boost to US bio-defence programmes in wake of Al Qaeda strikes against USA
 - Use of small amount of anthrax spores (sophisticated preparation)
 - 22 casualties, including 5 fatalities
 - Outcome:
 - Targeted members of media and Congress escaped unhurt
 - Mass hysteria in the USA
 - Anthrax spores ended up in mail in Europe and Asia

Non-conventional weapon categories



Legal Status of NBC Weapons

Prohibition	BW	CW	NW
on Use			
on Possession			 

Main prohibitions against CBW

- ▶ **1925 Geneva Protocol**
 - Prohibits the use in war of CBW
- ▶ **1972 Biological and Toxin Weapons Convention (BTWC)**
 - Comprehensive ban on development, production and possession of BW
 - 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 CW

International treaties against CBW

- ▶ **The BTWC and CWC are constructed differently**
 - Presence or absence of verification regime
 - Mechanisms to address compliance concerns and restore compliance, if necessary
- ▶ **Ability of treaties to react to changes in security environment or technological developments**
 - Review conferences
 - Nature of treaty may change fundamentally
 - Ability to modify treaties
- ▶ **Importance of national implementation**

Disarmament / Non-proliferation paradigm shift — 1

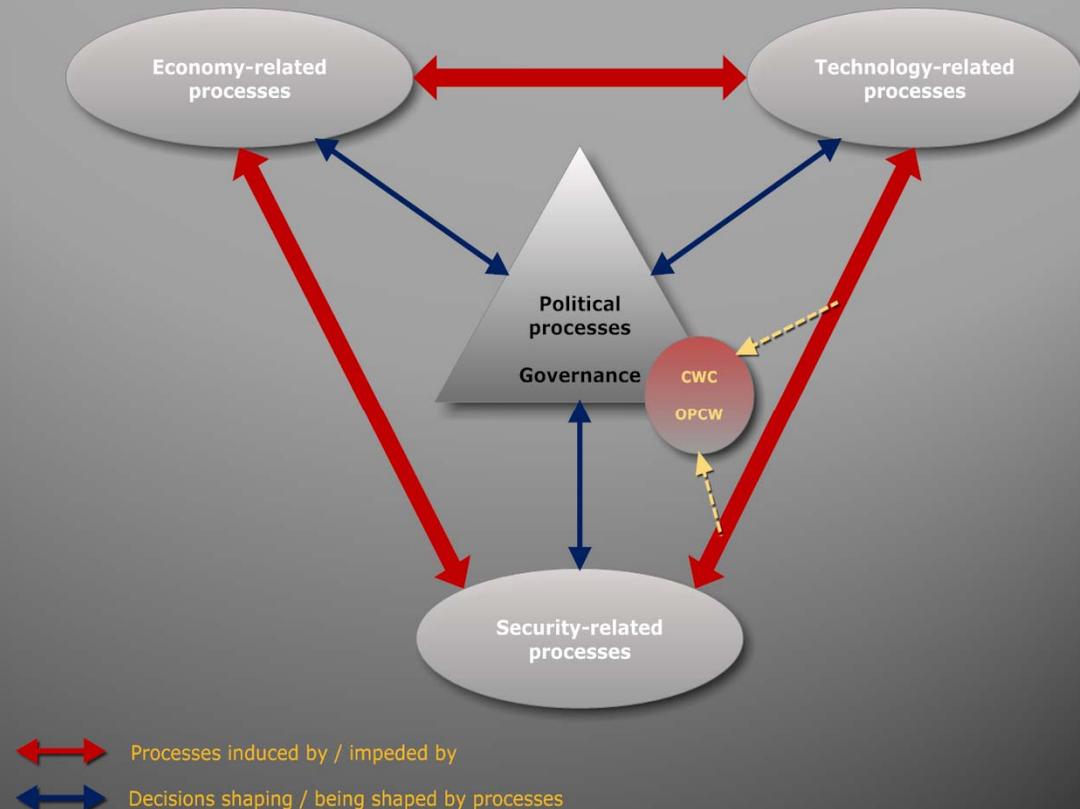
- ▶ Focus shift from weapon elimination to prevention of capability building
 - Impact on BTWC (Protocol) and CWC
 - Technology itself becomes central concern
- ▶ ‘Proliferation’ redefines the threat in function of the dominant power
 - Lack of consensus over threat evaluation
 - Lack of consensus over measures to address threat
 - Tendency to move to national/plurilateral rather than multilateral measures

Disarmament / Non-proliferation paradigm shift — 2

- ▶ **Objective goals vs. Subjective goals**
 - Disarmament: goals specified in treaty and apply equally to all parties
 - Non-proliferation: Different approaches to different countries based on subjective judgment of intent
- ▶ **Non-proliferation: CBW threat can never disappear**
 - Resolution of one proliferation threat does not affect other ones
 - Even if all resolved today, there is tomorrow's threat

Future challenges: Moving to a polycentric world order

- No unified model for governance of weapon control anymore
- States do not drive the processes anymore; they can steer in a limited way
- New stakeholders and security actors (dual-use technologies)
- Increased role of non-state national & transnational actors
- Declining role of states in shaping developments
- Shifting relative balances of powers (economy, politics, military) and multiple power centres
- Geographical decentralisation of business and industry activities
- South-south trade patterns and impact on technology diffusion
- Etc.



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