

CBRN Agents

Core Concepts

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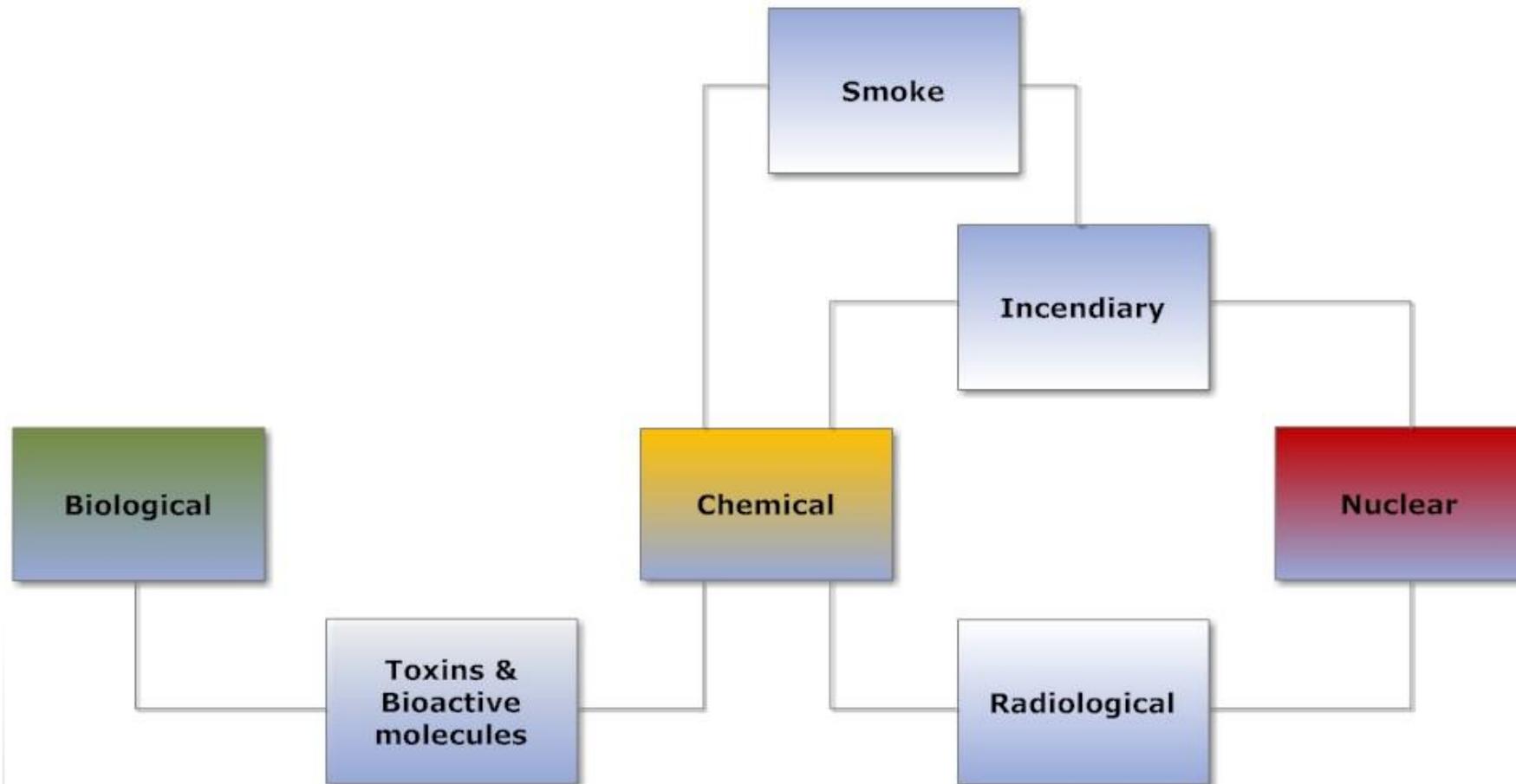
WMD

- What is the definition of a 'WMD'?
- I did not ask for an enumeration, so what is the definition of a 'WMD'?
- Does 'WMD' pose a challenge to your activities? Why / Why not?
- How does 'WMD' pose a challenge to your activities?

Core points to retain

- 'WMD' habitually comprises 4 distinct weapon categories
 - Chemical weapons
 - Biological weapons
 - Radiological weapons
 - Nuclear weapons
- 'WMD' has no internationally accepted legal definition
 - Each weapon category falls under a different (type of) legal regime
 - The respective legal regimes determine the *formal scope* of the weapon category
 - CW and BW formally defined in treaties (CWC; BTWC)
 - RW and NW lack universally accepted legal definitions

The CBRN spectrum



Understanding the spectrum – 1

- **Chemical weapons**
 - Ranges from irritants (e.g. lachrymatory agent) and incapacitants (e.g. BZ & fentanyl) to the most toxic nerve agents (e.g. sarin & VX) or toxins (e.g. ricin & saxitoxin)
 - Core aspects of the CW definition in *Chemical Weapons Convention*:
 - Any toxic chemical which through its chemical action on life processes can cause death, temporary incapacitation or permanent harm to humans or animals (Plants not mentioned!)
 - Also covers precursors to such toxic chemicals
 - Delivery systems and specialised equipment
 - CWC definition is based on the *General Purpose Criterion*
 - Covers past, present *and* future toxic substances
 - Does not distinguish methods of synthesis or whether an agent may be naturally occurring
- **Biological weapons**
 - Ranges from incapacitating agents (e.g. salmonella) to lethal ones (e.g. anthrax bacteria or smallpox virus) or toxins (= overlap with CWC)
 - Core aspects of the BW definition in *Biological and Toxin Weapons Convention*:
 - Microbial or other biological agents, or toxins (human, animal and plants)
 - Weapons, equipment or means of delivery
 - Understanding evolves through common understandings reached at 5-yearly Review Conferences (e.g. inclusion of subcellular particles and bioactive molecules)
 - BTWC definition is based on the *General Purpose Criterion*
 - Does not distinguish between origin or method of production
 - Covers any relevant development in synthetic biology, genetic engineering, etc.

Understanding the spectrum – 2

- **Radiological weapons**
 - Ranges from radioactive offal from hospitals or radiological centres to materials from the core of nuclear reactors
 - No formal international legal definition; there may be definitions of radioactive materials in national (criminal, environmental, health, etc.) law
 - With a few exceptions, RW were never really considered as a military tool
 - Impact of terrorist action with RW is seen as limited, even though one cannot ignore psychological or economic consequences
 - Decontamination would be complex and potentially costly (also in view of public concerns)
- **Nuclear weapons**
 - Ranges from portable nuclear demolition charges to the 50Mt Vanya hydrogen bomb (Tsar Bomba)
 - No universally accepted legal definition
 - Some definitions are included in regional *Nuclear Weapon-Free Zones* (but phrasing may differ)
 - Southeast Asia Nuclear Weapon-Free Zone Treaty and Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean define '*nuclear weapon*'
 - African Nuclear Weapon Free Zone Treaty and South Pacific Nuclear Free Zone Treaty define '*nuclear explosive device*'
 - Central Asian Nuclear-Weapon-Free Zone defines '*nuclear weapon or other nuclear explosive device*'
 - Legality of NW possession essentially regulated via *Nuclear Non-Proliferation Treaty*
 - Equipment and materials regulated via Safeguards Agreements administered by the *International Atomic Energy Agency* (different treaty from NPT) to ensure their application to peaceful purposes
 - Nuclear Weapon States as defined under the NPT have a different legal status from Non-nuclear Weapon States

The dual-use concept

- A *CBRN weapon* is a 'single-use' technology
 - It has no other purpose than being a weapon
- CBRN weapon *development* often rests on 'dual-use' technology
 - The core question is: *when is the 'single-use' stage reached* in weapon development?
 - For example:
 - *CWC* places certain toxic chemicals and their precursors in Schedule 1, meaning that they have *no other purpose than being a CW* (= single use)
 - But what about other precursor chemicals of past warfare agents such as chlorine and phosgene?
 - Would you consider the '*Novichock*' agent used in an assassination attempt in the UK as single or dual-use in view of its absence in Schedule 1?
 - In contrast, the *BTWC* faces the problem that BW is the only arms category in which the active ingredient can be used for *both attacking and defending* the target
 - Activities in BW defence, protection and prophylaxis are permitted, but hardly distinguishable from BW offence
 - Raises questions about activities that may inadvertently contribute to BW development in the present and the future
 - *RW*: when radioactive source is fixed to an explosive device or upon release?
 - *NW*: when enrichment of nuclear fuel exceeds 20%?

Contexts for 'dual-use' debate

- **Dual-use issues arise** when the attempts to control a particular technology confront the non-military commercial and scientific interests in such technology
- **Disarmament**
 - Total ban on development, production and possession of *a weapon* and preparations for *its* use in warfare (BTWC, CWC)
 - 'Dual-use' issue emerges when
 - Civilian facilities and installations need to be verified
 - Need to prevent the (inadvertent) assistance to development of banned weapon by another state or non-state entity
 - Ban of weapon (= single-use technology) is central; control of dual-use technology supports that central goal
- **Non-proliferation**
 - Control of access to technologies that may contribute to undesired weapon development in another state or non-state entity
 - Primary policy tool for weapon categories whose use in war or possession *have not been wholly delegitimised* (e.g., nuclear weapons, ballistic missiles)

How do these considerations affect your work?

- Consensus may exist about the prohibition of the weapon, but controversy exists about underlying technologies and processes because the final single-purpose phase in the weapon development process may be difficult to establish
- Different threat perceptions among relevant societal constituencies (military, politicians, scientists, industry, etc.) may lead to different assessments of risks, and therefore of responsibilities
- Limited awareness about potential contribution of their activities to future weapon development exists among scientists and industry representatives



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