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The US, Israel, the Arab States and a Nuclear Iran

Part Three: Iranian CBRN Options

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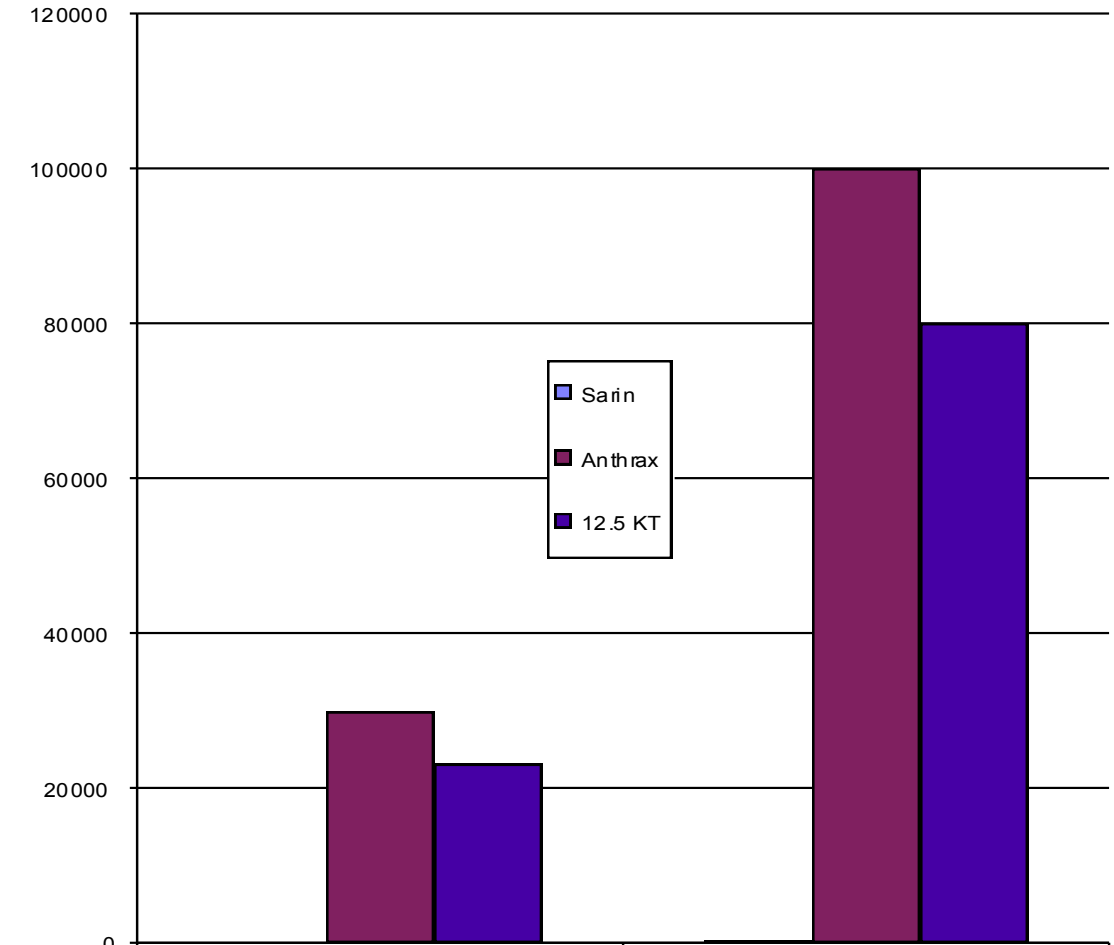
CBRN Prompt (48-hour) Killing Effect in an Urban Environment

The Relative Killing Effect of Chemical vs. Biological vs. Nuclear Weapons



	Low	High
Sarin	60	200
Anthrax	30000	100000
12.5 KT	23000	80000

Q_{50} for Some Types of BW - Open-Air Deployment

- **Plague (liquid): 3.5-4.5 liter/sq.km**
- **Tularemia (dry): 3.0-4.0 kg/sq.km**
- **Anthrax (dry, old version): 15-20 kg/sq.km**
- **Anthrax (dry, new version): 4.5-5.0 kg/sq.km**
- **Anthrax (liquid): 5.0-5.5 liter/sq.km**
- **Brucellosis (dry): 3.5-4.5 kg/sq.km**
- **Glanders/Melioidosis (liquid): 4.5-5.5 liter/sq.km**
- **Smallpox (liquid): 3.5-4.0 liter/sq.km**
- **Marburg (dry): less than 1.0 kg/sq.km**

New Types of Biological Weapons

- ***Binary biological weapons*** **that use two safe to handle elements that can be assembled before use. This could be a virus and helper virus like Hepatitis D or a bacterial virulence plasmid like E. coli, plague, Anthrax, and dysentery.**
- ***Designer genes and life forms*****, which could include synthetic genes and gene networks, synthetic viruses, and synthetic organisms. These weapons include DNA shuffling, synthetic forms of the flu – which killed more people in 1918 than died in all of World War I and which still kills about 30,000 Americans a year – and synthetic microorganisms.**
- ***"Gene therapy" weapons*** **that use transforming viruses or similar DNA vectors carrying Trojan horse genes (retrovirus, adenovirus, poxvirus, HSV-1). Such weapons can produce single individual (somatic cell) or inheritable (germline) changes. It can also remove immunities and wound healing capabilities.**
- ***Stealth viruses*** **can be transforming or conditionally inducible. They exploit the fact that humans normally carry a substantial viral load, and examples are the herpes virus, cytomegalovirus, Epstein-Barr, and SV40 contamination which are normally dormant or limited in infect but can be transformed into far more lethal diseases. They can be introduced over years and then used to blackmail a population.**
- ***Host-swapping diseases:*** **Viral parasites normally have narrow host ranges and develop an evolutionary equilibrium with their hosts. Disruption of this equilibrium normally produces no results, but it can be extremely lethal. Natural examples include AIDS, Hantavirus, Marburg, and Ebola. Tailoring the disruption for attack purposes can produce weapons that are extremely lethal and for which there is no treatment. A tailored disease like AIDS could combine serious initial lethality with crippling long-term effects lasting decades.**
- ***Designer diseases*** **involve using molecular biology to create the disease first and then constructing a pathogen to produce it. It could eliminate immunity, target normally dormant genes, or instruct cells to commit suicide. Apoptosis is programmed cell death, and specific apoptosis can be used to kill any mix of cells.**

Non-State Actor CBR(N?)

- **Independent, Proxy, False Flag, or Trigger Force?**
- **Access likely to be more critical in determining capability than ability to create own weapons, but highly lethal BW and genetic weapons may be becoming "off the shelf" option.**
- **Many of same twists as covert State Actor attacks:**
  - **Bypasses defenses.**
  - **Plausible deniability?**
  - **Exploits special vulnerability of "one bomb" states.**
  - **Psychological and political impacts as important as direct killing effects.**
  - **False flag and proxy options clear.**
  - **Buying time may limit risk of retaliation.**
  - **Allows to exploit "slow kill" nature of biological strikes. Achieve "line source" effects**
  - **Covert forces in place can restrike or escalate.**
- **Unclear Non-State Actors are deterrable by any form of retaliation.**

Source: Ken Alibeck

State Actor Covert Bioterrorism, Suitcase Nuclear

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- Plausible deniability?
- Exploits special vulnerability of "one bomb" states.
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Possible Terrorist/Covert/Irregular Deployment of Biological Weapons

- Use of infected vectors (mosquitoes, fleas, lice, etc.)
- Contamination of food and water supplies
- Contamination of various articles (letters, books, surfaces, etc.)
- Use of different aerosolizing devices and approaches to contaminate inner spaces of various buildings (line and point sources)
- Use of different aerosolizing devices and approaches for open-air dissemination (line and point sources)
- Inner- and outer-space explosive dissemination including suicide bombers
- Terrorist/Sabotage methods of infecting crops and livestock

Source: Ken Alibeck

WME: "Weapons of Mass Effectiveness"

- Theoretical possibility, give precision long-range strike capability.
- Target mix varies with attacker's motives.
- Broad possible target base in MENA area, varying sharply by country.
  - Desalination
  - Major power plants, nuclear power plants.
  - Water purification and distribution.
  - Refinery
  - High value, long-lead time oil, gas, and petrochemical facilities.
  - Ethnic and sectarian high value targets.
  - Leadership elite: Royal family, president, etc.