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CBRN
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EU CBRN Risk Mitigation Centres of Excellence

Biosafety and Biosecurity

Module 4, Part 2:

Acquiring a Biological Weapon Capability

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Biological Weapon System

- **Pathogen:** the active ingredient of the system
- **Formulation:** chemical mixed with pathogens; may be “wet” or “dry”
- **Munition:** protects the formulated pathogen during transport and storage.
- **Dispersal device:** usually sprayer or atomizer for creating aerosol

A pathogen by itself is not a weapon!





Requirements for Biological Weapons



Skilled
People



Dangerous
pathogens
or toxins



Dual-use
technologies



Biological Weapons



Elements of Capability

1. Expertise in applied microbiology
2. Facility for housing persons and equipment
3. Threat agent(s) for BW purpose
4. Equipment and supplies
5. Expertise relevant to effective dispersal





Skilled People (Expertise)

Rajneeshees Cult



Lowest skill level
Ma Anand Puja

al Qaeda



Middle skill level
Abdur Rauf

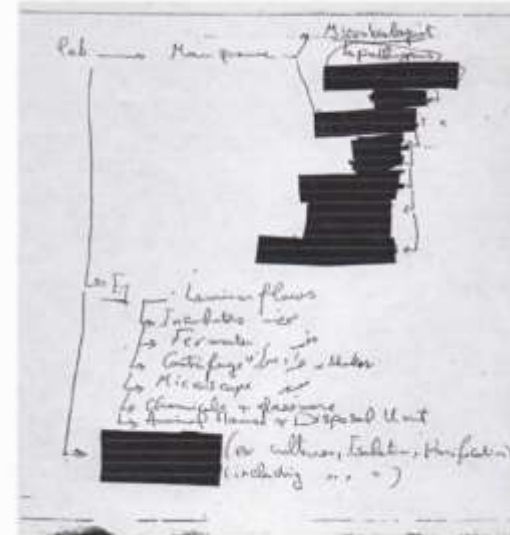
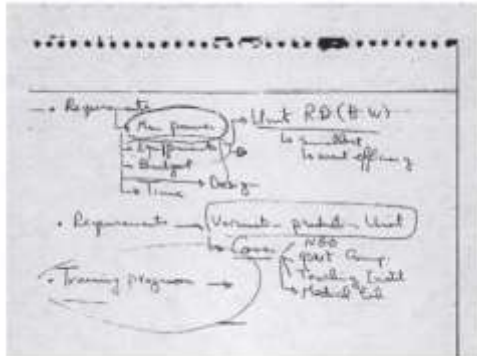
Soviet Union



High skill level
Gennady
Lepeshkin



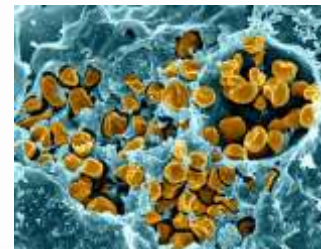
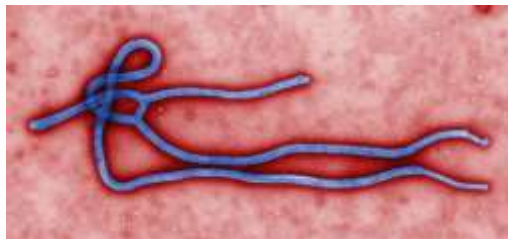
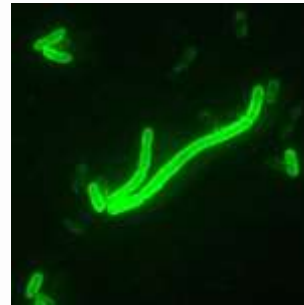
Case Study: Abdur Rauf, Al Qaeda Consultant





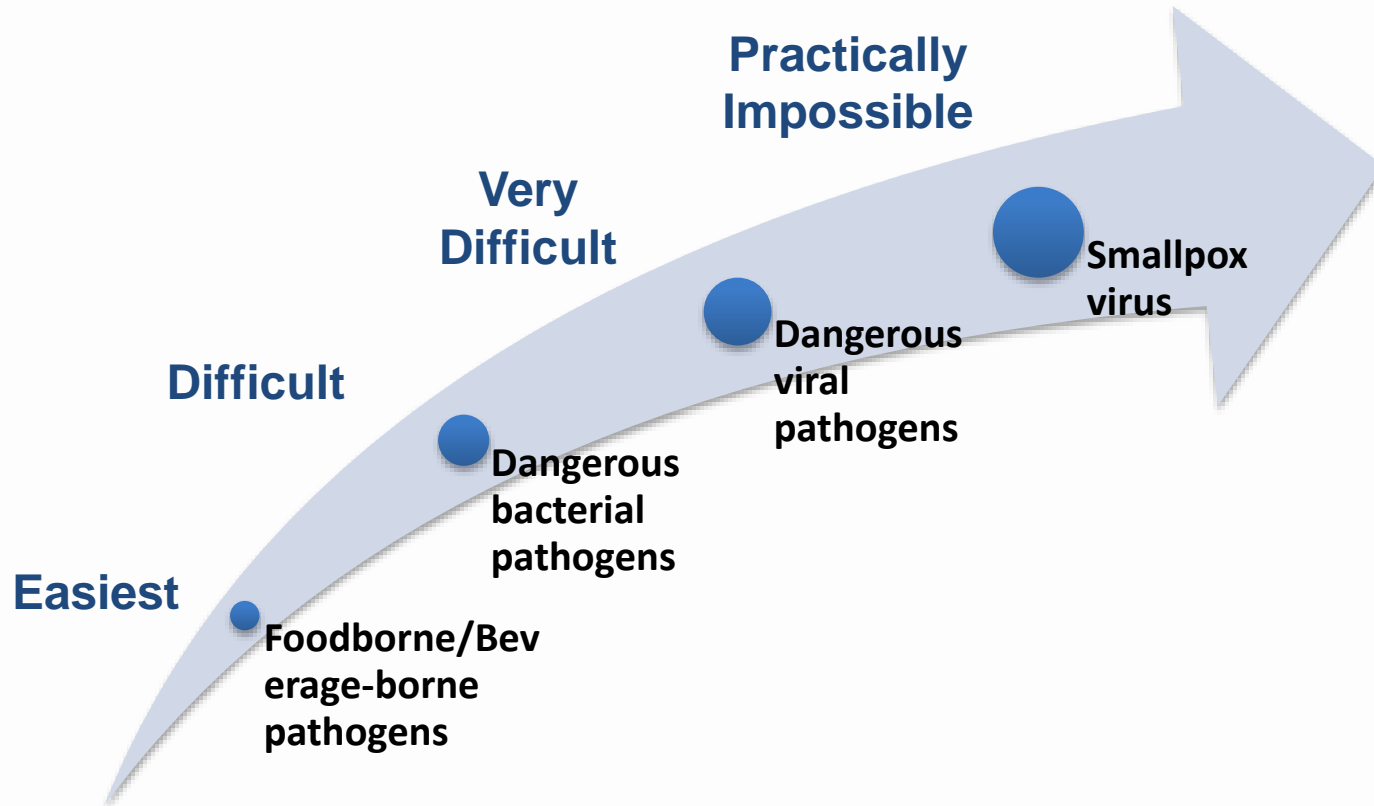
Main Biological Weapons Threat Agents

- *B. anthracis* (anthrax)
- *Y. pestis* (plague)
- *F. tularensis* (tularemia)
- Variola virus (smallpox)
- Hemorrhagic fever viruses (eg., ebolavirus, marburgvirus)
- Botulinum neurotoxin





Pathogen Availability to Terrorists





Potential Sources of Select Agents

- State BW or biodefense programs
- Natural sources
- Medicine/Bioscience
- Artificial/Synthetic Biology



Dual-Use Supplies & Equipment

- Substrates and agar
- Equipment such as incubators, small fermenters, centrifuges
- Personal protective equipment
- Dispersal devices





Low Capability Level Acquisition: Ricin

- Naturally-occurring toxin
- Castor beans easily obtainable
- Production information available on the Internet
- Crude powder from mashed castor beans
- No purifying for terrorist purposes





Low Capability Level Acquisition: Ricin



Castor beans - raw
material for ricin production



Low Capability Level Acquisition: Ricin



Home-made biosafety cabinet for producing ricin toxin from castor beans



Low Capability Level Acquisition: Ricin



Home-made biosafety cabinet showing castor beans mashed into a paste



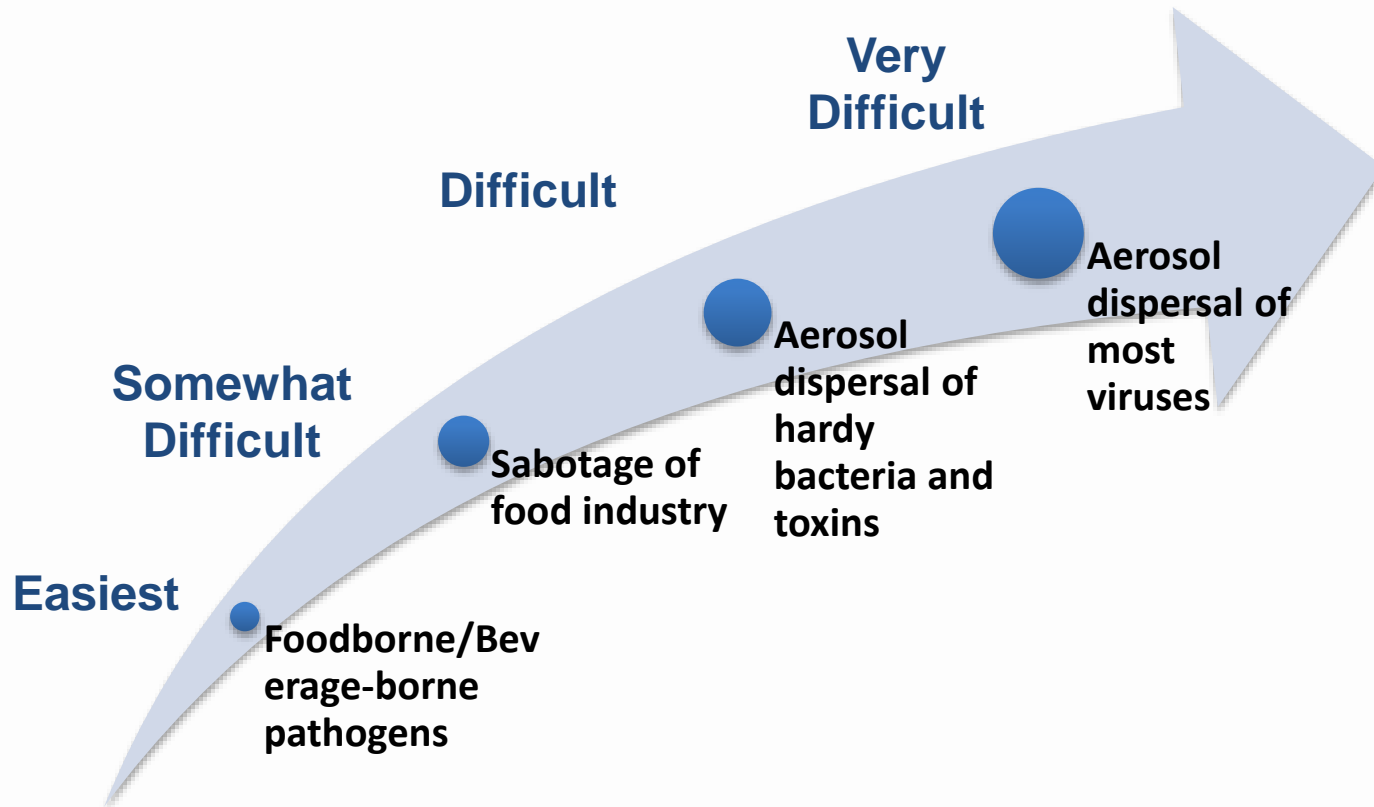
Low Capability Level Acquisition: Ricin



Ricin paste milled into a fine powder ideal for airborne dissemination



Dispersal Methods Available to Terrorists?



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