

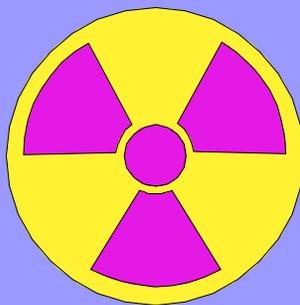


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INTRODUCTION TO CBRN MATERIALS AND BIOLOGICAL TERRORISM





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Is there a terrorist threat?

September 28, 2006

Iraq Al-Qaeda Leader Recruiting Scientists For Unconventional Weapons, 'Whether Biological Or Dirty'

Topics: [Iraq](#)

In what amounts to sobering reenforcement of [Fouad Ajami's comments](#) in his Opinion Journal piece today, in which he said that should "we pull up stakes from Baghdad - a terrible price would be paid for a hasty and unseemly withdrawal," we need only look to excerpts of [comments by Abu Ayyub al-Masri](#) - the leader of al-Qaida in Iraq, on an al-Qaeda website today:



[...] In a new audio message Thursday, the leader of al-Qaida in Iraq **called for explosives experts and nuclear scientists** to join his group's holy war against the West.

The speaker said "the field of jihad" could provide scientists with an avenue for experimentation.

"We are in dire need of you," he said. "The field of jihad (holy war) can satisfy your scientific ambitions, and the large American bases (in Iraq) are good places to test your **unconventional weapons, whether biological or dirty**, as they call them."



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What are CBRN(e) Materials? (Definitions)

- Chemical
 - Chemicals are toxic manmade compounds including those designed for warfare use or industrial use
- Biological
 - Biological agents are living organisms and toxins (poisons). They can fall within the following categories:
 - Bacteria – a pathogen that will replicate itself and survive in the environment
 - Viruses – pathogens that require a 'host' to replicate
 - Rickettsia
 - Fungi – such as poisonous mushrooms
 - Toxins – produced by biological agents but not infectious
- Radiological
 - Radioactive materials may be either naturally occurring or man-made. Radiation is energy transported in the form of particles or waves in the form of:
 - Alpha particles
 - Beta particles
 - Gamma radiation, and
 - neutrons
- Nuclear
- Explosives



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Chemical Terrorism

Use of a toxic chemical, its precursors, a device containing the toxic chemical, or the equipment designed for use with the device, in order to commit a terrorist act.



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Nuclear terrorism

Use of nuclear weapons against a civilian target

Use of a radiological weapon or dirty bomb against a civilian target

An attack against a nuclear power plant



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Bioterrorism

Bioterrorism refers to the intentional **use** of biological agents or toxins for the purpose of harming or killing humans, animals or plants or with the intent to intimidate **or threaten**.



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Current CBRN Situation

- A CBRN attack remains less likely than an explosive one, as explosives are simpler, tested and effective
- The likely availability of CBRN materials for an attack is:
 - chemical > biological = radiological > nuclear
 - chemical > toxin > radiological > pathogen > nuclear
- The likely casualty impact for CBRN attack is:
 - nuclear > biological > chemical > radiological
 - nuclear > pathogen > chemical > toxin > radiological



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CBRN Risks

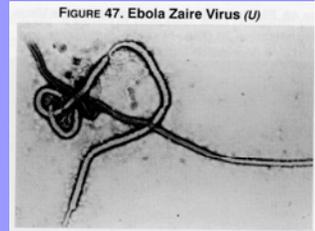
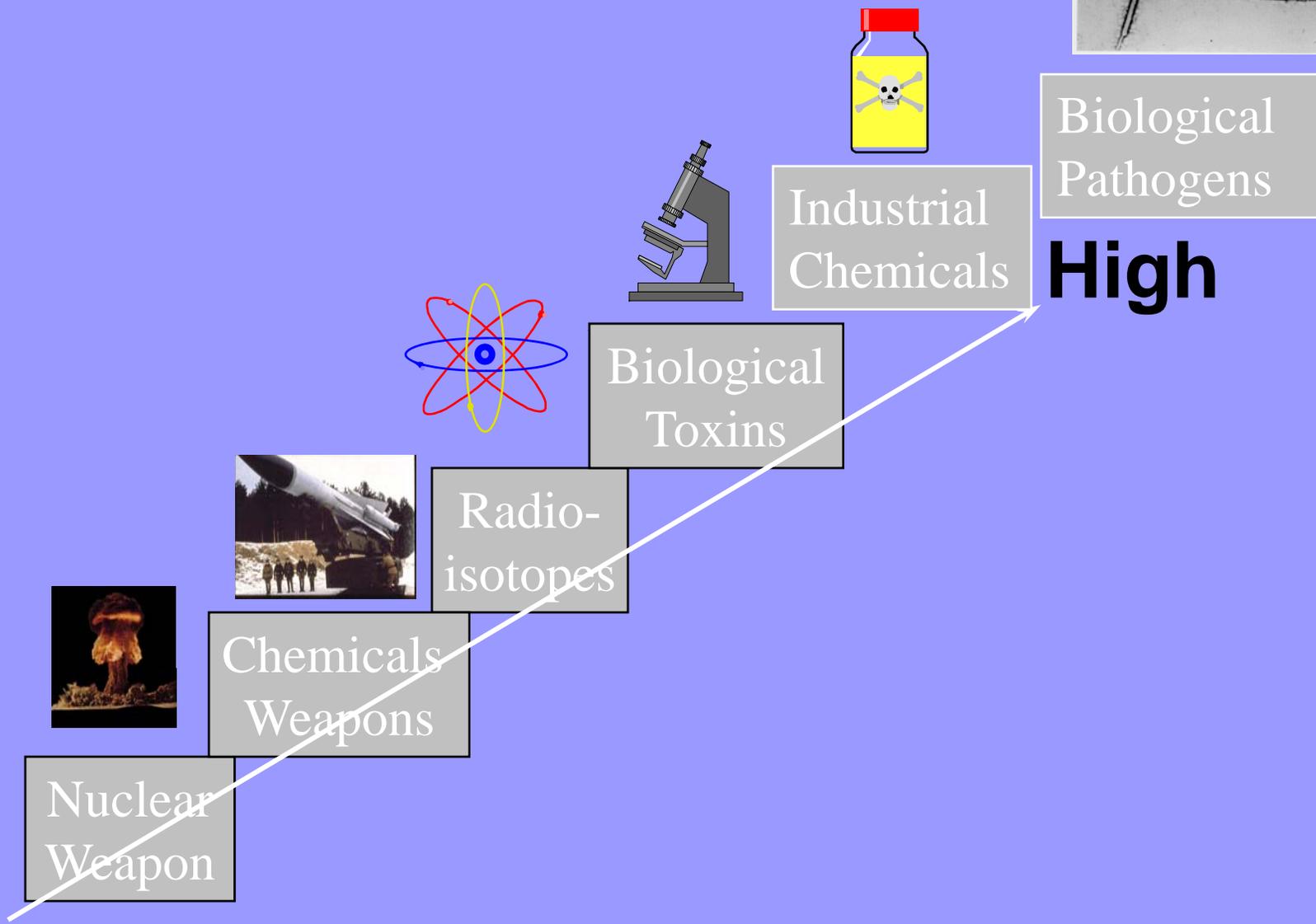


FIGURE 47. Ebola Zaire Virus (U)



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CBRN Threat Spectrum

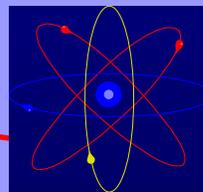
-Likelihood Versus Impact-

Potential
Impact

Nuclear
Weapon



Chemical
Weapons



Radio-
isotopes

Industrial
Chemicals



Biological
Agents



Likelihood (Threat)



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Why Would Terrorists Use Biological Agents?

- Mass casualties
- Fear
- Longevity of attack
- Economic impact
- Confusion



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Biological Attack Types

Overt

Whereby an attack is obvious. There will be a scene to which emergency services can respond to.

Covert

The release of an infectious agent which goes unnoticed, resulting in a wide spread of the disease before first symptoms come to light.



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Examples of Biological Agents

Toxins

- Ricin
- Botulinum Toxin
- Staph enterotoxin B (SEB)

Virus

- Viral Hemorrhagic Fevers
- Smallpox

Bacteria

- Tularemia
- Plague
- Anthrax

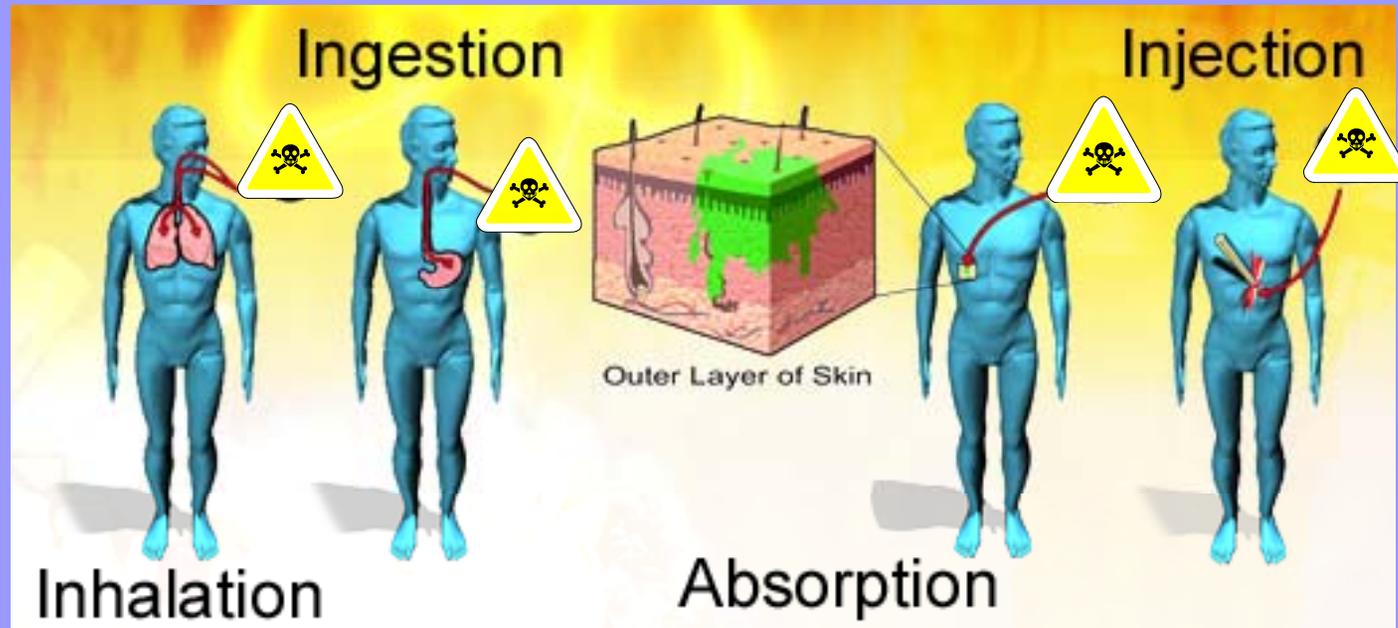
Rickettsia

- Q fever



Routes of Infection

Inhalation is a common route of infection and likely to lead to spread of disease between humans/animals/plants. Symptoms are delayed, resulting in a wider spread of infection.





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Biological Agents

Advantages of Use

- Small quantities required
- No Immediate Symptoms
- Limited Detection
- Mass Casualties
- Contagious pathogens

Disadvantage of Use

- Climate/Environment may affect agent dispersal
- Not all are human to human contagious
- Many have available effective treatment



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Historical Use of Biological Agents?

American Civil War

Rajenshees Cult in Oregon USA

Anthrax Attacks in USA 2001



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Why use Anthrax?

Bacterial example

- Found in soil or infected animals in many countries
- Powdered spores easy to disseminate
- Spores are stable and resistant
- Remain in environment for years
- Previous use adds to fear

But...

- Is not spread person-to-person
- Can be treated
- Have to use the right 'strain'



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Recognizing a Improvised Bio Lab

- Equipment that would indicate possible BTA production
 - Culture media: agar plates, broth
 - Blender, mortar and pestle, coffee grinder
 - Coffee filters, cheesecloth
 - Centrifuge
 - Water purification system
 - Refrigerator and/or incubator
 - Sterilization
 - Room 'sealed'





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Filtered mask

Beer making
kit/
reproducing
bacteria

Media
bottles

Culture
tubes

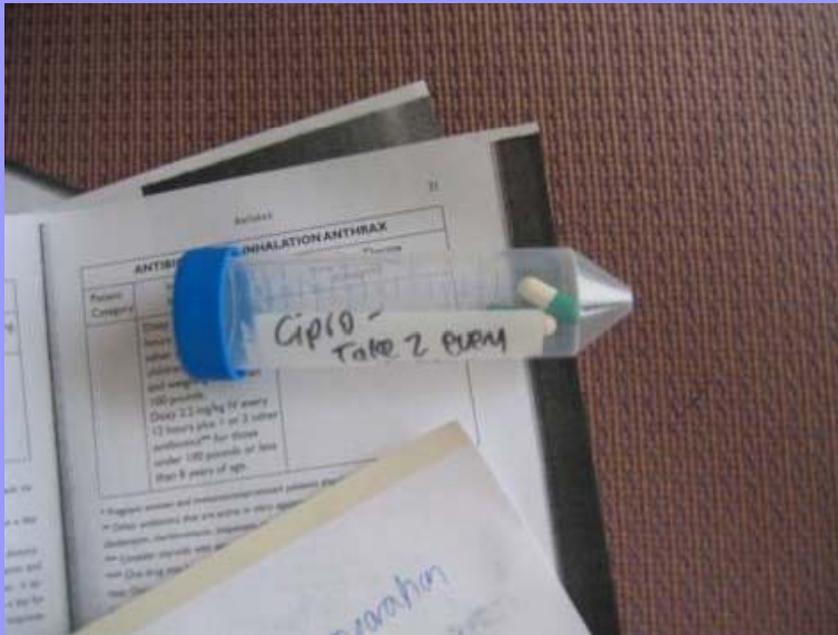
Desiccator/
to dry the
slurry



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Complexity of Delivery Systems

	Simple	Intermedi ate	Complex
Emplaced	Spray bottle	Unattended sprayer	Automated aerosol
Mobile	Pedestrian manually deploying BTA	Automobile with sprayer attached	Aircraft with sprayer attached
Remote	Hand-thrown projectile	Unguided rocket with BTA	Advanced guided weaponry



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Methods of Dispersal

- Breaking Devices
- Injection (syringe or umbrella)
- Explosive Device
- Aerosol Spray

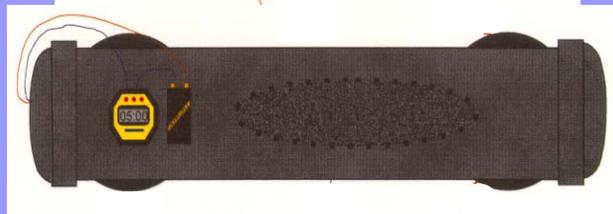
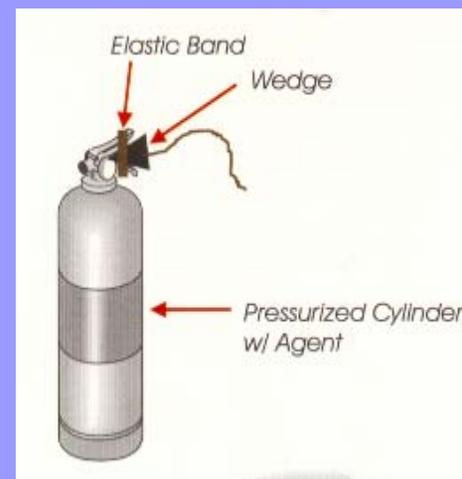


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Improvised Dispersal Devices



Liquid Chlorine



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Devices May Be Camouflaged





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