
Biological Weapons A Counterterrorism Perspective

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The public is exposed to a lot of information about potential biological attacks

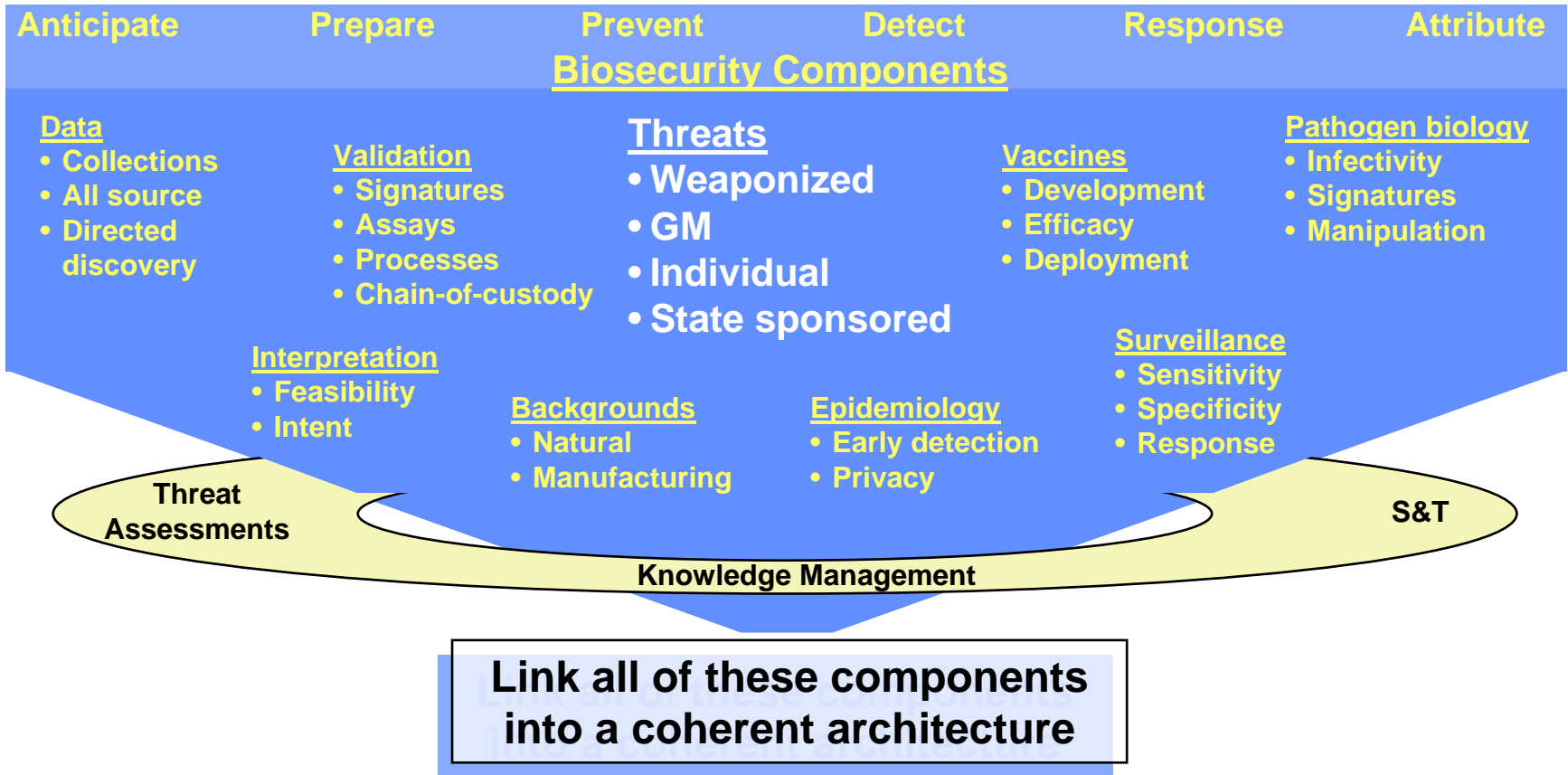


Initiation of BioWatch at the State of the Union on January 28, 2003:
“...deploying the nation's first early warning network of sensors to detect biological attack”



**What are the key issues around BW and BW defense?
What are distractions?**

Biosecurity is a multifaceted problem that requires integrating many disparate components





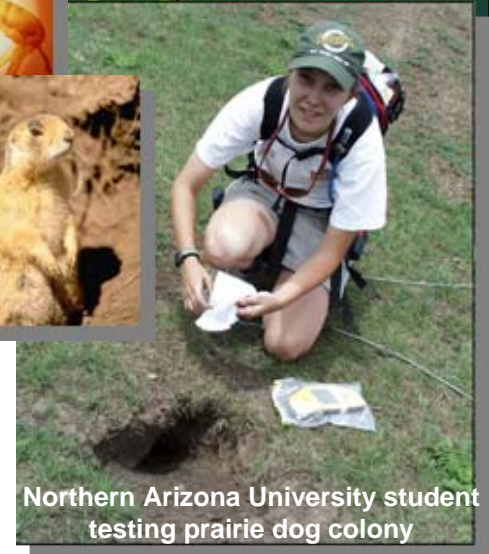
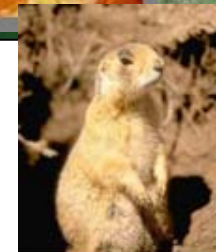
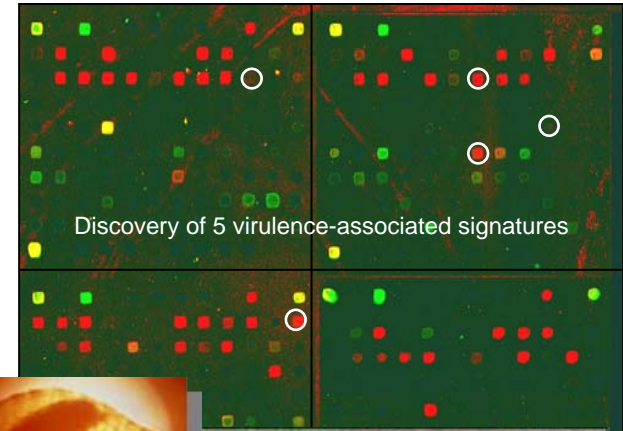
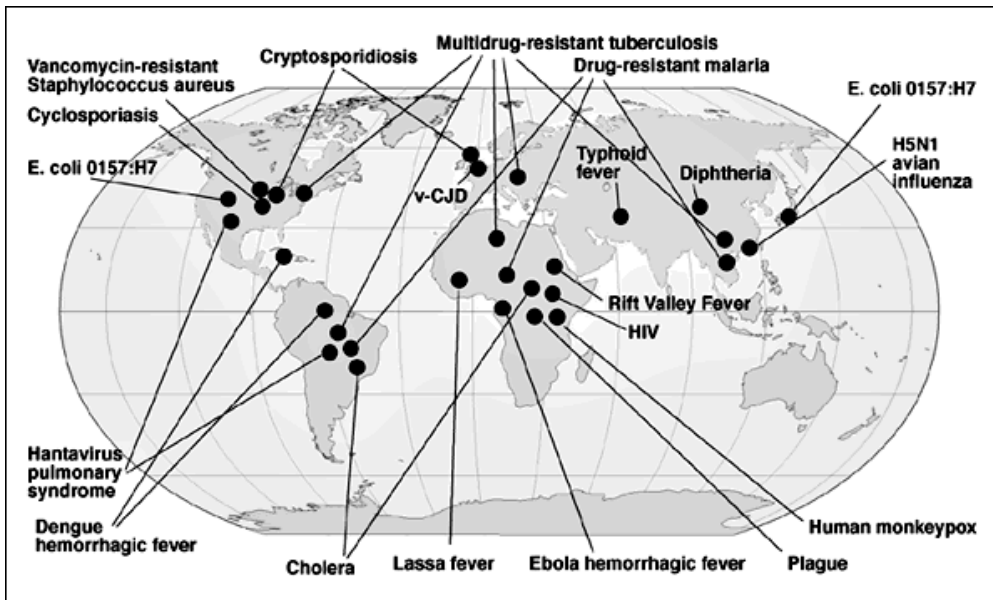
We would like to know even more!

BW attacks sound scary

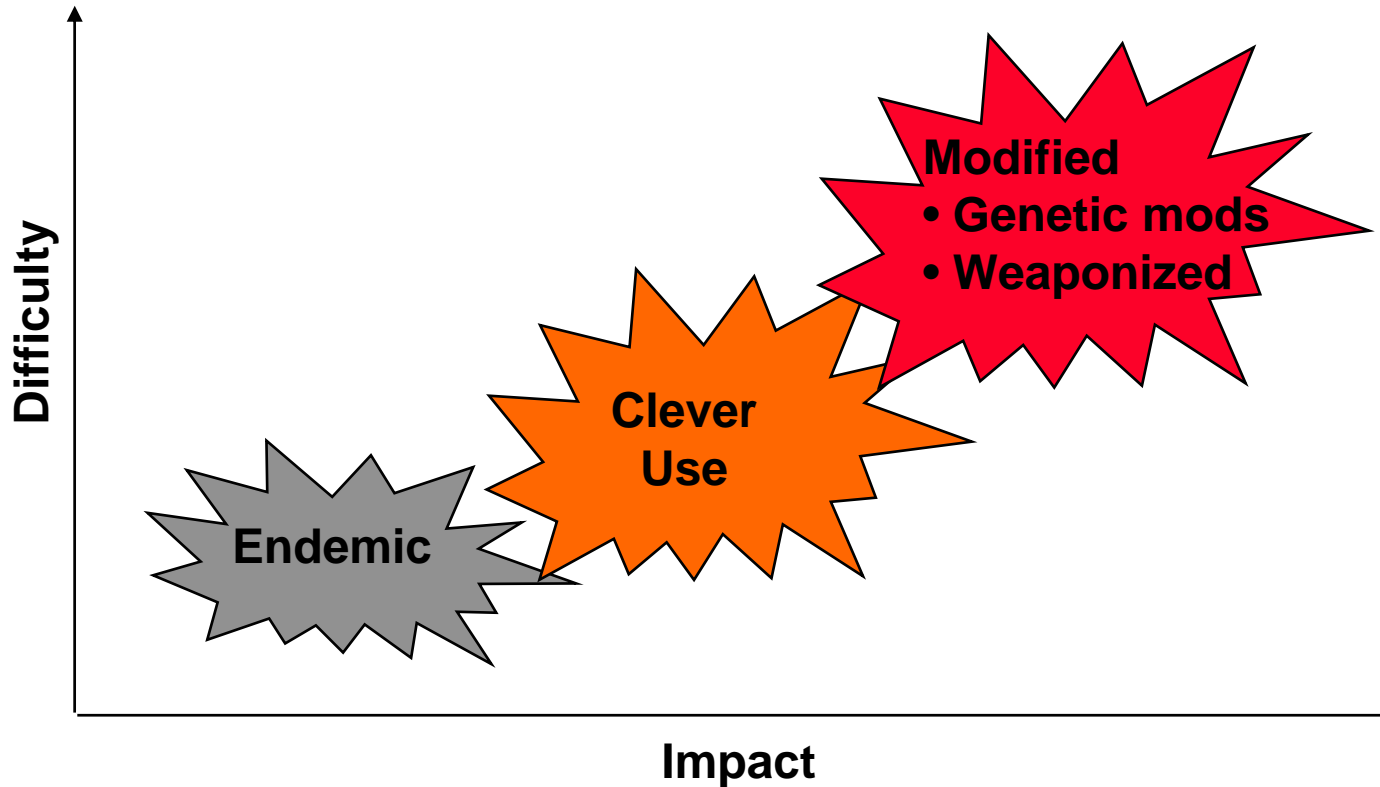
- Genetically modified threat
- Bio Terror & Bio Error

“Mother Nature” as terrorist

- Re-emergent diseases
- Influenza



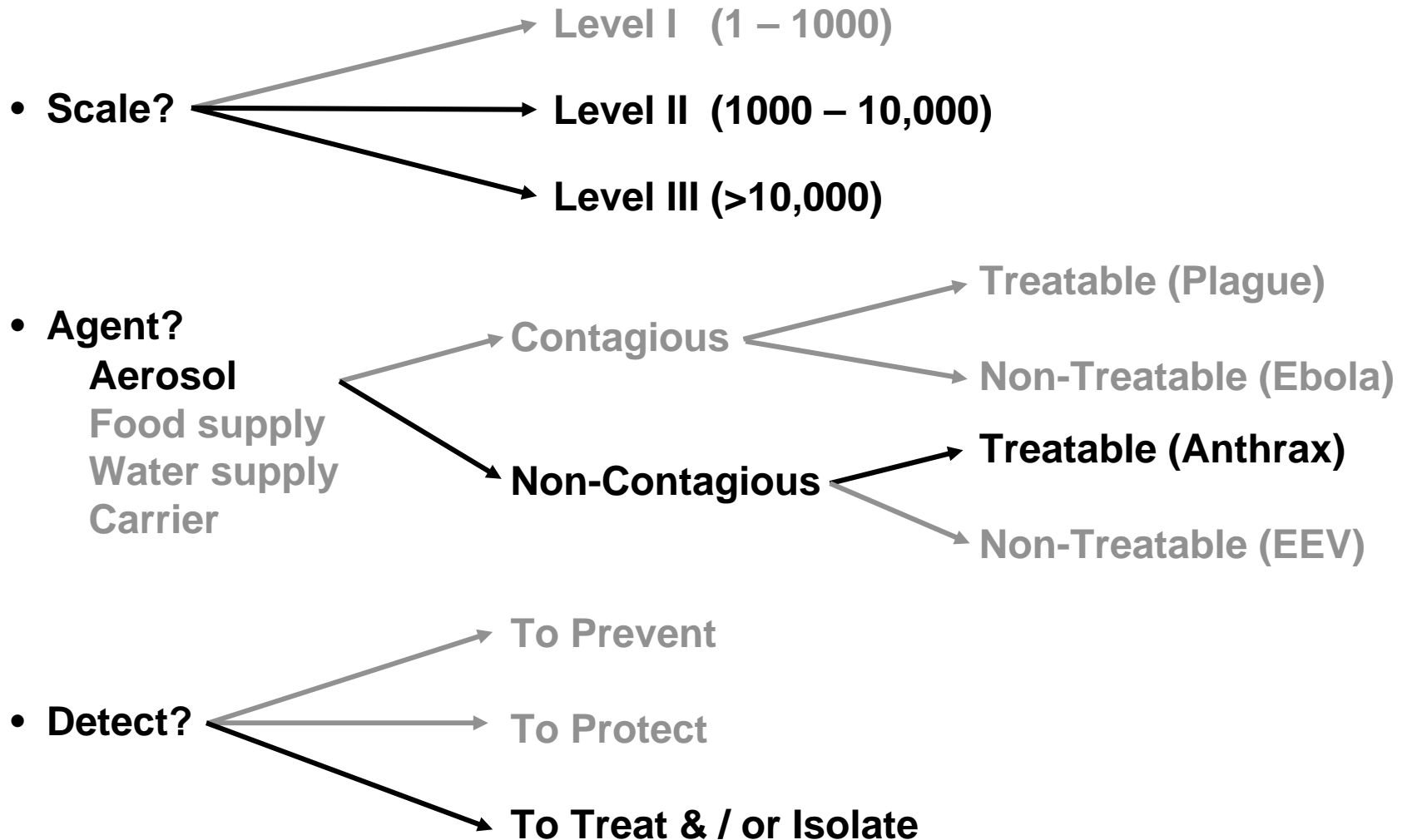
The human and economic impact of endemic pathogens can be amplified



The systems-level challenge is to counter numerous potential threats



A stratified view of bioterrorist threats



Looking for solutions: there are significant benefits to early detection of a biological attack

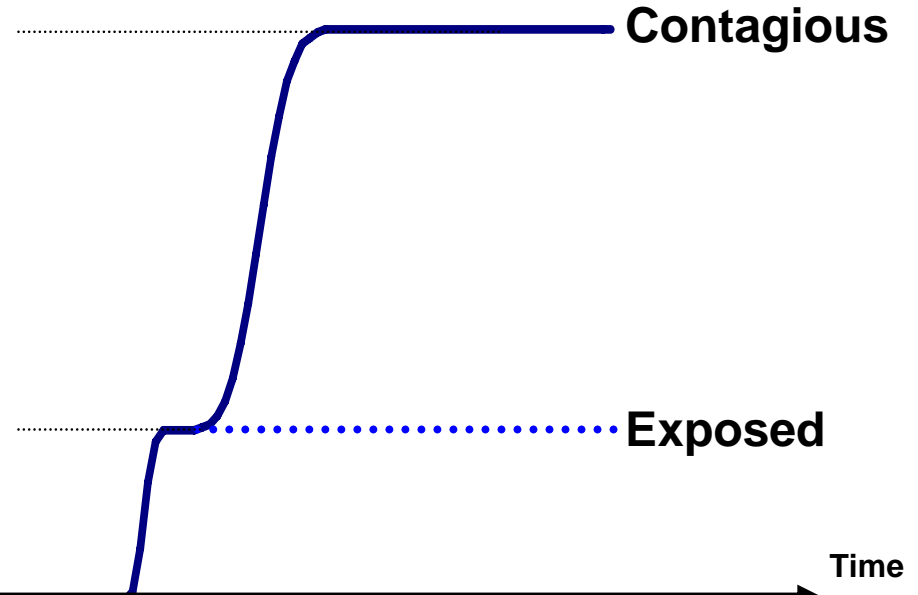


Treatments and quarantines must be administered early

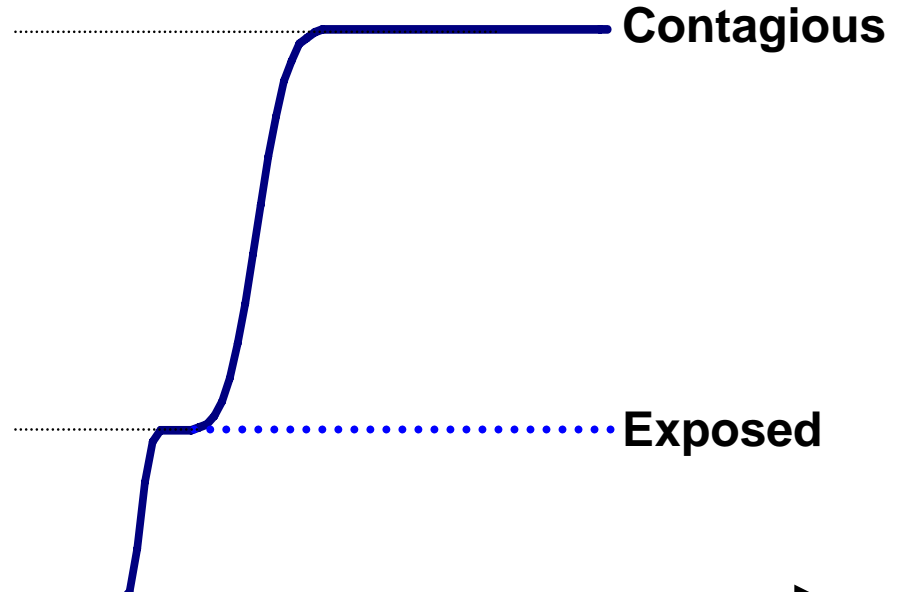
| Disease | Incubation period (days) | Intervention window (days) |
|-------------------|--------------------------|----------------------------|
| Smallpox | 12 to 14 | 3 to 4 |
| Pulmonary Anthrax | 5 to 7 | 1 to 2 |
| Plague | 3 to 4 | 1 |
| Influenza | 2 to 5 | 3 |

A combination of complementary strategies are needed for early detection

Examples for preventing, detecting, and responding to WMD events



Examples for preventing, detecting, and responding to WMD events

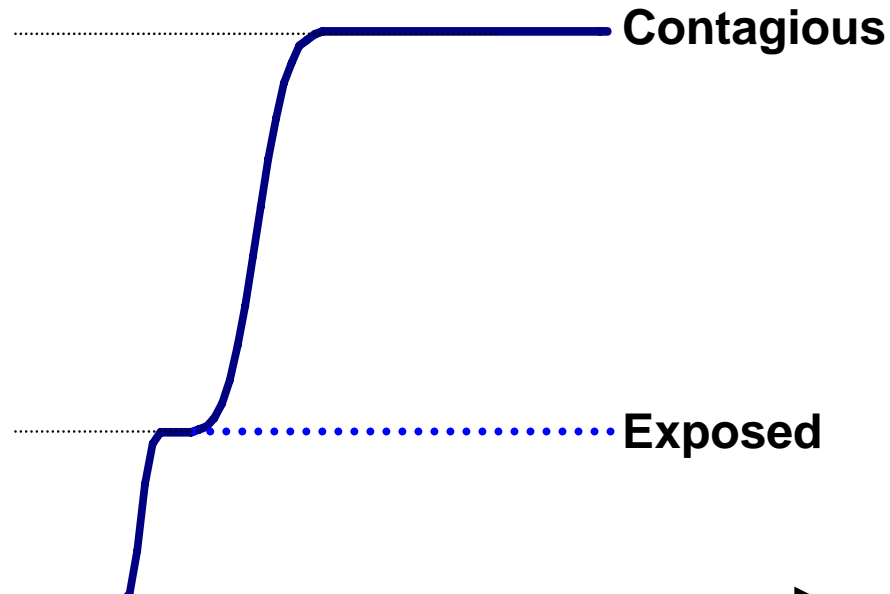


Signatures →

← Forensics and attribution

Backgrounds →

Examples for preventing, detecting, and responding to WMD events



Detect to prophylax

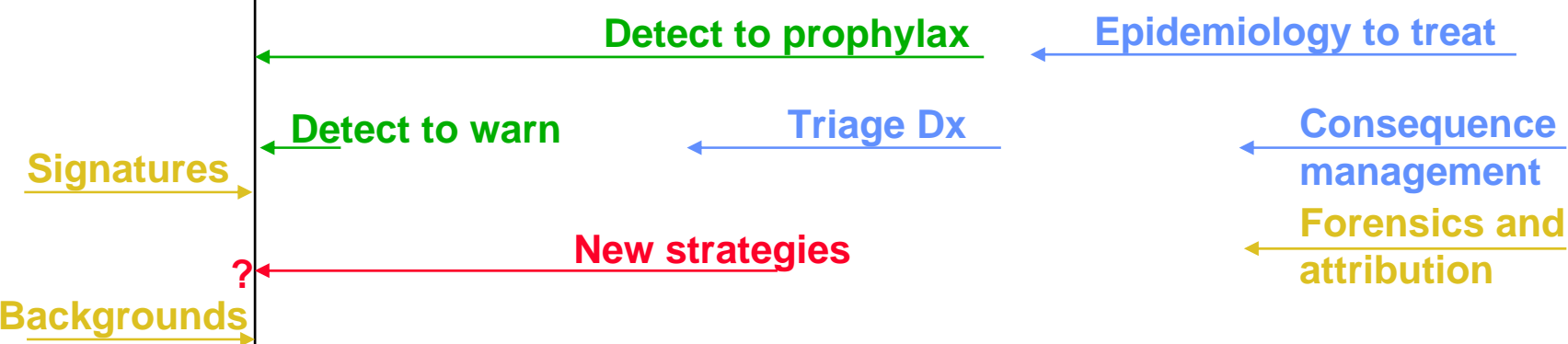
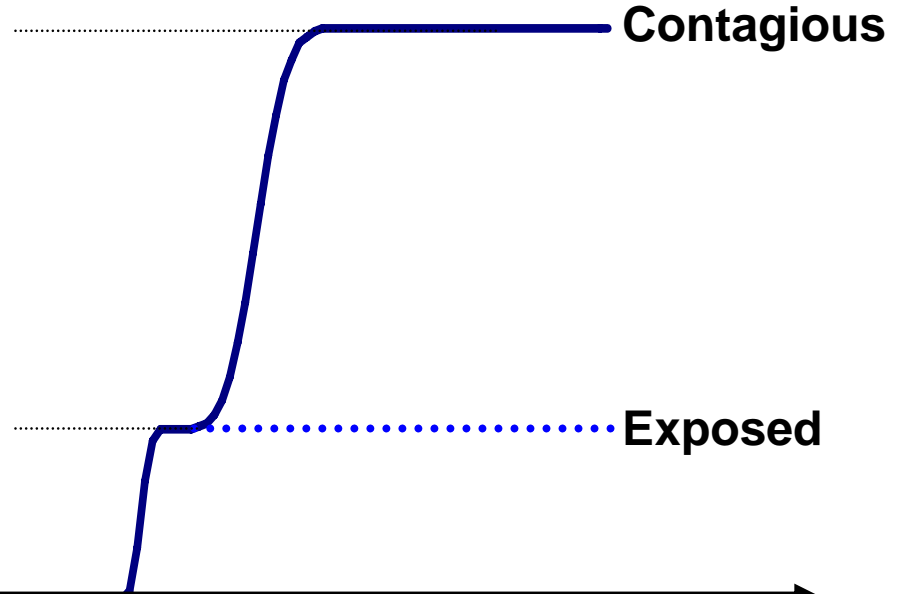
Detect to warn

Signatures

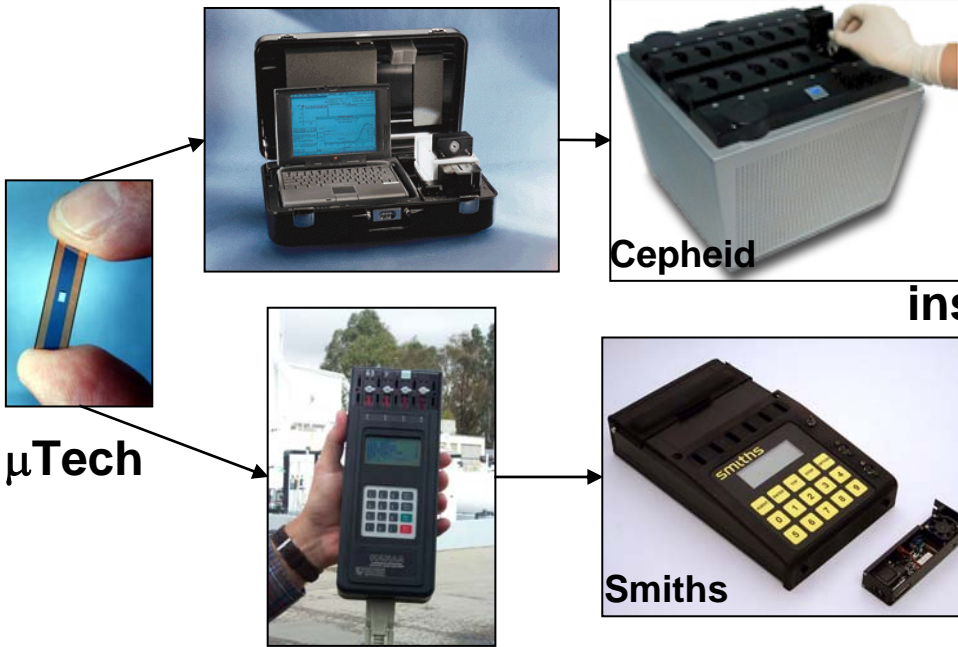
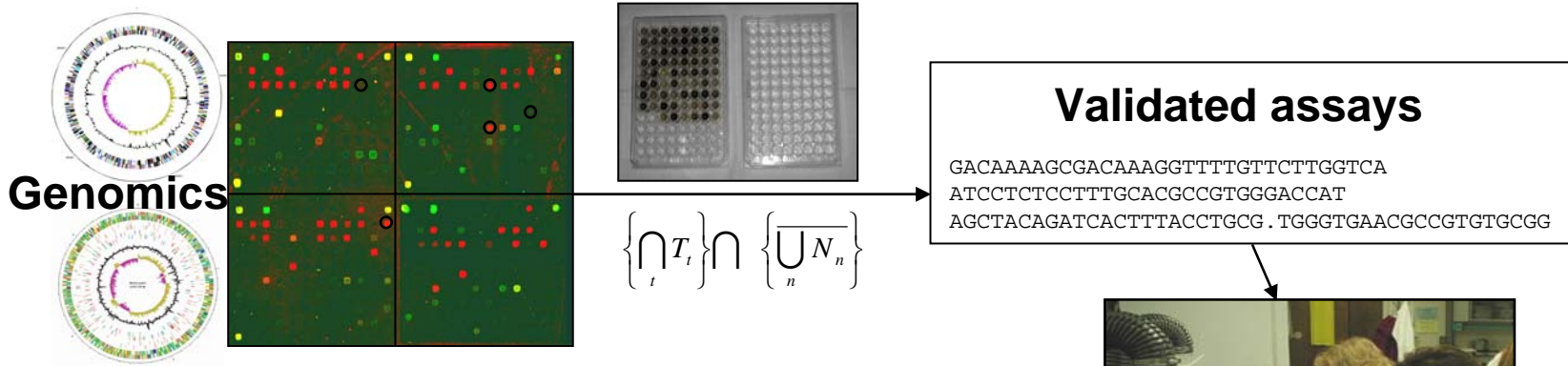
Forensics and attribution

Backgrounds

Examples for preventing, detecting, and responding to WMD events



Developing new operational capabilities took several years and integration across multiple disciplines



Enabling instrumentation



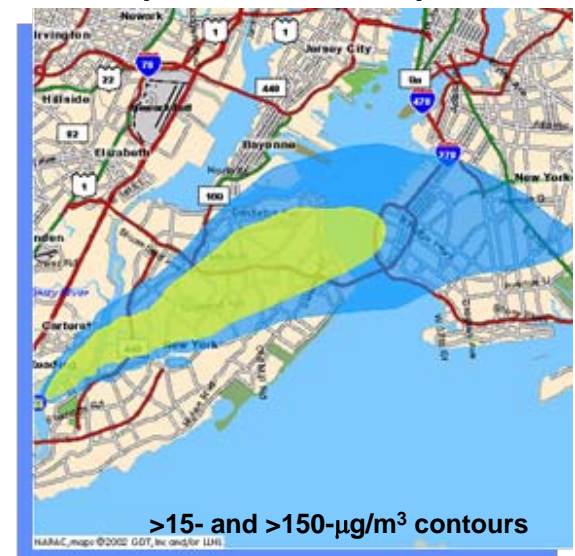
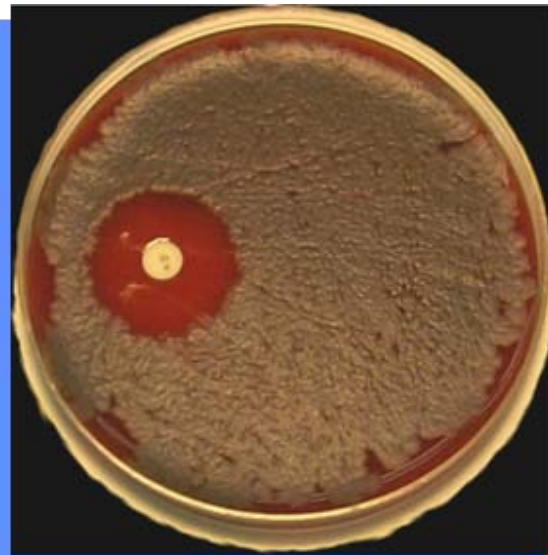
Early detection combined with models of dispersion are valuable



- Bio attacks may not be visible
- Want to act before symptoms present
- Identify affected area / people / livestock
- Prophylax, treat and clean-up
- **BUT timelines are not short enough!**



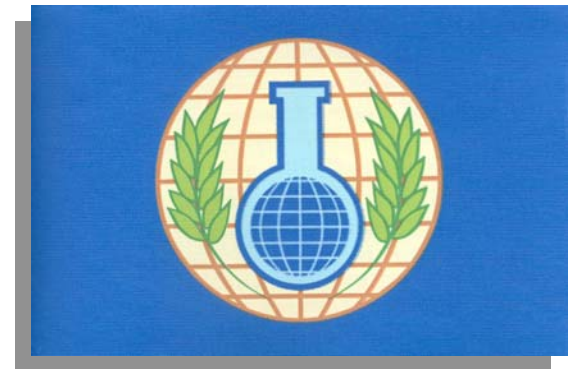
**Staten Island Fire
(Feb. 21, 2003)**



What community norms can be established, promoted or enforced?



- **Biological Weapons Convention is intent-based**
- **US offensive BW program terminated in 1969**
 - 'Frozen' perspective on BW
 - Recent investments in biodefense
- **Are BW the “poor man’s” nuke?**
 - Role of deterrence?
 - What value does attribution provide?
 - When would a nation turn to BW?
 - When would a terrorist group?
 - Latency?
- **Contrast to other areas**
 - OPCW, for example

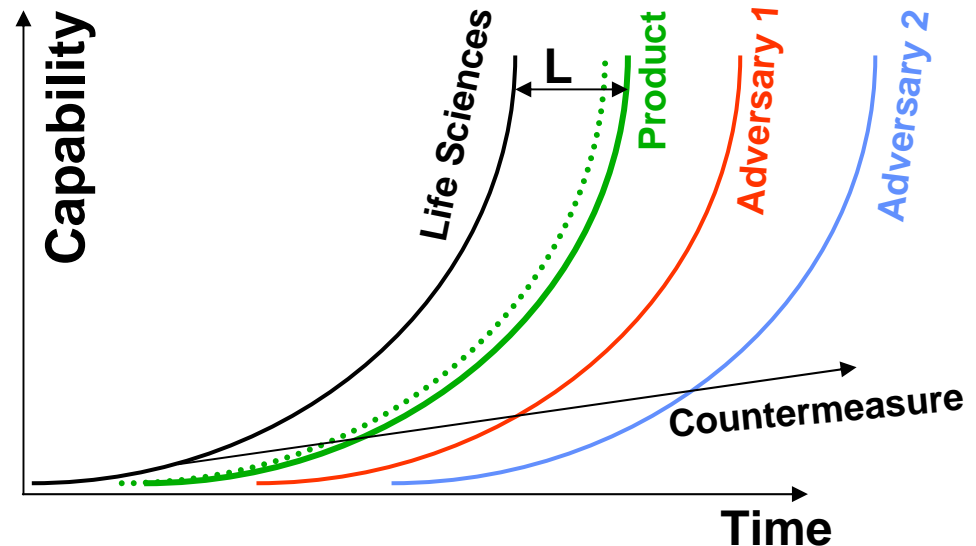


**Organization for the
Prohibition of
Chemical Weapons**

There are critical shortfalls in the nation's infrastructure for dealing with bio-terrorism



- Life science R&D exploding
 - Inherent “dual benefit”
 - Proliferating
 - 1969 out-of-date reference
 - BWC
- Countermeasures not keeping up
 - Large cost and time from concept to regulatory approval
 - Increasing antibiotic and antiviral resistance
 - Few novel antibiotics in the pipeline
 - Vaccines not commercially attractive
- Similar issues in agriculture and food



Countermeasure developers must adopt more rapidly than adversaries

An example of rapid response 2003 Exotic Newcastle Disease Virus outbreak





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