



Biological WMD: The Threat from Non-State Actors

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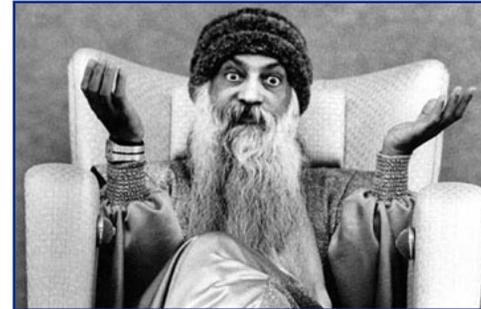
www.biosecurity.sandia.gov

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Terrorist Uses of Biological Weapons

- **Rajneeshees – 1984**
 - Contaminated restaurant salad bars in The Dalles, Oregon with salmonella spp. bacteria



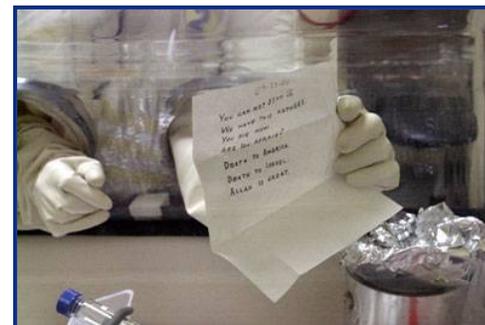
*Bhagwan
Shree
Rajneesh*



*Aerosolization of *Bacillus anthracis* and botulinum toxin by Aum Shinrikyo*

- **Aum Shinrikyo – 1990s**
 - Aerosolized and disseminated biological agents in Tokyo
 - Vaccine strain of *Bacillus anthracis*
 - Inactive strain of *Clostridium botulinum*

- **US anthrax attacks – 2001**
 - Highly refined: 4-7 letters contaminated over 60 different sites
 - Highly virulent: killed 5, wounded 21



Amerithrax

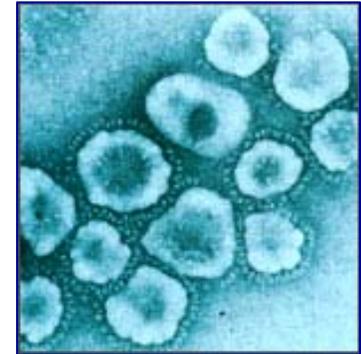
Evolution of the Biological Threat

- **The biological threat has evolved in concert with**
 - **Increasing emergence and reemergence of highly infectious disease**
 - **Advance of biotechnology globally**
 - **Rise of transnational, asymmetric terrorism**
- **This recent “globalization” of the biological threat has broadened the availability of materials, technologies, and expertise needed to maliciously disseminate infectious disease**

Mt. Merapi, Yogyakarta, Indonesia

Infectious Disease

- **Global outbreaks of emerging and reemerging infectious disease present a growing threat to international security**
- **Most dangerous infectious diseases are often tropical diseases that emerge in developing countries**
- **Infectious diseases now spread across borders as never before**
- **Natural outbreaks represent unpredictable sources of dangerous pathogens for terrorists**

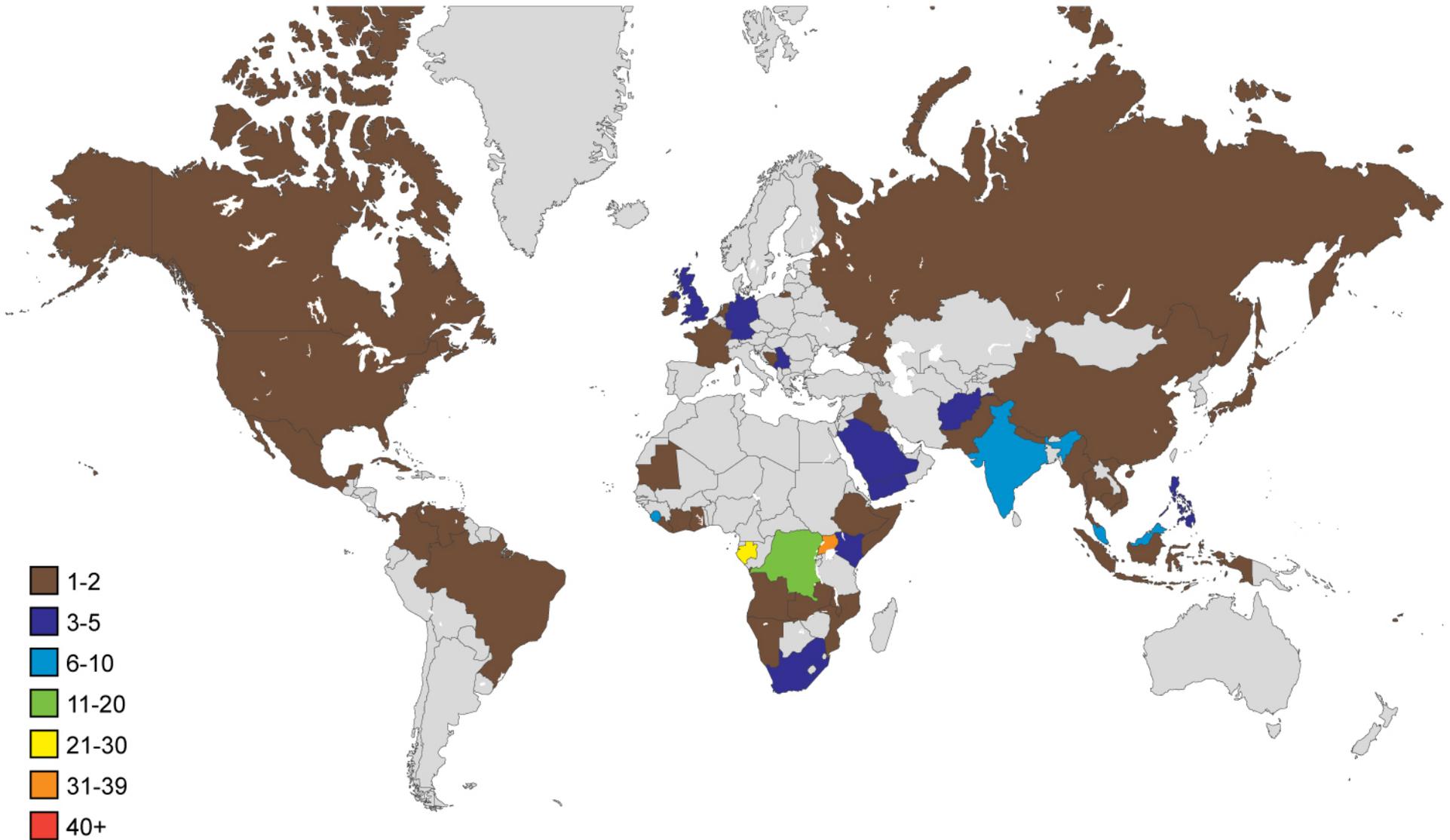


SARS virus

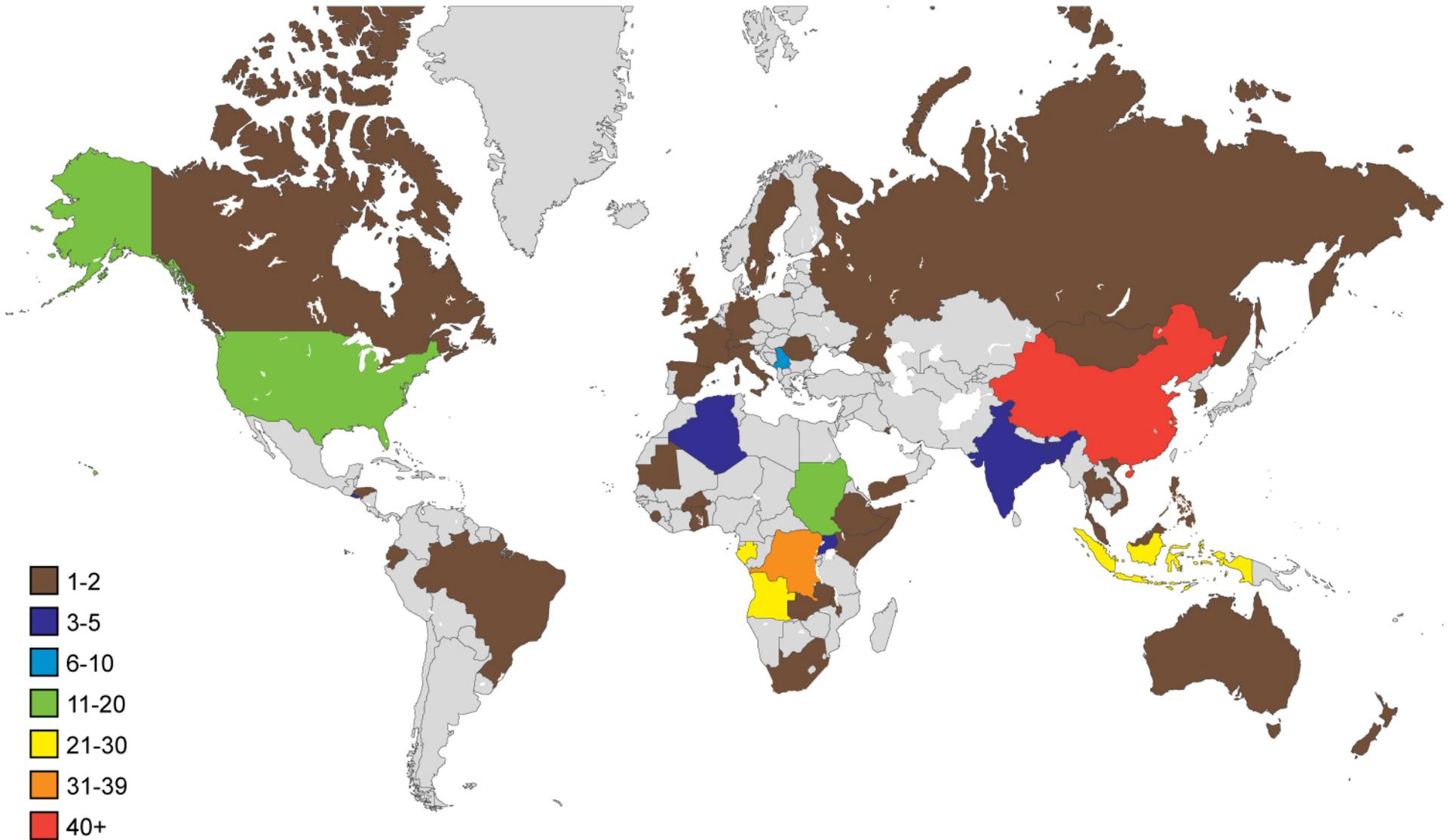


FMD outbreak UK

WHO Outbreak Reports for Emerging Infectious Diseases 1996-2000



WHO Outbreak Reports for Emerging Infectious Diseases 2001-2005

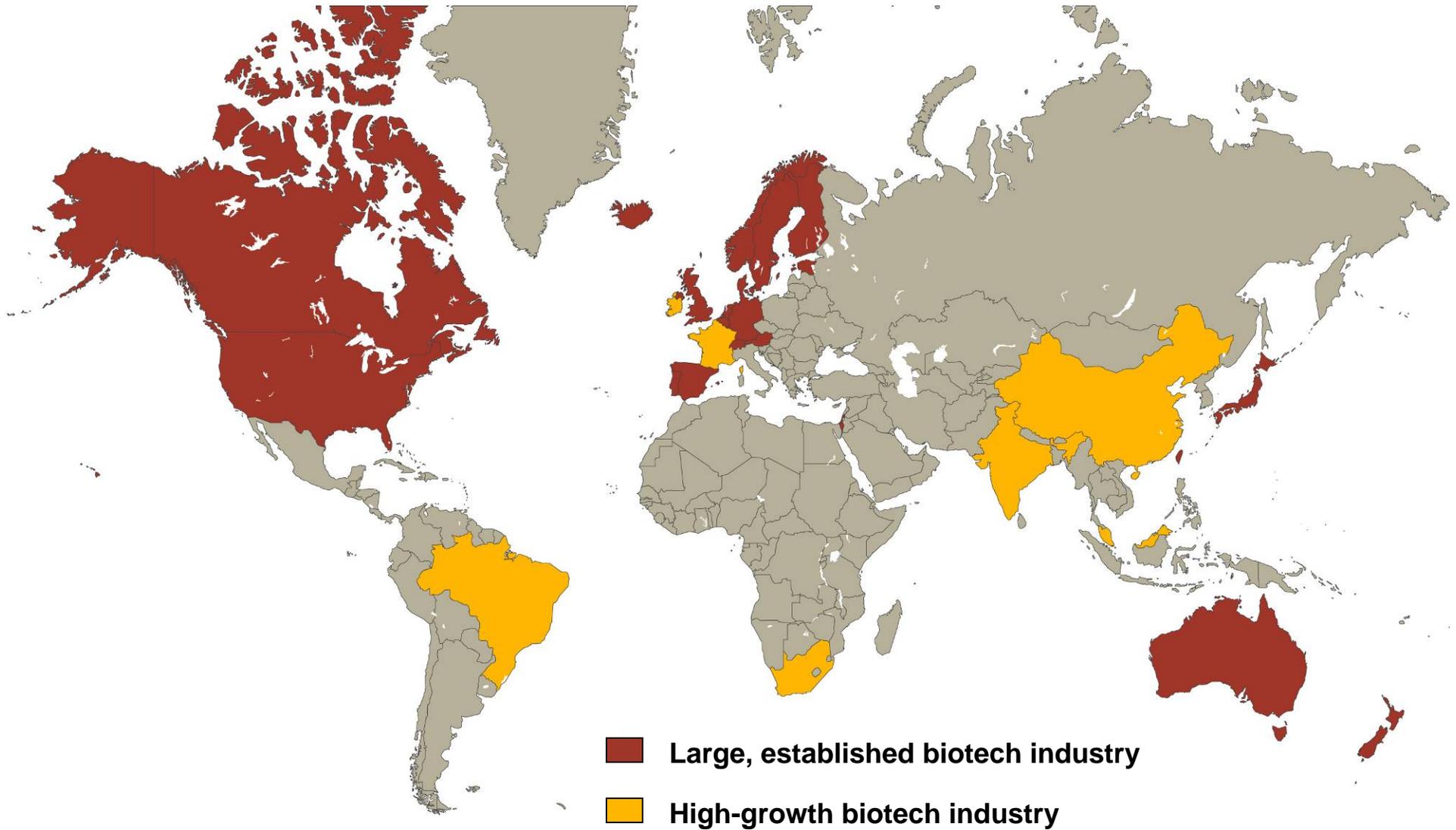


Biotechnology and the Life Sciences

- **Rapid expansion of bioscience worldwide is perhaps the most significant influence on the biological threat**
- **Viable and virulent organisms are stored and used in more legitimate bioscience facilities across the globe than ever before**
- **Individuals with the expertise necessary to misuse biology can be found in nearly all areas of the life sciences internationally**
- **The tools necessary to develop and disseminate a low-grade biological weapon are ubiquitous**



Large Biotechnology Industry and Clusters of Expertise, 2004-2005

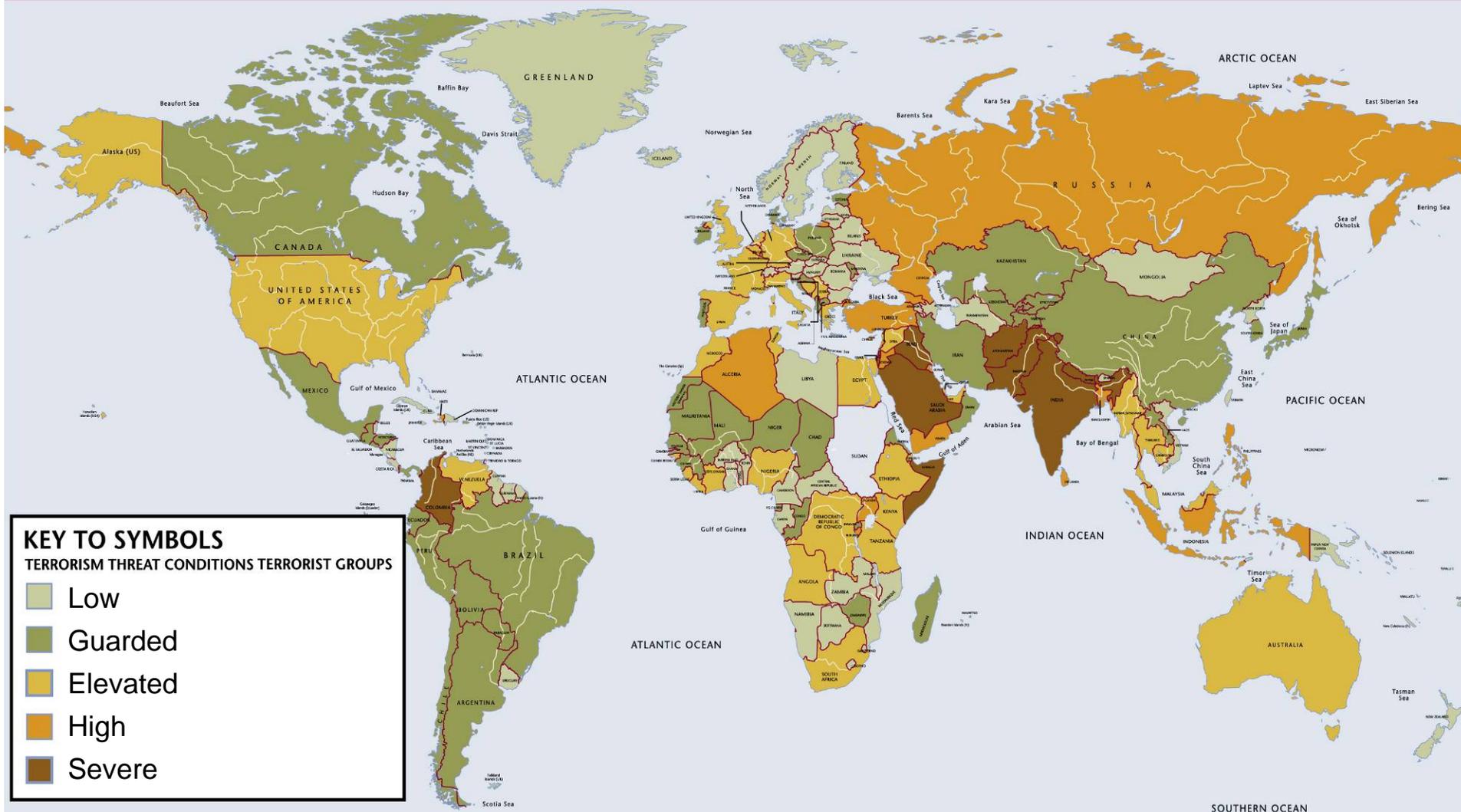


Transnational Terrorism

- Well financed and sophisticated terrorism has risen sharply over the last 15-20 years
- Terrorists engage in asymmetric warfare – employing unconventional tactics which experts believe will increasingly focus on acquiring and using WMD
- Terrorists are active in regions with expanding biotechnology and outbreaks of infectious disease
- Al Qaeda has repeatedly expressed interest in biological weapons
 - Osama bin Laden (1998): acquiring WMD is a “religious duty”
 - December 2001: cache of technical books, journal papers, rudimentary equipment found at abandoned training camp near Kandahar



Global Terrorism Risk

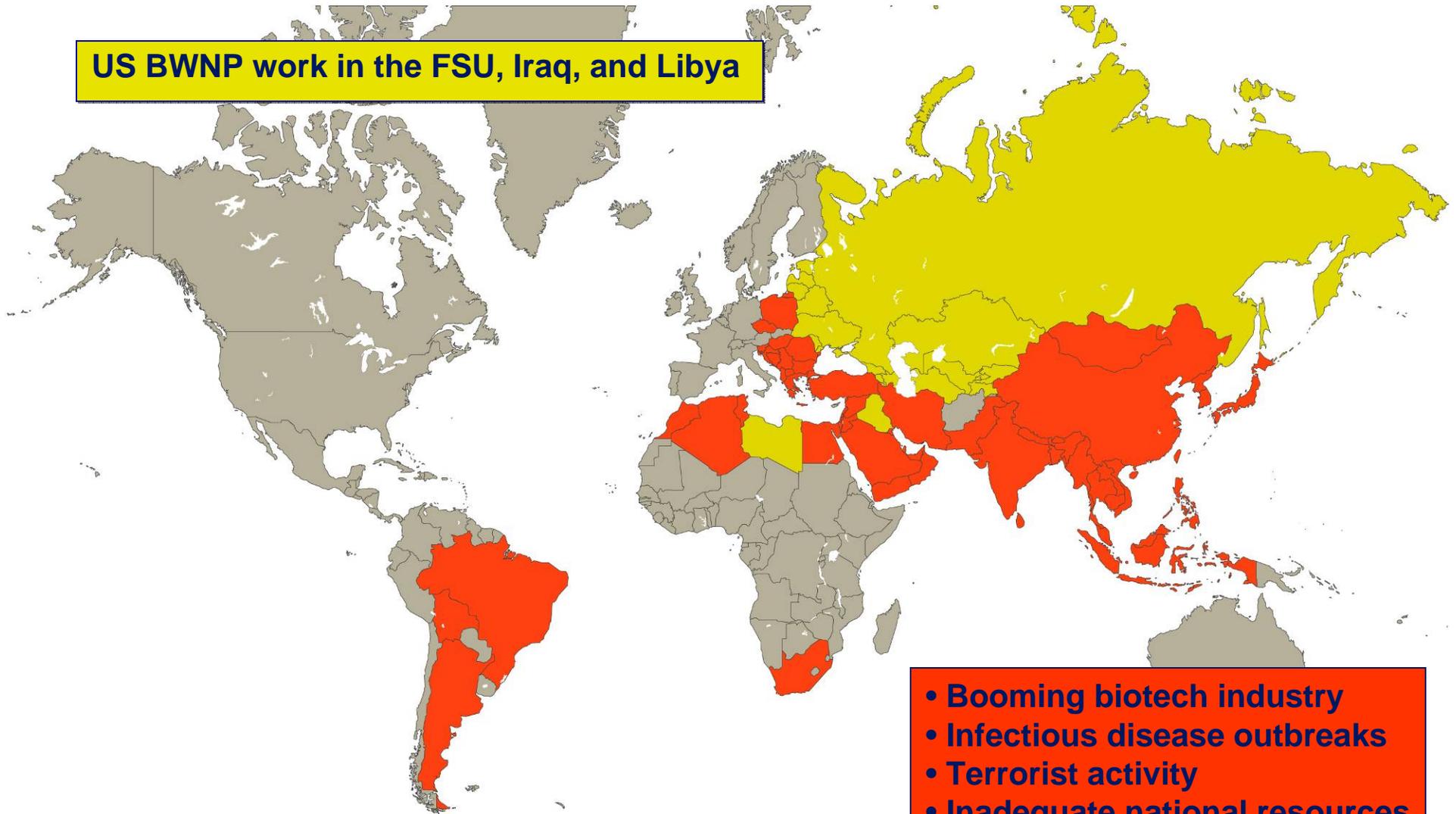


KEY TO SYMBOLS
TERRORISM THREAT CONDITIONS TERRORIST GROUPS

- Low
- Guarded
- Elevated
- High
- Severe

Sandia Bioscience Risk Assessment

US BWNP work in the FSU, Iraq, and Libya



- Booming biotech industry
- Infectious disease outbreaks
- Terrorist activity
- Inadequate national resources
- Government instability

Scenarios for Non-State Biological Weapons Proliferation

Objectives	Acquisition	Development	Dissemination
<ul style="list-style-type: none"> •Generate terror •Promote geopolitical objectives •Genocide •Invigorate support base •Assassination 	<ul style="list-style-type: none"> •Legitimate lab or culture collection (theft or fraud) •Theft from transport •Derived from natural sources •Provided by hostile state actor 	<ul style="list-style-type: none"> •Tactical quantities •Limited development / weaponization •Use proven bugs (non GMOs for at least the next 5 years) 	<ul style="list-style-type: none"> •Natural (human vector) •Commercial sprayers •Unconventional - mail systems •Food / water •Building HVAC systems •Percutaneous inoculation

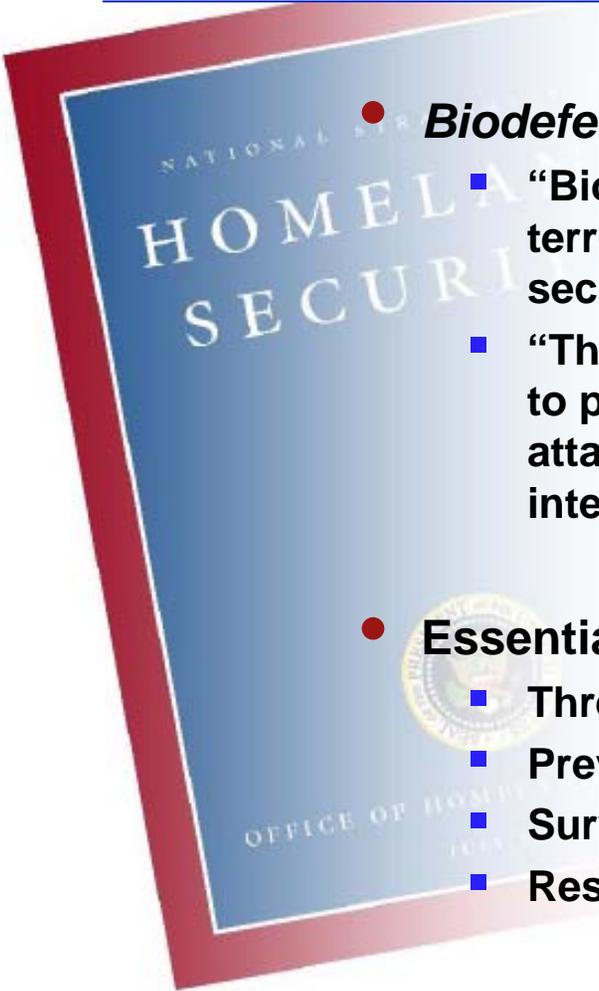
International and US Efforts to Mitigate the Bioterrorist Threat

UNSCR 1540 and Biosecurity

- **Urges States to take preventative measures to mitigate the threat of WMD proliferation by non-state actors**
- **UNSCR 1540 requires States to**
 - **Establish and enforce legal barriers to acquisition of WMD by terrorists and states**
 - **Submit reports to the 1540 Committee on efforts to comply**
- **Paragraph 3 is the key provision that supports biosecurity**
 - **“Take and enforce effective measures to establish domestic controls to prevent the proliferation of . . . biological weapons . . .; including by establishing appropriate controls over related materials”**
 - **Develop and maintain appropriate effective measures to account for and secure such items in production, use, storage or transport**
 - **Develop and maintain appropriate effective physical protection measures**

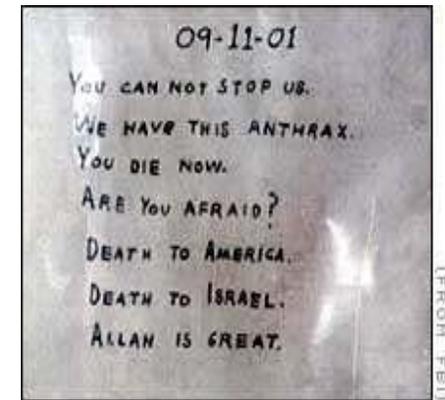


Homeland Security Presidential Directive-10

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- ***Biodefense for the 21st Century (also NSPD-33), April 2004***
 - “Biological weapons in the possession of hostile states or terrorists pose unique and grave threats to the safety and security of the United States and our allies.”
 - “The United States will continue to use all means necessary to prevent, protect against, and mitigate biological weapons attacks perpetrated against our homeland and our global interests.”
 - **Essential pillars of our national biodefense program are**
 - Threat Awareness
 - Prevention and Protection
 - Surveillance and Detection
 - Response and Recovery

US Policy to Counter the Biological Weapons Threat

- \$36B since 2001
- Biodefense
 - Enhance the ability of the US to respond to the next bioterrorist attack
 - A *domestic* strategy designed to reduce the consequences of bioterrorism
- Biological weapons nonproliferation
 - An *international* strategy designed to prevent the development, use, and spread of biological weapons by states



Biodefense

- **Rapid USG biodefense budget increase**
 - \$1.5B in FY01
 - \$6.5B/year average in FY02-05
 - \$8B in FY06; \$8B requested in FY07
- **Broad technical applications**
 - Diagnostics and disease surveillance
 - Detection and sensor technologies
 - Emergency response capabilities
 - Decontamination and remediation technologies
 - Public and agricultural health capacities
 - Vaccines and therapies



- **Significant gaps exist in the short term**
 - Inadequate countermeasures for all threat agents
 - Limited detection and attribution capabilities
 - Infrastructure not prepared for attack

Biological Weapons Nonproliferation

- Represents only 2% of the USG budget to counter biological weapons
 - \$61M in FY01
 - \$127M/year average in FY02-FY06
- US BWNP programs have focused on bilateral engagement with countries that had offensive weapons programs
 - Engage Russia and the republics of the Former Soviet Union
 - Support and strengthen the Biological Weapons Convention
 - Impose export controls



US Domestic Efforts to Reduce Access to Dangerous Biological Materials

- Realization that bioscience facilities are potential sources of biological weapons material
- USA PATRIOT Act of 2001 – US Public Law 107-55
 - Restricted Persons
- Bioterrorism Preparedness Act of 2002 – US Public Law 107-188
 - US Select Agent Rule
 - Hazardous Material transport security
- No international standards for managing dangerous pathogens internationally



*National Animal Disease Center,
Ames, Iowa*



*Centers for Disease Control and
Prevention, Atlanta, Georgia*

New Department of State Program in 2006

- **DOS Biosecurity Engagement Program concerned about terrorists exploiting legitimate bioscience to pursue bioterrorism**
 - Not looking for state-based offensive weapons programs, weapons caches, or terrorists developing weapons
- **DOS working with legitimate bioscientists and law enforcement officials around the world to**
 - Ensure safe and secure use of dangerous biological agents
 - Strengthen capacities to detect and control infectious disease
- **Method: build relationships, share technical expertise, and promote good practices**



*New Department of
State Global Program
(www.bepstate.net)*

***US national security interest to help international community
manage dangerous pathogens and control infectious disease***

Conclusion

- **US Government focuses on improving our ability to *respond* to the next bioterrorist attack at home**
 - Much less emphasis on *preventing* bioterrorism attacks
 - US Government to develop new policies and programs that focus on protecting dangerous pathogens and strengthening legitimate bioscience worldwide
- **The biological threat has evolved in concert with**
 - Increasing emergence and reemergence of highly infectious disease
 - Advance of biotechnology globally
 - Rise of transnational, asymmetric terrorism
- **Evolution of the threat has international community seeking new ways to balance legitimate bioscience with BW concerns**

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