

# **Assessing the Threat of Biological Weapons and Bioterrorism: A Public Policy Issue**

Milton Leitenberg

CISSM, School of Public Policy

University of Maryland

James Martin Center for Nonproliferation Studies,

March 18, 2009

# ***Assessing the Biological Weapons and Bioterrorism Threat, Milton Leitenberg, 2005***

[www.strategicstudiesinstitute.army.mil/pubs/display.cfm?PubID=639](http://www.strategicstudiesinstitute.army.mil/pubs/display.cfm?PubID=639)



# Policy Issues

1. Prompting terrorist interest in BW
2. Diversion of resources
3. Reduction of US security by increasing BW proliferation potential
4. Misdirecting international public health efforts
5. Oversight and regulation

# Typical Bioterror Threat Statements

“The greatest existential threat we have in the world today is biological ... an inevitable bio-terror attack [would come] at some time in the next 10 years.”

Senator William Frist, 2005

“This [bioterrorism] is one of the most pressing problems we have on the planet.” Dr. Tara O’Toole, 2005

“...no other problem facing humanity is so potentially cataclysmic and has been so inadequately addressed.” Barry Kellman, 2008

5-year prediction of the WMD Commission, 12/2008

- Included CBRN and Global Target
- Sen. Graham’s addition re BW

# US Biodefense Expenditure Post FY 2001

Following the “Amerithrax” events of October and November 2001 in which 22 people were sickened, of whom five died, the US government has authorized \$57 billion for Biological Weapons Prevention and Defense. The proposed current rate of annual authorization for this purpose is ~\$7 billion, which can be expected to continue in the forthcoming years.

Alan Pearson, “Federal Funding for Biological Weapons Prevention and Defense, FY 2001-2009,”  
[www.armscontrolcenter.org/policy/biochem/articles/fy09\\_biodefense\\_funding/](http://www.armscontrolcenter.org/policy/biochem/articles/fy09_biodefense_funding/).

# Annual Global Mortality Rates

- Poverty: 7.3 million
- HIV/TB/Malaria: 5.0 million
- Diarrheal disease: 3.5 million
- Measles: 0.5 – 1.0 million
- Smoking: 5.0 million
- Warfare: 1.0 million+
- **Bioterrorism: 0**

**TOTAL**

**22.6 million**

22.6 million per year, 10 years back and 10 years forward,  
equals **452 million**

# Annual US Major Disease Mortality

- Various forms of cancer kill roughly 565,000 Americans per year.
- Tobacco kills around 440,000.
- Obesity causes perhaps 400,000 or more deaths.
- Approximately 1.7 million patients develop infections annually while undergoing treatment in US hospitals, resulting in an estimated 99,000 deaths.
- **Together these four causes account for roughly 1.5 million US deaths per year, every year.**
- Bioterrorism killed *zero* U.S. citizens in the twentieth century and five to date in the twenty-first century.

# NYC Mortality, 2006

Total deaths:	55,391
• Colorectal cancer	1,473
• Pulmonary cancer	2,555
• Major CV disease	24,760
• Influenza/pneumonia	2,575
• HIV	1,209
• COPD	1,305
• Diabetes mellitus	1,708
• Accidents	1,195
• Suicide	459
• Homicide	624
• <b>Bioterrorism</b>	<b>0</b>

Summary of Vital Statistics, 2006. NYC DOHMH  
Available at: [www.nyc.gov/html/doh/html/vs/vs.shtml](http://www.nyc.gov/html/doh/html/vs/vs.shtml)

## Compare to:

- Global climate change, presumptive consequences
  - to global agricultural production
  - Asia's major river systems with Himalayan sources
  - Conflict
- Global deforestation, desertification
- Global poverty levels
- Oceanic changes (coral reefs etc)
- Depletion of fresh water aquifers
- Roughly 245 million people died in 20<sup>th</sup> century wars and conflicts

# **What is the Current BW Threat to the United States?**

- offensive biological weapons programs being carried out by states;
- evidence of proliferation from state BW programs;
- evidence of state assistance to non-state actors to develop or produce biological agents or weapons; and
- efforts to develop biological agents or weapons by non-state actors that are true international terrorist groups.

# Estimates of State Offensive BW Programs-1

- Contrary to all statements since the late 1980s, the trend of proliferation of state BW programs was probably more or less flat since the mid-1970s: ~11.
- In recent years, official US estimates of the number of such programs has declined by 5. As of 2008, the US government apparently thinks the appropriate number is six.

# Estimates of State Offensive BW Programs-2

- Since 2005, the US intelligence community has qualified its assessments of those remaining programs to such a significant degree that it is difficult, if not impossible, to judge what degree of “offensive” nature—the development, testing, production or stockpiling of biological agents or weapons—remains in those programs. The “capability” phrasing used would apply to the US more than any other state.
- **There is no discussion at all** of alleged offensive state BW programs in the Dennis Blair, Feb 2009, DNI Threat Assessment.

# **Proliferation from State BW Programs**

## **Personnel**

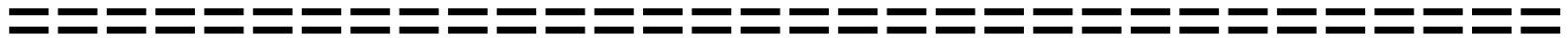
- USSR/Russia: Minimal, about a dozen scientists to Iran. None known to any other country of BW concern.
- South Africa: None
- Iraq: None

## **Transfer of technology and pathogen strains**

- 1980-1990, to Iraq, from USSR, US, France, Germany
- None from the three countries above since 1992
- 1999-2003, massive US DOD export of surplus equipment to Gulf state purchasers  
[GAO-04-8171N1, 10/7/2003]

# State assistance to non-state actors

- No evidence of any since end of WW II
- US intelligence community does not think that states would provide such support



Official US threat presentations, February 16, 2005 and March 17, 2005. Greatly reduced depiction of BW threat from non-state actors.

# Intelligence Community Assessment

“We accept the validity of intelligence estimates about the current rudimentary nature of terrorist capabilities in the area of biological weapons.” **[WMD Commission, 12/2008]**

“... For your information, the intelligence community shares your perspective of terrorist capabilities which has been fed to senior administration officials.” [Sent to me in July 2005; one of three similar intelligence community messages.]

## **Dennis Blair, Feb 2009, DNI Threat Assessment**

- “Most terrorist groups that have shown some interest, intent or capability to conduct CBRN attacks have pursued only limited, technically simple approaches that have not yet caused large numbers of casualties.”
- “In particular, we assess the terrorist use of biological agents represents a growing threat as the barriers to obtaining many suitable started cultures are eroding and open source technical literature and basic laboratory equipment can facilitate production.”

# **Classic Themes since 1985 in the Anticipation of Terrorist Acquisition of Biological Weapons**

- Rapid advances in the microbiological and molecular genetic sciences. Most particularly pronounced over the past decade.
- The knowledge and relevant equipment is internationally diffused.

## **In the Real World However...**

- Neither of these factors, universally invoked, has driven terrorist interest or acquisition of BW.
- A message from Dr. Ayman al-Zawahiri to his deputy on April 15, 1999, noted that “we only became aware of them [BW] when the enemy drew our attention to them by repeatedly expressing concerns that they can be produced simply with easily available materials.”
- The “recipes” constantly referred to “available on the web” or “on jihadi websites” are useless.

## **Policy Issue 1 - The Primary Driving Factor Prompting Terrorist Interest**

- Gross exaggeration, propaganda, and alarmism about BW are critically counterproductive, inducing interest by non-state actors in precisely the kind of activities that the United States would like to prevent.
- What has been trumpeted abroad for 10-15 years is no longer retrievable.
- If we do see a successful attempt by a terrorist group to use BW in the coming decades, responsibility will rest to a great degree with the incessant scaremongering and threat magnification about bioterrorism in the United States, thereby emphasizing its desirability to terrorist organizations.

# **A Parallel Case: “We invented nuclear terror.”**

**Brian Jenkins, RAND, 2008**

- “... The threat preceeded any terrorist actually thinking about the issue. ...we educated the terrorists on the subject.”
- “The message clearly coming out of Washington for the last seven years has been a relentless message of fear.”
- “Nuclear terror...it’s about our imagination.”
- **“The first thing we have to do is truly understand the threat.”**

*See National Journal, 10/18/2008, pp. 50-51.*

# Essential Requirements to Produce BW Agents

- One must obtain the appropriate strain of the disease pathogen.
- One must know how to handle the organism correctly.
- One must know how to grow it in a way that will produce the appropriate characteristics.
- One must know how to store the culture, and to scale-up production properly.
- One must know how to disperse the product properly.

# Efforts of True International Terrorist Groups to Develop Biological Agents or Weapons

- Japanese Aum Shinrikyo, 1990 to 1993, effort failed totally. Did not obtain any pathogenic strains. [Question of new evidence; Danzig]
- Al-Qaeda in Afghanistan, 1997-1998 to December 2001, effort failed. Did not obtain any pathogenic strains. Equipment procurement minimal; unclear if any work was done. [See declassified documents and details; G. Tenet's published remarks dubious.]
- As best as is known, no other terrorist group is currently seeking BW capability.

# Significance of 2001 Amerithrax events

- Dispersion of a purified dry-powder preparation of *B. anthracis* through US postal system, Sept-Oct 2001
- Identification of institutional source as US government biodefense facility(s) and/or contractor. Resource base includes strain access, technical capacity, highly qualified personnel, providing crucial insight into (a) the ability of true international terrorist groups to develop a similar capability and (b) in what span of time this might occur; i.e., the imminence of the threat.

# The Past 15 Years

- “Fact Free Analysis” [Brian Jenkins, RAND, 1999]
- Substitution of vulnerability analysis for threat assessment, utilization of absolute optimum mathematical possibilities [example of Runge, 2008, Providence, Rhode Island]
- Exercises with preposterous assumptions; justified by the desire to prompt official action for the public good [Atlantic Storm, 1/2005]
- Postulated future scenarios with extravagant assumptions [Danzig]
- Government exercises with rigged variables (pathogen transmission rates, RO)
- Massive exaggeration overall

# US BIOTERRORISM EXERCISE SCENARIOS

1. 1988, Mexico-Texas border: “Alibek” smallpox chimeric viral agent
2. TOPOFF1, May 2000: aerosolized pneumonic plague, FEMA, and US Department of Justice
3. [Unnamed], July 2000: aerosolized plague, US Department of Justice and DOD/DTRA [used fallacious RO of 10:1]
4. Dark Winter, June 2001: aerosolized smallpox, Johns Hopkins Center for Biosecurity and 3 collaborating groups [also used RO of 10:1]
5. Sooner Spring, April 2002: smallpox, also pneumonic plague and botulinum toxin, National Memorial Institute for the Prevention of Terrorism (MIPT), Oklahoma
6. TOPOFF2, May 2003: aerosolized pneumonic plague, US Department of Homeland Security and US Department of State [used fallacious RO of 6:1]
7. Atlantic Storm, January 2005: aerosolized dry powder smallpox, Center for Biosecurity (now affiliated with the University of Pittsburgh Medical Center) [used appropriate RO of 3:1]
8. TOPOFF3, April 2005: aerosolized pneumonic plague, US Department of Homeland Security [again fallacious RO, 6:1]

***CATASTROPHIC BIOTERRORISM,***  
**RICHARD DANZIG, 2003**

- ❑ Case 1: a large-scale outdoor aerosol anthrax attack
- ❑ Case 2: a large-scale outdoor aerosol smallpox attack

**----- The above 2 are highly unrealistic -----**

- ❑ Case 3: an attack that disseminates botulinum toxin in cold drinks.
- ❑ Case 4: an attack that spreads foot and mouth disease among cattle, sheep and pigs.

# National Planning Scenarios: Department of Homeland Security (Homeland Security Council)

- Scenario #2: Biological Attack, aerosolized anthrax, 5 cities in sequence
- Scenario #4: Biological Attack, aerosolized plague in three areas of a single city

----- **The above 2 are highly unrealistic** -----

Scenario #13: Biological Attack, liquid anthrax placed in ground beef in a factory – producing intestinal anthrax; mortality in low hundreds

- Scenario #14: Biological Attack, foot and mouth disease. Economic loss; no human mortality

# The Essential Issue ...

... is reality versus (extravagant) imagination.

Imagination, in the form of future scenarios, has been justified for purposes of planning.

The claim has been made that if we anticipate and prepare for a maximum event we will be best prepared for less serious events as well.

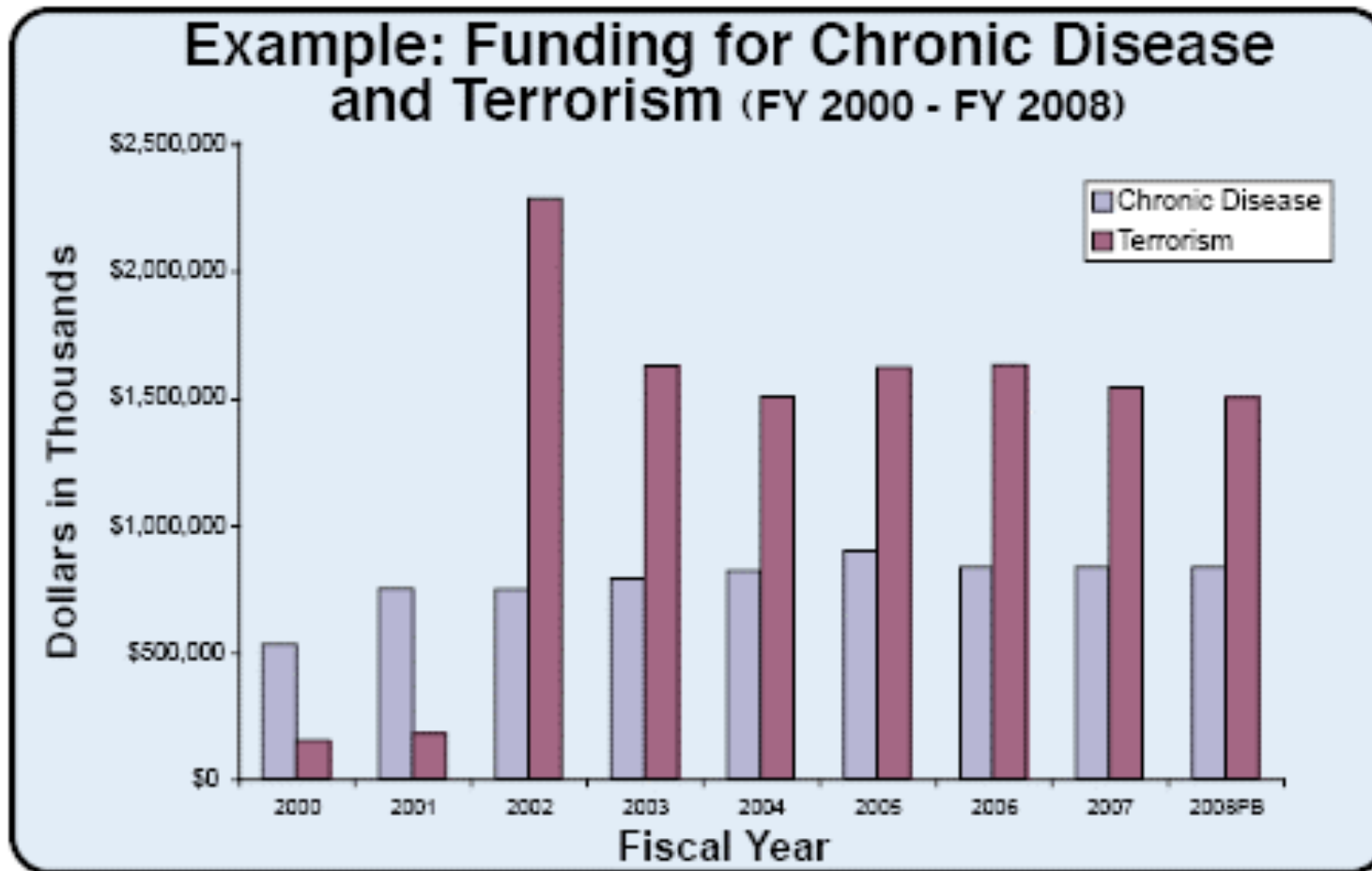
Also used in part as a justification for certain lines of US biodefense research.

The costs of excessive imagination: alternative priorities that resources should rather be used for, and counterproductive consequences.

## **Policy Issue 2 – Diversion of Resources**

- Faulty threat analysis produces faulty allocation of national resources and expenditure
- If avoidance of death due to potential disease mortality is the criterion, then return to the list of major causes of US disease mortality
- Compare, for example, with the utility of a **national** influenza vaccine facility

# Funding for Chronic Disease and [Bio] Terrorism (FY 2000 – FY 2008)\*



\* Terrorism refers to bioterrorism, and the table represents CDC funding.

## **Policy Issue 3 – Reducing US Security and Increasing BW Proliferation Potential**

- US biodefense community was source of first serious bioterrorism event on US soil (the “insider threat,” “Amerithrax”)
- Potential exacerbation of that by the dramatic post-2002 expansion of individuals and facilities working with select agents
- Stimulation of similar increases in other countries (BWC CBMs in 1993 showed 13 biodefense programs; 25 in 2007)
- The stimulation to the overall “BW threat” by research being undertaken within the US biodefense / NBACC program

## **Policy Issue 3 – Reducing US Security and Increasing BW Proliferation Potential [cont'd]**

- Research being undertaken within the US biodefense / NBACC program **and the issue of its compliance with the Biological Weapons Convention (Article I).**

**See ML, 2005 AWC monograph, pp. 65-90.**

## **Policy Issue 4 – Misdirecting International Public Health Efforts**

*Countering Biological Threats: Challenges for the Department of Defense's Nonproliferation Program Beyond the Former Soviet Union*, National Academy of Sciences, 3/2009.

Do the programs suggested assist or subvert public health efforts in the selected developing nations based on their own needs, that is, the pattern of local disease incidence causing major mortality?

# Policy Issue 5 – Oversight and Regulation

- Responses by NSABB authors (Winter 2008), expression of fear of oversight or regulation of biodefense research; “threat to science”
  - Conflates a [small] fraction of 1 percent of life scientists who work with BW agents with “the life sciences enterprise” as a whole
  - More serious oversight and/or regulation would be unlikely to have any negative effect on US science, US health, or US economic competitiveness.
  - Arguments offered are analogous to those made by US commercial/industrial firms against regulation (air, water, toxic compounds, ozone depletion, etc) since 1930s.

# The Problem of Biological Weapons

## The Problem of Biological Weapons

**Milton Leitenberg, 2004**



SWEDISH  
NATIONAL DEFENCE COLLEGE



SWEDISH  
NATIONAL DEFENCE COLLEGE

DEPARTMENT OF SECURITY AND STRATEGIC STUDIES

