

The Dual Use Dilemma

An International Challenge and Opportunity

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U.S. National Science Advisory Board for Biosecurity

The Dilemma

**Good science can
be put to bad uses**

...intentionally or by accident.

The Bio-risk Spectrum

Chronic
Disease

Infectious
Disease

Misuse of
Dual-use
Technologies

Biological
Terrorism

Biological
Warfare

The Bio-risk Spectrum

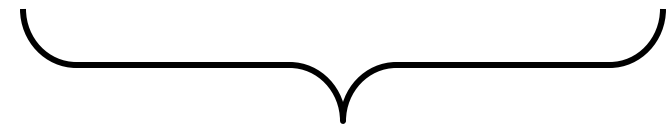
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Involve Intent

The Bio-risk Spectrum

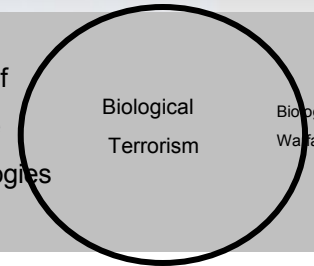
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U.S. ca. 2002/3

1. Mouse Pox and IL-4 (2000)
2. *De Novo* Synthesis of polio virus (2002)
3. Smallpox 'SPICE' gene (2002)
4. Biotech Revolution
5. ...and interest inside the beltway

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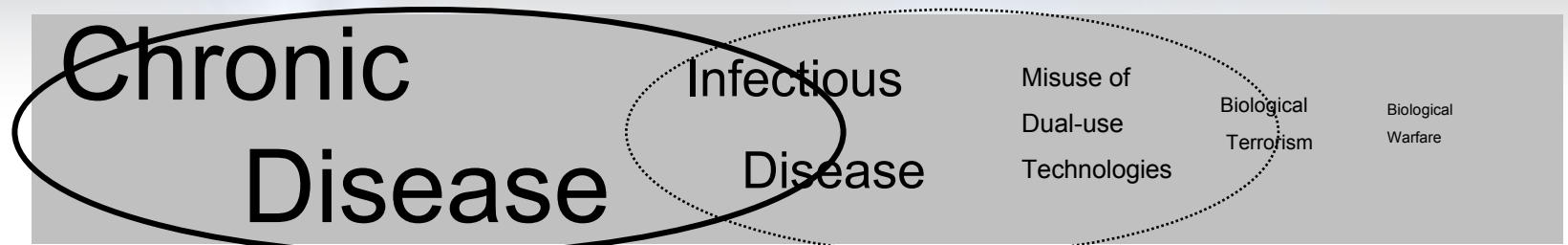
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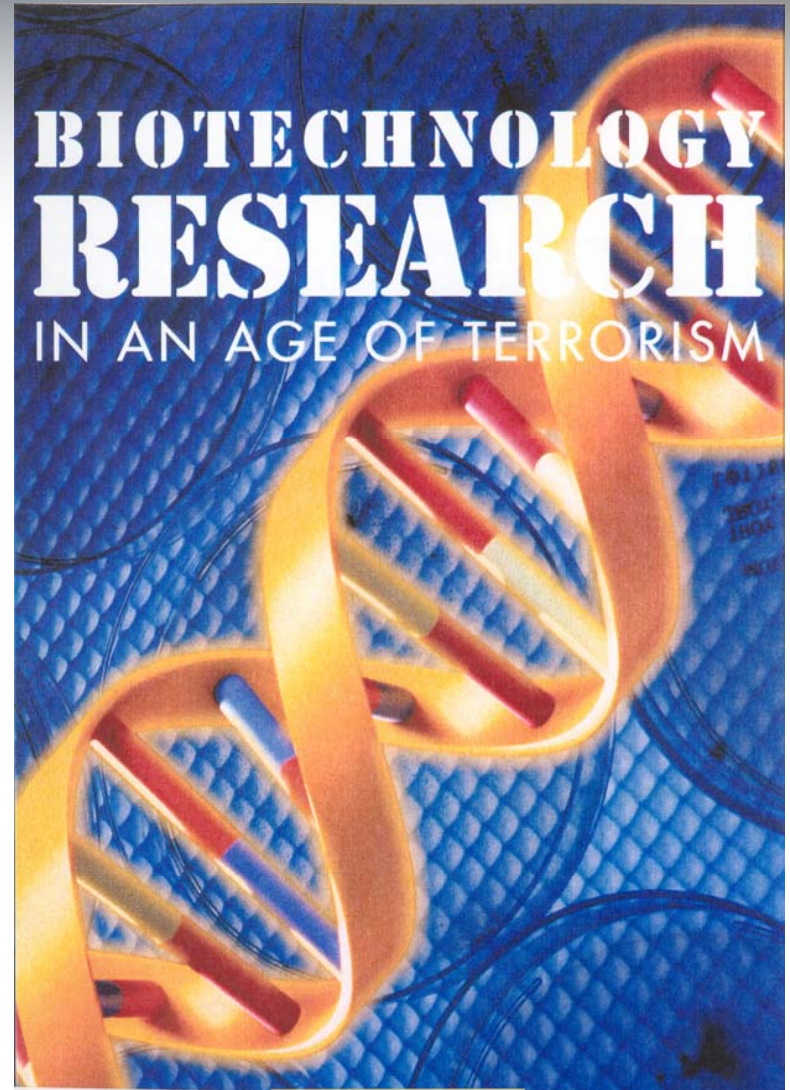
The Bio-risk Spectrum



The NRC Report on Dual-Use Research

**Report of the National
Research Council of the
National Academies:**

***“Biotechnology
Research in an Age of
Terrorism: Confronting
the Dual Use Dilemma”
(October 2003)***



Fink Committee asked to consider the risk of...

...agents stolen for malevolent purposes

...research results or knowledge that facilitate...

...related to legitimate research

Charge to Committee:

1- Review current U.S. rules

2- Address adequacy of U.S. rules

3- Recommend changes to...prevent misuse

...while still enabling legitimate research

NSABB Structure and Operations

- **25 voting members appointed by Secretary of Health and Human Services, after consultation with other Federal Agencies**
- **Meetings open to public, unless otherwise determined by the Secretary, HHS**
- **Managed by National Institutes of Health, Department of Health and Human Services**

NSABB Expertise

- **Molecular/genomics**
- **Microbiology**
- **Clin. ID/diagnostics**
- **Lab biosafety/security**
- **PH/epidemiology**
- **Health physics**
- **Pharm. production**
- **Veterinary medicine**
- **Plant health**
- **Food production**
- **Bioethics**
- **National security**
- **Intelligence**
- **Biodefense**
- **IBCs**
- **Export controls**
- **Law, law enforcement**
- **Scientific publishing**
- **Perspectives from academia, industry, public, RAC**

NSABB Charges

Recommend:

- **Criteria for identifying** dual use research of concern
- National **guidelines for oversight** of dual use research at both local and federal levels, including
 - Local review and approval processes e.g., Institutional Biosafety Committees (IBCs)
 - Criteria/processes for referral of issues to NSABB
- Strategies for **oversight of new classes** of experiments and technologies

NSABB Charges

Advise on:

- **Program for biosecurity education and training** for all scientists and laboratory workers at federally funded institutions
- **A code of conduct** for scientists and laboratory workers in life sciences research
- National **guidelines on communication and dissemination** of dual use research methodology and research results
- Strategies for promoting **international dialogue** on dual use research issue

NSABB Working Groups

- **Criteria** for identifying dual use research
- **Code of conduct** for life sciences researchers
- Responsible **communication** of dual use life sciences research
- Biosecurity issues raised by **synthetic genomics**
- **Oversight** of dual use research
- **International** collaboration for oversight of dual use research

“1918 Flu and Responsible Science”



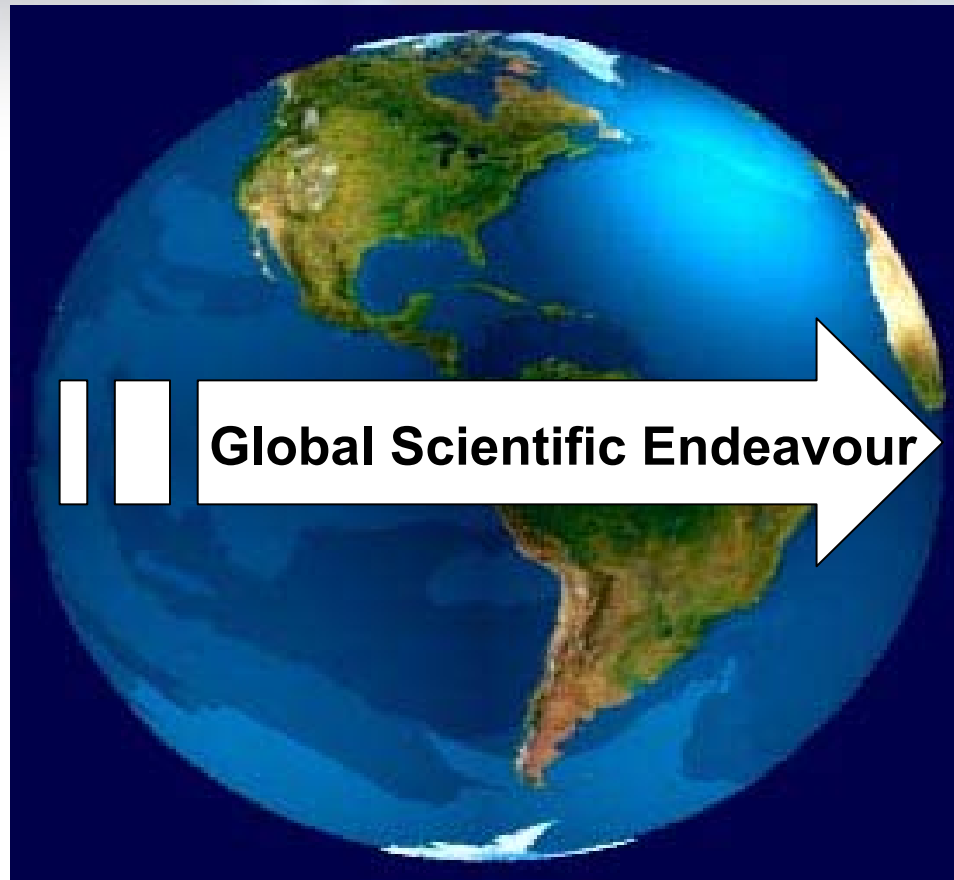
“I firmly believe that allowing the publication of this information was the correct decision in terms of both national security and public health.”

***Science* Editorial
Vol. 310, 7 October 2005
Philip A. Sharp**

Draft Oversight Guidelines

1. Federal Guidelines
2. Awareness
3. Education
4. Local Evaluation and Review for D-U Potential
5. Risk Assessment and Risk Management
6. Periodic Evaluation
7. Compliance

International Collaboration



**International Collaboration
on Oversight of Dual Use
Research**



**International
Working Group**

The International Panel

- **Current Focus:**
 - **Identifying relevant stakeholders**
 - **Understanding how other countries perceive the “biosecurity” threat**
 - **Develop strategies to engage the global scientific community in cooperative efforts**

Our Mission: To share the NSABB “toolbox”

International Roundtable

- Co-sponsors
 - World Health Organization
 - US Government
- Location
 - Bethesda, Maryland
- Date
 - February 26-27, 2007

Countries of Participants

- Australia
- Argentina
- Bulgaria
- Georgia
- India
- Israel
- Morocco
- Netherlands
- People's Republic of China
- Poland
- Uganda
- United Kingdom
- United States
- Spain
- Switzerland

Participating Organizations

- **Intergovernmental Organizations**
 - World Health Organization
 - World Organization for Animal Health (OIE)
 - Food and Agriculture Organization of the United Nations (FAO)
- **Scientific Professional Associations**
 - International Union of Biochemistry and Molecular Biology (IUBMB)
 - International Union of Microbiological Societies (IUMS)
 - International Council for Life Sciences (ICLS)
 - American Society for Microbiology (ASM)



Consensus Points

- Science is a global enterprise and becoming ever more so
 - Addressing the challenges of dual use science is therefore a global issue
 - Different approaches may be required in different regions/countries

Consensus Points, cont.

- Science is a powerful tool of good for society
 - Science and our understanding of biological processes are advancing very rapidly
- Strengthen and sustain a culture of responsibility and accountability
 - Humans control science for good or ill

Consensus Points , cont.

- Maintain a productive scientific enterprise and minimize the potential for harm
- Provide guidance on dual use to the broader scientific community, defining the problem and the challenges
- Promote continued awareness of the dual use research issue
 - Build a layered, integrated, international web of prevention, protection, awareness and understanding

Challenge

Prevent use of science for harm
yet...

Protect scientific discovery

Preserve scientific creativity

Biology: *Living with uncertainties...*



TIME (Europe) April 14, 2003

<http://www.biosecurityboard.gov>

NATIONAL SCIENCE ADVISORY BOARD FOR BIOSECURITY

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Welcome

The NSABB has been established to provide advice to federal departments and agencies on ways to minimize the possibility that knowledge and technologies emanating from vitally important biological research will be misused to threaten public health or national security. The NSABB is a critical component of a set of federal initiatives to promote biosecurity in life science research.

The NSABB is charged specifically with guiding the development of:

- A system of institutional and federal research review that allows for fulfillment of important research objectives while addressing national security concerns;
- Guidelines for the identification and conduct of research that may require special attention and security surveillance;
- Professional codes of conduct for scientists and laboratory workers that can be adopted by professional organizations and institutions engaged in life science research; and
- Materials and resources to educate the research community about effective biosecurity.

The NSABB is chartered to have up to 25 voting members with a broad range of expertise in molecular biology, microbiology, infectious diseases, biosafety, public health, veterinary medicine, plant health, national security, biodefense, law enforcement, scientific publishing, and related field. The NSABB also includes nonvoting ex officio members from 15 federal agencies and departments. NSABB members are presently being appointed.

Please visit this site frequently for updates on the NSABB and its activities.

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