



Enhancing Biological Safety and Security

Terence Taylor

**Global Health and Security Initiative
and the
International Council for the Life Sciences
Amman
16 January 2007**

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Understanding Biological Risk

- ◆ Extraordinary advances in life sciences and biotechnology bring enormous benefits to medicine, public health, and agriculture
- ◆ But the risk to public safety and security from the misuse of this science and technology needs to be minimized by the engagement of the life sciences community



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Spectrum of Biological Risk

- ♦ Naturally occurring disease
- ♦ Re-emerging disease
- ♦ Anti-biotic resistant disease
- ♦ Accident or misadventure
- ♦ Deliberate use – state or non-state



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Pace of the Advances

- ♦ Moore's Law – computing power doubles every 18 months
- ♦ Carlson's Law
 - Starting in 2002 it took two years for a team to synthesize the polio virus
 - In 2005 it took two weeks for a team to synthesize a virus of comparable length
- ♦ Cost reducing at about the same rate.



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Carlson's "Law"



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Special Challenges

- ◆ Lack of shared global language, risk assessment methodologies and standards in biosafety and biosecurity
- ◆ Challenge to traditional multilateral institutions, individual scientific organizations and national governments



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Competing Issues

- ◆ Commercial Interests
 - Desire to measure up to global standards perceived to be in the strategic interest of private business and governments
- ◆ Basic health care – infectious disease
- ◆ Agriculture and food production



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Global Approaches

- ◆ World Health Organization
- ◆ G-8 and Global Partnership
- ◆ National Academies of Science
- ◆ **Global networks of life scientists**



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A Global Issue Network

- ◆ Networks can define norms for governments, business, and multilateral institutions”
- ◆ “Global issue networks can transcend the limits imposed by contemporary territorial and hierarchical institutions that were never constructed to address these inherently global changes”

Jean-Francois Rischard, Vice-President,
World Bank



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International Council for the Life Sciences

- ◆ Created in December 2005 to help enhance biological safety and security through international standards and the sharing of best practices
- ◆ Private organization
- ◆ Product of over three years of engagement of the global life science community



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ICLS Mission

The mission of the Council is to help ensure global public health, safety and security by safeguarding the opportunities offered by advances in the life sciences and their application through the promotion of best practices, standards, and codes of conduct.



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Senior Advisory Panel

- ♦ **Abdallah Daar**
University of Toronto (Canada)
- ♦ **Robert Erwin**
Large Scale Biology Corporation
- ♦ **Paul Fischer**
GenVec
- ♦ **Jerome Gervais**
Formerly of the The Vaccine Fund (France)
- ♦ **William Haseltine**
Haseltine Associates
- ♦ **Erling Myhre**
Lund University Hospital (Sweden)
- ♦ **Anwar Nasim**
National Biotechnology Commission (Pakistan)
- ♦ **Mikhail Paltsev**
Moscow Medical Academy and TEMPO
- ♦ **Julia Polak**
Imperial College (UK)
- ♦ **Charles Penn**
Syntaxin (UK)
- ♦ **George Poste**
Arizona Biodesign Institute, Arizona State University
- ♦ **Una Ryan**
AVANT Immunotherapeutics
- ♦ **Martin Sanders**
CDC
- ♦ **Gurinder Shahi**
Global BioBusiness Initiative USC (Singapore)
- ♦ **Mark Smolinski**
Global Health and Security Initiative
- ♦ **Rainer Wessel**
GANYMED Pharmaceuticals (Germany)



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ICLS Charter & Membership Obligations

- ◆ National and International Laws and Regulations
- ◆ Personnel
- ◆ Information
- ◆ Safe and Secure Operation of Facilities
- ◆ Governance of Research



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ICLS - Creating Partnerships

- ◆ Common global standards for Biosafety Levels 1, 2, 3 and 4
- ◆ Safety and security training standards and curricula for personnel from academia, private industry and government
- ◆ Global multi-disciplinary biological risk assessment



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ICLS Priority Action Areas

- ◆ International Biosecurity and Biosafety System
- ◆ Risk Assessment – common approach
- ◆ Briefings for policy officials



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2006 Outreach

- ◆ OECD Conference on Biological Research Centres
- ◆ G-8 Seminar Moscow
- ◆ National Scientific Advisory Board on Biosecurity
- ◆ National Academies of Sciences
- ◆ Royal Society (UK)
- ◆ United Nations
- ◆ Dialogues Islam and the West



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Risk Analysis

Risk analysis should answer three questions:

- What can go wrong ?
- How likely is it to happen?
- What are the consequences?

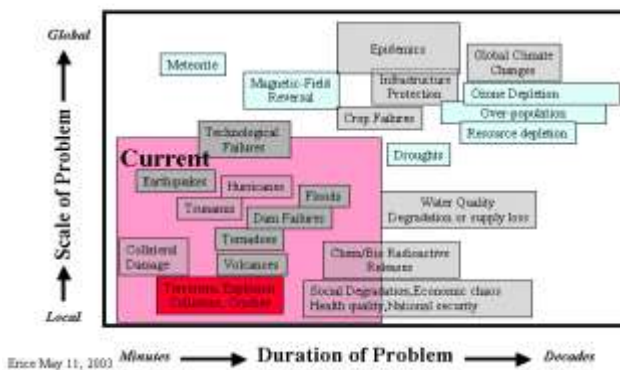


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Focus of Most Current Methodologies (3)

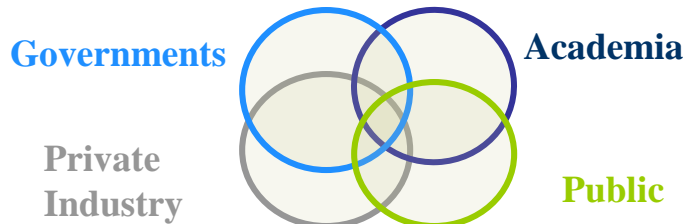
Most Analyses Concentrate on Evaluation of Relatively Short Duration and Limited Scale Phenomena



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Stakeholder Cooperation



Successful **risk management** requires **cooperation** among all the **stakeholders**



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Global Objectives

- ◆ International advisory groups on:
 - Training standards and curricula
 - Risk assessment methodologies
 - International Biosafety/biosecurity best practices and standards
- ◆ Membership:
 - Multi-disciplinary
 - Geographically representative



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2007

- ◆ Develop the ICLS International Biosafety and Biosecurity System
 - Russia
 - Middle East and the Gulf
 - South Asia
 - East Asia
- ◆ Develop Biological Risk Analysis Methodology



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Regional Meeting

- ◆ Planned to be in the Gulf in late 2007
- ◆ To include primarily representatives from countries in the Middle East, Gulf and South Asia
- ◆ Experts from other regions may also be invited
- ◆ Participants may be scientific and policy experts from academia, governments and the private sector



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Regional Visit

- ◆ ICLS Director and Assistant Director to visit the region in January 2007
- ◆ Listening to views on the key issues
- ◆ Selecting a conference location
- ◆ Promoting participation from academia, governments and private industry
- ◆ Developing the network



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ICLS Supporters

- ◆ NTI – Global Health and Security Initiative
- ◆ Alfred P. Sloan Foundation
- ◆ Foreign Affairs Canada
- ◆ Robert and Ardis James Foundation
- ◆ Private Individuals



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ICLS Supporters (2)

- ◆ Avant Immunotherapeutics (US)
- ◆ Ganymed Pharmaceuticals (Germany)
- ◆ Haseltine Associates (US)
- ◆ Higher Education Commission (Pakistan)
- ◆ Syntaxin (UK)
- ◆ Toronto University (Canada)
- ◆ Virginia Technical University (US)



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ICLS Supporters (3)

- ◆ Asia BioBusiness (Singapore)
- ◆ Imperial College (UK)
- ◆ Health Protection Agency (UK)
- ◆ I.M. Sechenov Moscow Medical Academy (Russia)
- ◆ Confederation of Indian Industry (India)
- ◆ National Biotechnology Commission (Pakistan)
- ◆ International Science and Technology Center
- ◆ World Health Organization



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ICLS Contact Information

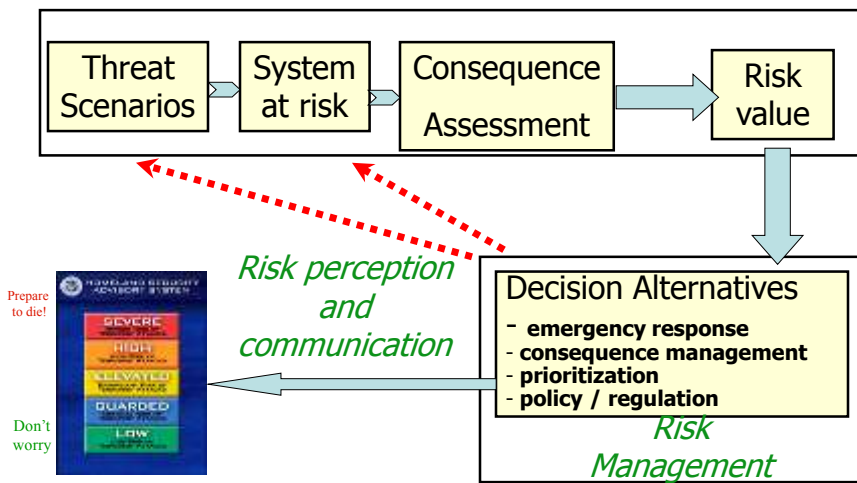
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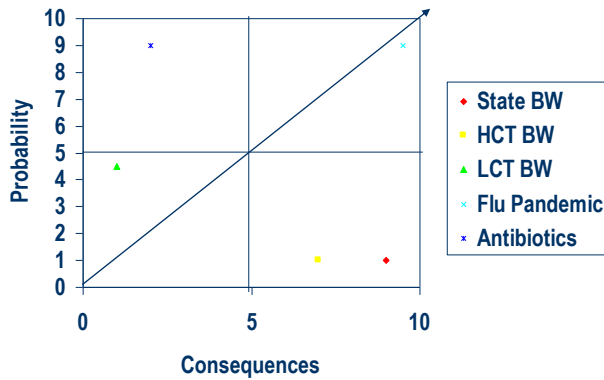
Risk Analysis



11 October 2006

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Infectious Disease Risk Matrix (illustrative) (4)



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