

Framing the issues of international biosafety and biosecurity

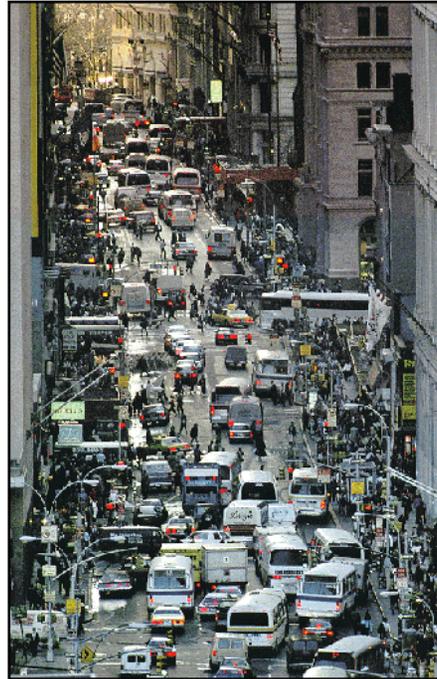


Laboratory Biosafety and Biosecurity
REDI Centre, Singapore
7-8 April, 2005

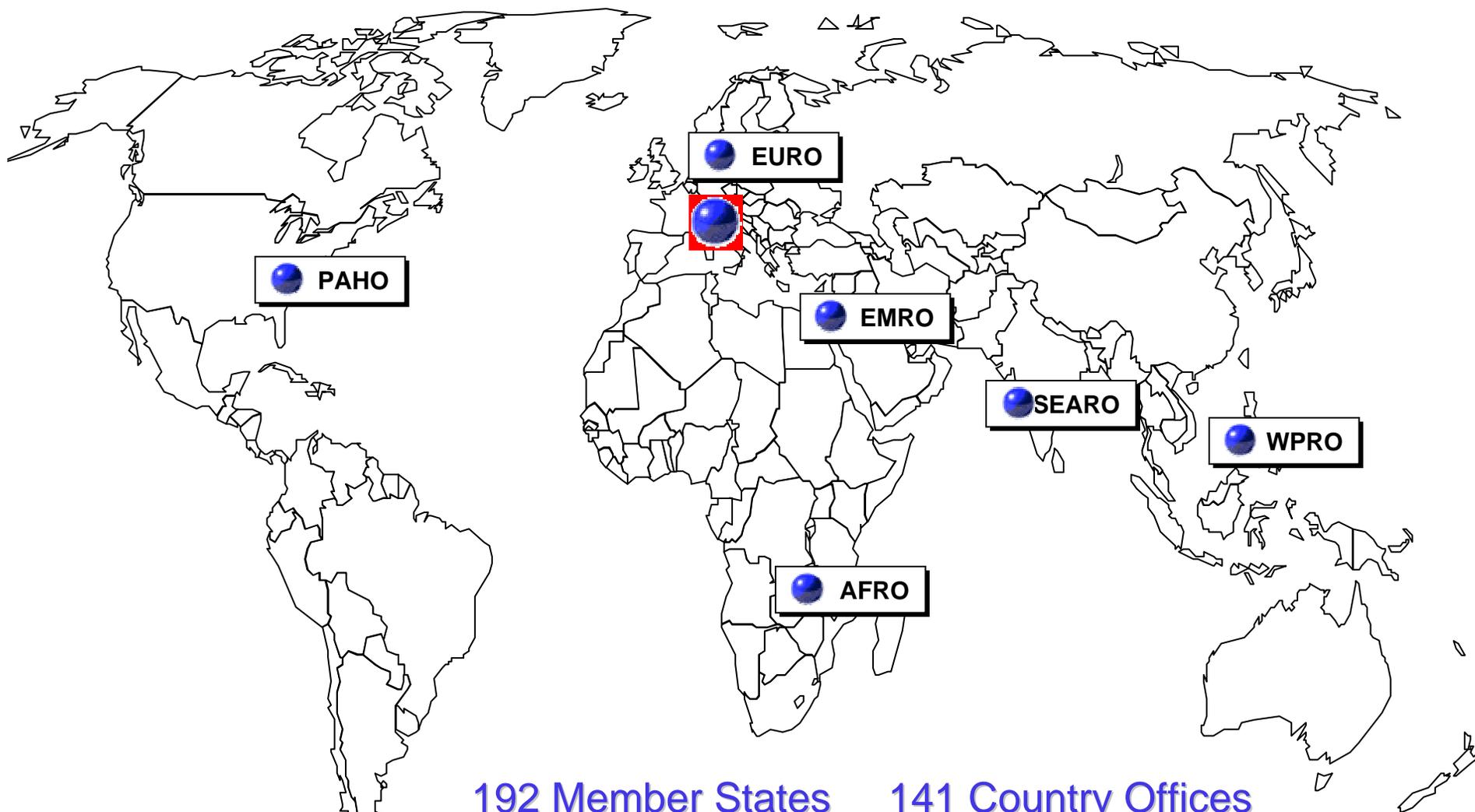
Dr Bradford A. Kay
Preparedness for Accidental and Deliberate Epidemics
Communicable Disease Surveillance and Response
World Health Organization

Our world is changing

- ❑ We change the way we live
- ❑ Microbes evolve
- ❑ New threats emerge
- ❑ New solutions are needed



World Health Organization



192 Member States 141 Country Offices



Global Outbreak Alert and Response Network (GOARN)

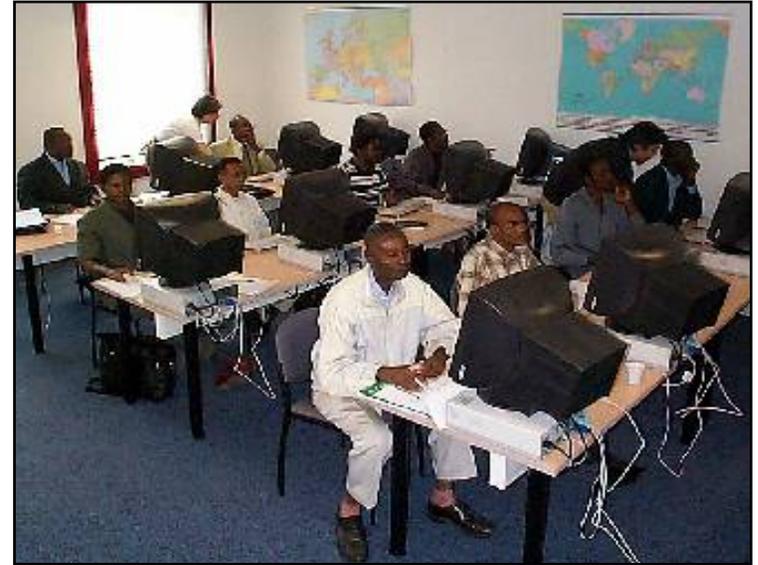
- **Technical partnerships with institutions and networks to mobilize resources for control of disease outbreaks**
 - **Rapid identification, verification and communication of disease outbreaks**
 - **Coordinate technical assistance to affected state(s)**
 - **Identify opportunities for sustainable outbreak preparedness**



Programme areas for WHO CSR Lyon

Strengthen national capacities to prevent and control disease epidemics by strengthening:

- Disease surveillance systems
- Public health and healthcare laboratories
- Biosafety and security of pathogens in laboratories and healthcare setting
- Preparedness for public health response to bioterrorism



International Health Regulations

Re-defining how WHO and Member States will cooperate with communicable diseases of international concern.



WHO: Mobilizing the global response to SARS

■ Aetiology

- 13 laboratories in 9 countries

■ Clinical management

- 50+ clinicians in 14 countries

■ Epidemiology

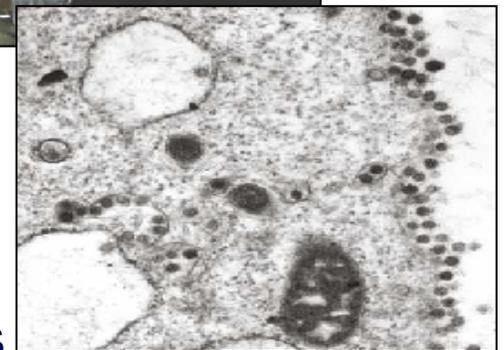
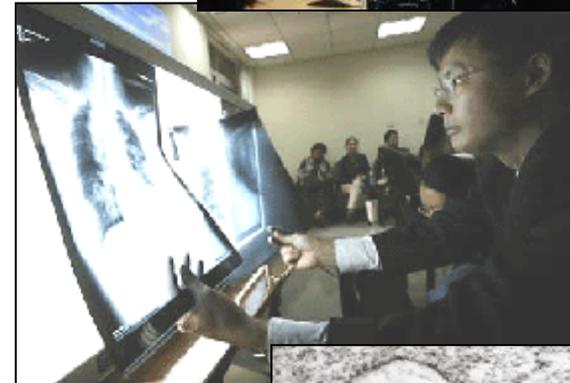
- 32 epidemiologists, 11 institutions

■ Animal reservoirs

- 15 experts from 11 institutions

■ Outbreak network

- 115 experts from 26 institutions in 17 countries

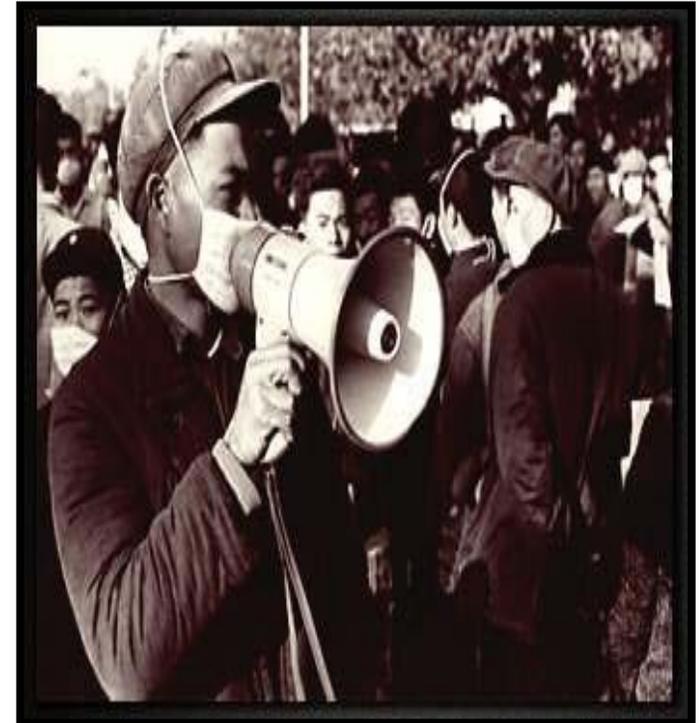


Lessons learned from SARS

- Exceptional situations require exceptional measures
- Highest political commitment required
- Open, honest communications
- Evidence-based action
- Global partnerships are essential



20th Century Influenza pandemics



US National Museum of Health and Medicine

1918: “Spanish Flu”
20-40 million deaths
A(H1N1)

1957: “Asian Flu”
1-4 million deaths
A(H2N2)

1968: “Hong Kong Flu”
1-4 million deaths
A(H3N2)

Challenges to public health come from diverse scenarios



Refugees



Natural disasters



Epidemics



Pilgrimage



Bio terrorism

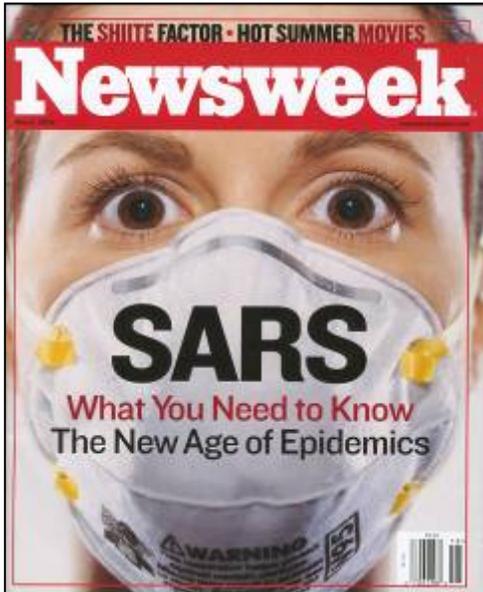


Sporting events



International trade, travel

Public Health and security activities have traditionally had minimal overlap



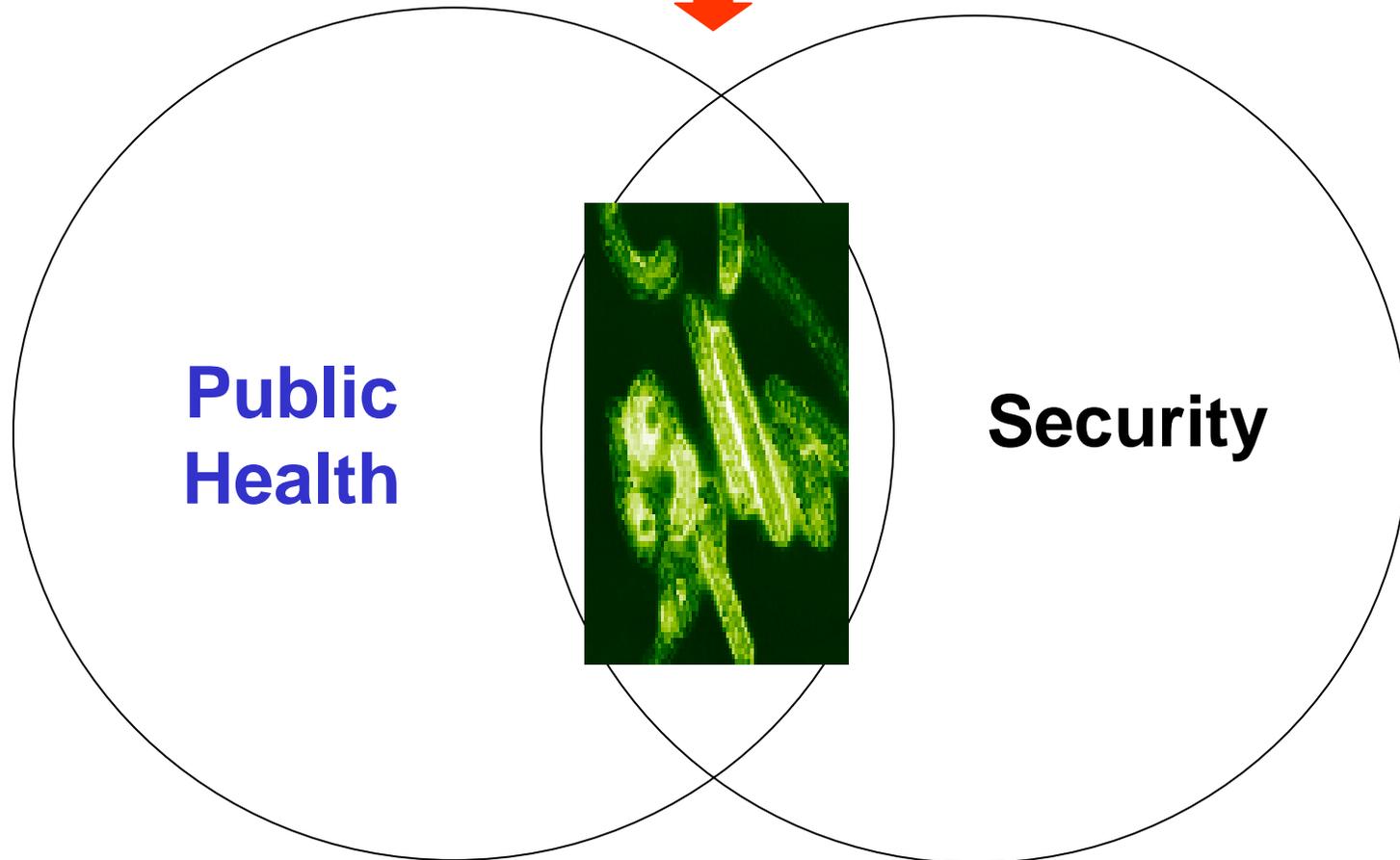
**Public Health
issues**



**Security
issues**

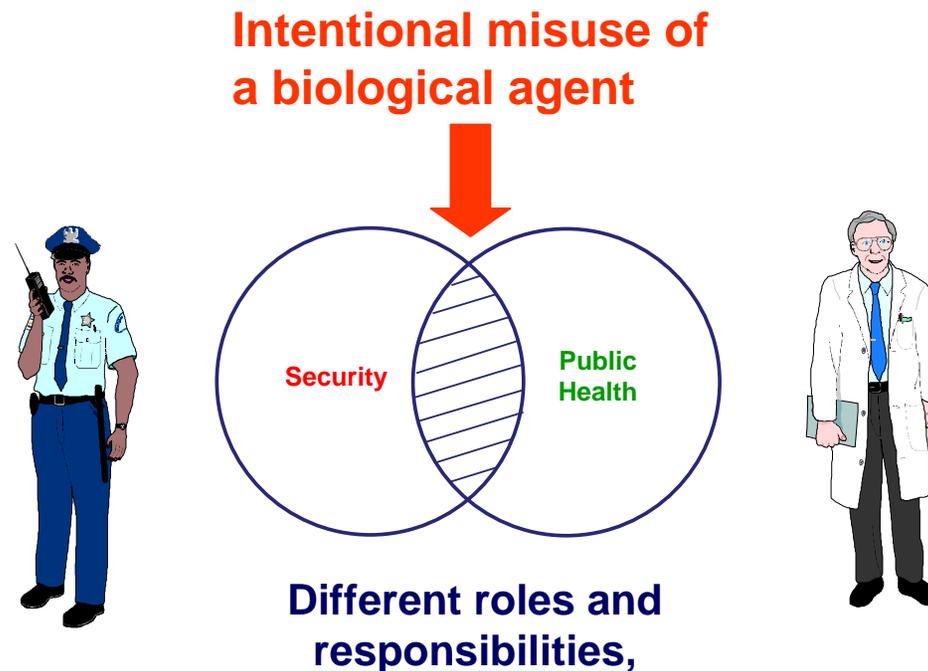
Challenges to health and security

Intentional misuse of
biological agent

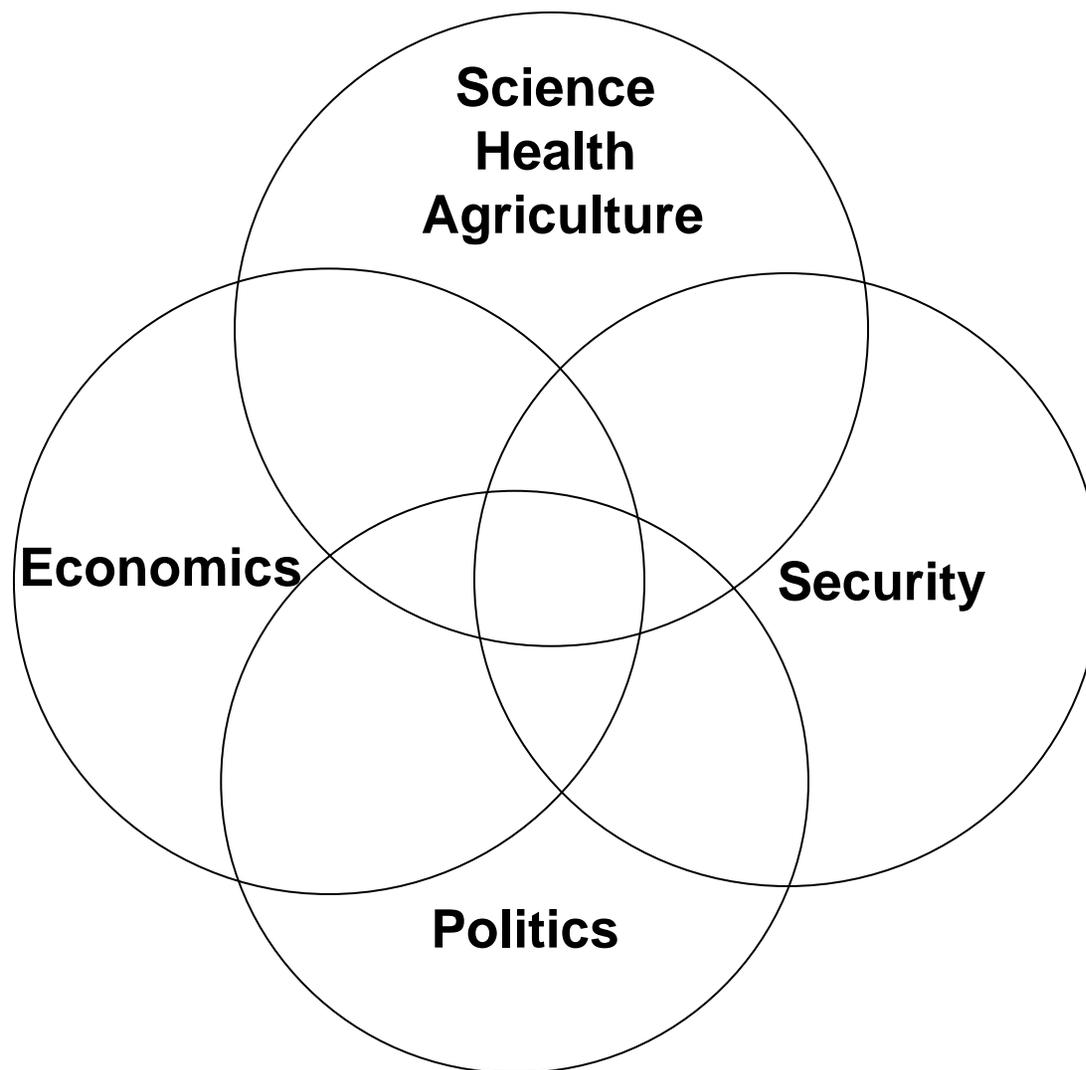


Challenges to public health and security

- Deliberately caused epidemics fundamentally ***transform the context*** in which the public health response must be delivered:
 - Need for national and international coordination on roles and responsibilities

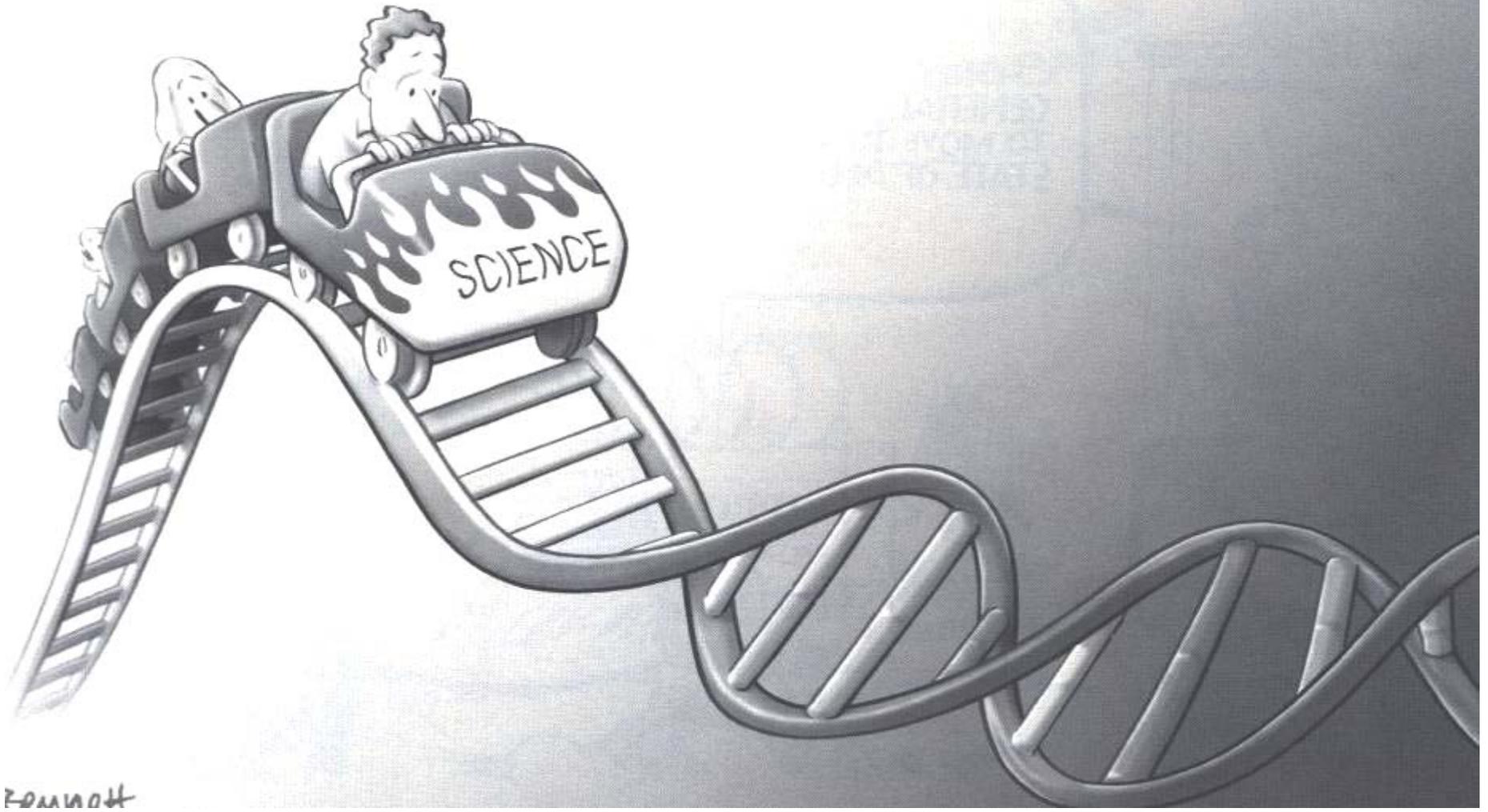


Biorisks: The intersection of many perspectives



Dual-use biological research

"Biological research with legitimate scientific purpose that may be misused to pose a biological threat to public health and/or national security"



Biosecurity issues for public health

- Natural diseases and natural disasters continue to occur
- Public health structures for disease surveillance and response are the foundation of biosecurity
- Biosafety (**working safely**) is an essential component of biosecurity (**keeping the work safe**)
- Developing countries have few resources for biosafety or biosecurity
- Sustainable biosecurity measures must be linked to clear advantages

Biosecurity issues for public health

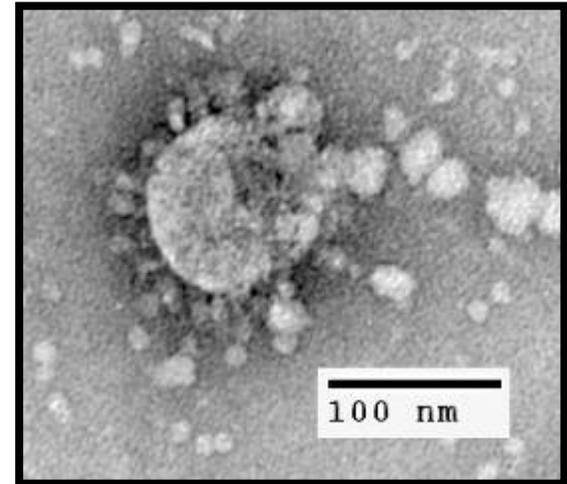
- Bioscience facilities are potential sources of harmful biological agents
 - Health care and public health laboratories
 - Basic and applied research institutions
 - Pharmaceutical and biotechnology laboratories
 - Agricultural and veterinary laboratories
- Bioscience community not uniformly accustomed to security issues
- Global norms and standards for professional conduct of science do not exist
- Global regulatory mechanisms for biological materials do not exist
- Security measures must be in balance with other priority public goods

International issues for bioscience

- Many nations do not have biosecurity legislation
- Uncoordinated national standards could lead to **inconsistent regulations or weak implementation**
- Uniform standards on which states can base national legislation for biosecurity do not exist

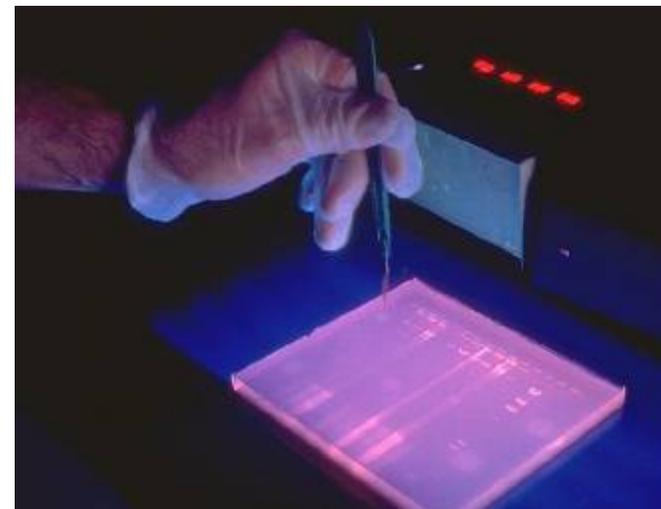
Control issues with biological agents

- Microbes are ubiquitous, naturally occurring
- Traditional security measures can be ineffective
- Minute amounts are significant
- Travel and trade promote ease and speed of spread
- No global means to control or monitor distribution
- Origin of agent can be difficult to trace
- Uncertainty about forum for global issues of biological security



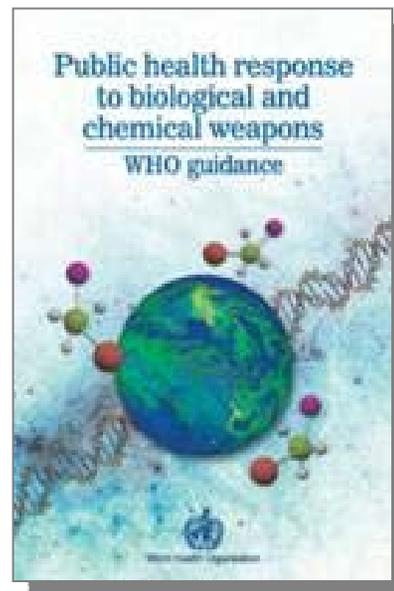
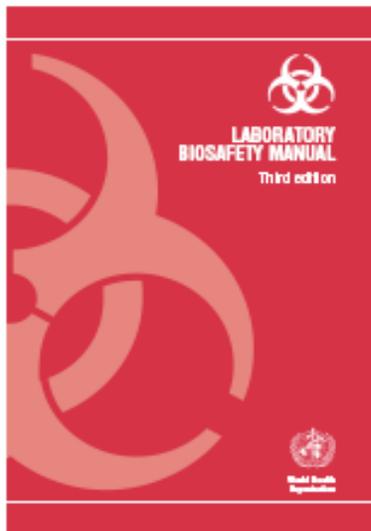
Biological materials must be safeguarded for many reasons

- Education
- Evaluation and assessment
- Basic and applied research
- Food production
- Culture collections
- Pharmaceutical and manufacturing
- Vaccine production
- Bioterrorism



What Norms and Standards are needed?

- Biosafety standards
- Laboratory biosecurity standards
- Standards for containment facilities (BSL 3,4)
- Recognition of facilities (certification/licensing)
- Standards for laboratory management
- Procedures for risk assessments
- Pathogen transfer and/or export mechanisms



Conclusions

- Harmonized, global norms and standards for laboratory biosafety and biosecurity are needed and missing.
- Development of norms and standards must be broadly inclusive.
- International organizations can play a significant facilitating role for global cooperation.
- WHO and technical partners must work together to produce needed guidance on laboratory biosafety/biosecurity issues
- Resources are needed to address fundamental needs and to assist WHO Member States.

Thank you

