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Centre de Politique de Sécurité, Genève
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The governance of biosecurity and biosafety

Stakeholdership in the Prevention of the Hostile Use of Biology and Biotechnology

Nairobi, 15 November 2007

Structure of Presentation

1. Overview of biosecurity and biosafety (BB) and why it is important
2. Examination of biosecurity and biosafety concerns and challenges
3. Recommendations and summary

What is biosecurity and biosafety?

- Multiple definitions depending on the sector (agriculture, environment, health, arms control)
- Concepts overlap and aim to manage biological risk
  - Biosecurity: to prevent the *deliberate* diversion of pathogens for malicious purposes
  - Biosafety: to prevent the *accidental* release of pathogens that could endanger public health

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Why is biosecurity and biosafety important?

1. To protect against the malicious use of biological agents
2. To manage advances in biotechnology
   - E.g. balancing scientific openness with regulatory needs
3. To help us cope with infectious disease
4. To protect the natural environment

Example of biological agent comparison according to barriers to potential use

Lower barriers	Medium barriers	Higher barriers
Glanders	Marburg HF*	Venezuelan EE*
Crimean-Congo HF*	Ebola HF*	Typhus
Pneumonic plague	Melioidosis	Rocky Mtn. spotted fever
Hantavirus	Yellow fever	*Escherichia coli* 0157:H7
Dengue HF*	Anthrax	Smallpox
Eastern EE*	Q fever	Monkeypox
Lassa fever	Machupo HF*	Brucellosis
Russian (SS) Enceph.*	Tularemia	*Shigella dysenteriae*
Western EE*	Junin HF*	Cholera
Rift Valley fever		*Salmonella* Typhimurium

Source: CRS Report RL 32391, 20 May 2004

***HF = hemorrhagic fever; EE = equine encephalitis ; SS= spring-summer**

What are examples of biosecurity- and biosafety-related challenges?

- Setting common governance standards
  - No globally designed strategy for biosecurity
- Applying biosafety guidelines consistently
  - Data is limited, especially at the local/laboratory level
- Addressing advances in biotechnology
  - E.g. advances in diagnostics, genomics, nanotechnology
- Operationalising certain biosecurity elements
  - E.g. mass vaccinations, guideline components

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There are three main pillars for biosecurity and biosafety

Joint efforts across all three levels

Intl. Instruments	National level	Local level
• BTWC (e.g. CBMs) • UNSCR 1540 • Intl. organisations (e.g. WHO, OIE, FAO) • Intl. protocols/codes (e.g. Cartagena)	• Multinational (e.g. G8, GHSI) • Health departments • National acts • Response measures (alerts, vaccinations) • National plans/codes	• Emergency response • Detection/monitoring • Laboratory safety • Education/training • Local codes

Effective biosecurity and biosafety requires a bottom-up and top-down approach

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What is needed to strengthen biosecurity and biosafety?

- Raise greater awareness at different levels
- Familiarise relevant stakeholders with international instruments (e.g. BTWC, UNSCR 1540)
- Encourage greater collaboration between academia, industry, and government
- Improve data on biosecurity and biosafety breaches
- Update and make available codes of conduct

In summary…

- Biosecurity and biosafety governance exists at many levels
- Effective governance requires a top-down and bottom-up approach
- Among critical elements for biosecurity and biosafety are:
  - Individual and local responsibility
  - Raising awareness and spreading knowledge