Bioterrorism and Biosecurity

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Centre for Environmental Safety and Security

Biosecurity Office
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Institute for Public Health and the Environment

- Governmental expertise centre for public health and the environment
- 12 centres and laboratories
- 1500 employees
- Work for: Mo Health, Mo Environment, Mo Foreign Affairs, ...
- Products:
  - Papers
  - Reports
  - Advices
  - Scientific papers
  - Website
  - International representative for the government
Public Health and Infectious Diseases

Mission RIVM:
- Prevent and control infectious diseases
- Promote Public Health and consumer safety
- Protect quality of environment

Biothreat expertise
- Biothreat Response Unit
- Biosecurity Office
Environmental Assessment Module

Calamities
Disasters

Samples Chemical, Biological, Radiological, Nuclear
Biothreat Response Unit

Rapid recognition and research of biothreat agents essential for:

- Treatment exposed persons
- Prevention further exposure
- Limit spread
- Decontamination

Detection required in:

- Environmental samples (prevention, rapid response)
- Clinical samples (confirmation)
Accidents and disasters
RIVM at NSS 2014

On 24 and 25 March 2014 the Nuclear Security Summit (NSS) will take place in The Hague. The NSS is an international summit, aiming to prevent nuclear terrorism worldwide. It is expected that 58 world leaders, 5,000 delegates and 3,000 journalists will attend the World Forum in The Hague. RIVM will provide support in emergencies involving hazardous substances and suspicious objects, and in food incidents. The regular response organisation of RIVM will remain available in case a calamity occurs in other parts of the country.

Mobile Chemical-Biological Laboratory
The MCBL is an advanced mobile laboratory. In the event of accidents and attacks this facility makes it possible to determine much faster whether chemical, biological or radioactive substances are involved, and what these substances are. Hence a quicker and more effective deployment of the national response organisation is possible. The mobile chemical-biological laboratory is built into a 19 metre long truck trailer. The unit is fitted with measurement and analysis techniques in a protected environment that meets the strictest safety rating, bar none. The MCBL is one of the most advanced mobile laboratory facilities of its kind in that it allows a sample of a suspected substance to be analysed simultaneously in two different analysis processes: biological and chemical. This results in a significant saving in time.

Biosecurity Office

National biosecurity knowledge and information office, aimed at organisations working with high risk pathogens (BSL 3 and 4)

Activities:
- Biosecurity workshops
- Biosecurity information
- Support government
  - National
  - EU CBRN action plan
  - Biological Toxins Weapons Convention

To reduce the risk of malicious use of pathogens and knowledge and raise awareness
Don't talk to anyone.
Don't touch anyone.
Biological Threat?

- International Transport
- Ports of entry
  - Schiphol Airport
    - 51 million passengers per year
    - 15\textsuperscript{th} airport world wide
  - Harbour of Rotterdam
    - 430 million ton trans-shipment
    - Largest harbour of Europe
Outbreak of SARS
Bioterrorism is not novel

Caffa 1346, siege of city by Tartars with Pest corpses

Pizarro (15th century)
Britain (18th century)
Used clothes contaminated with smallpox on local indian population
Bioterrorism is not novel

WW I Germany - Anton Dilgers (1915)
anthrax and glanders - USA
sabotage cavalry

*Salmonella* contamination salad bars
Osho-sekt, 1984, Oregon, USA
>750 diseased
Anthrax letters USA 2001

3 letters with spores of anthrax 2001 in the USA. Result: 5 dead, 17 infected people and huge commotion

- 2100 persons nasal swap + three days antibiotics
- 625 persons 60 days antibiotics
- 32 persons positif nasal swap (5 emergency response)

- Decontamination Hart Building $23 million!

non-state actors
Biological Weapon Programs

Unit 371 Japan - Shiro Ishii (1932-1945)

Experiments on prisoners of war, resistance, political opponents etc.

Biological weaponization of: anthrax, pest, meningitis, brucella, cholerae
Biological Weapon Program

**Biopreparat** code name: P.O.Box A-1063 (civil) Sovjet Union

- Started 1920
- 32,000 employees (60,000 total)
- 40 companies
- Production of Anthrax, Smallpox, Q-fever, Turalemia, Typhus
- Dissemination, weaponization
Mistakes do happen...

1976
1 gram anthrax
120 - 400 diseased
Over 75 dead
‘contaminated meat’

Mistake changing filters
Pathogenesis Anthrax

- Cutaneous, ingestion and respiratory
- Spore-forming
- Germinate in lymph nodes
- Production of toxines
- Destruction of Tissue (necrosis)
- Bleeding
Anthrax, a real threat?

1976
1 gram anthrax released
120 - 400 diseases
Over 75 deaths

2001
3 letters: 2 grams anthrax
32 diseases
5 deaths
Geneva protocol (1925)

“Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or other Gases, and of Bacteriological Methods of Warfare”

Prohibits *use* Biological and Chemical Weapons

138 signatories (may 2013)
BTWC (1972)

“Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction”

179 countries

Additional initiatives:
• CWC in 1997
• UN1540 in 2004 (UN resolutie)
• EU CBRN-action plan
Smallpox

- Human reservoir
- Aerosols
- Case fatality rate (30%)
- Infecting: 2-8 (effective reproduction rate $R_0$)
Smallpox: Variola

- World wide eradicated
- First success story by vaccination
- Virus officially stored in two laboratoria
- In the Netherlands last epidemic in 1951 (Tilburg)
- Vaccination program stopped in 1974
Vaccination with Cowpox
Jenner 1798
Smallpox as biological weapon

The eradication of pathogens creates biological weapons

- CDC Atlanta en Vector Koltsovo
- Corpses in permafrost (unlikely)
- Material from epidemics before ’77 (Iran, Iraq en Syria)
- Biopreparat, biological weapon program Sovjet Union
Dual-Use research

Royal Netherlands Academy of Arts and Sciences

2007  2013
Biosafety and Biosecurity

Biosafety: keep **bad bugs** away from **people**
(prevent: incidents, accidents, catastrophes)

Biosecurity: keep **bad people** away from **bugs**
(prevent: terrorism, sabotage, espionage, blackmail)
Biosecurity toolkit

www.biosecuritytoolkit.com

1. Physical Security
2. Personnel Security
3. Material Control and Accountability
4. Transport Security
5. Information Security
6. Awareness
7. Response
8. Organisation management

Adapted from: Laboratory Biosecurity Handbook, CRC press 2007, FIGURE 3.1
Based on 8 biosecurity pillars
Fill in the questionnaire

Biosecurity Zelfscan Toolkit
Version 1.5.6-RELEASE © 2012-2013 RIVM

Home | Awareness | Personnel reliability | Transport security | Information security | Accountability for materials | Response | Management | Physical measures

Results | Good Practices | Contact

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**Awareness**

- Are employees aware of the biosecurity risks?
  - Yes ☑️
  - No ☐️

- Have procedures and rules of conduct related to biosecurity been included in an introduction programme?
  - Yes ☑️
  - No ☐️

- Are managerial staff members fully aware of their responsibilities regarding biosecurity?
  - Yes ☑️
  - No ☐️

- Are employees fully aware of how responsibilities regarding biosecurity have been assigned?
  - Yes ☑️
  - No ☐️

- Are employees fully aware of their own responsibilities regarding biosecurity?
  - Yes ☑️
  - No ☐️

- Is internal communication used to inform employees about biosecurity?
  - Yes ☑️
  - No ☐️

- Are employees supported in increasing their awareness of biosecurity?
  - Yes ☑️
  - No ☐️

- Are employees fully aware of the actions that they are required to take at certain incidents, such as in cases of theft?
  - Yes ☑️
  - No ☐️

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Save & Next  Interim results  Print
Results

Score

- Awareness
- Personal
- Transport
- Information
- Materials
- Response
- Management
- Physical
- Overall

Awareness

Physical

Personal

Management

Transport

Response

Information

Materials

Overall
The Biosecurity Office

- Functions as knowledge and information center
- Helps organizations to consolidate biosecurity
- Enters into discussions about biosecurity
- Gives lectures and workshops (Sept/Oct 2014 series)
- Supports the government on biosecurity policy

Goals:
- To raise biosecurity awareness
- To prevent misuse and theft of biological agents and knowledge
- To educate biorisk professionals
- To support emergency responses
More information

www.biosecuritytoolkit.com

www.bureaubiosecurity.nl/en
folder
information
links to documents
september: workshops

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