

# Biopreparedness

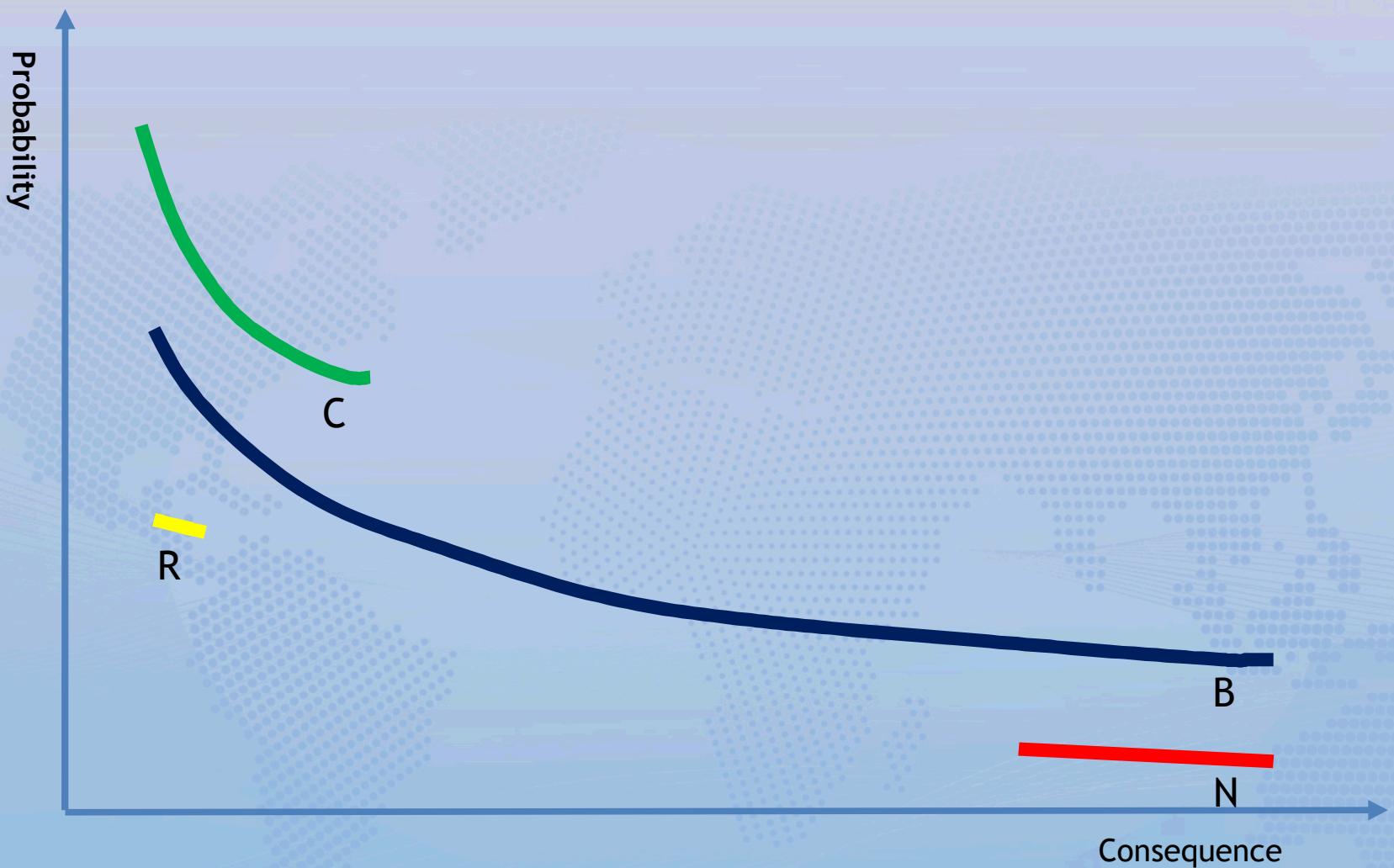
*BioICE*

*Biological Incident Command Exercise*

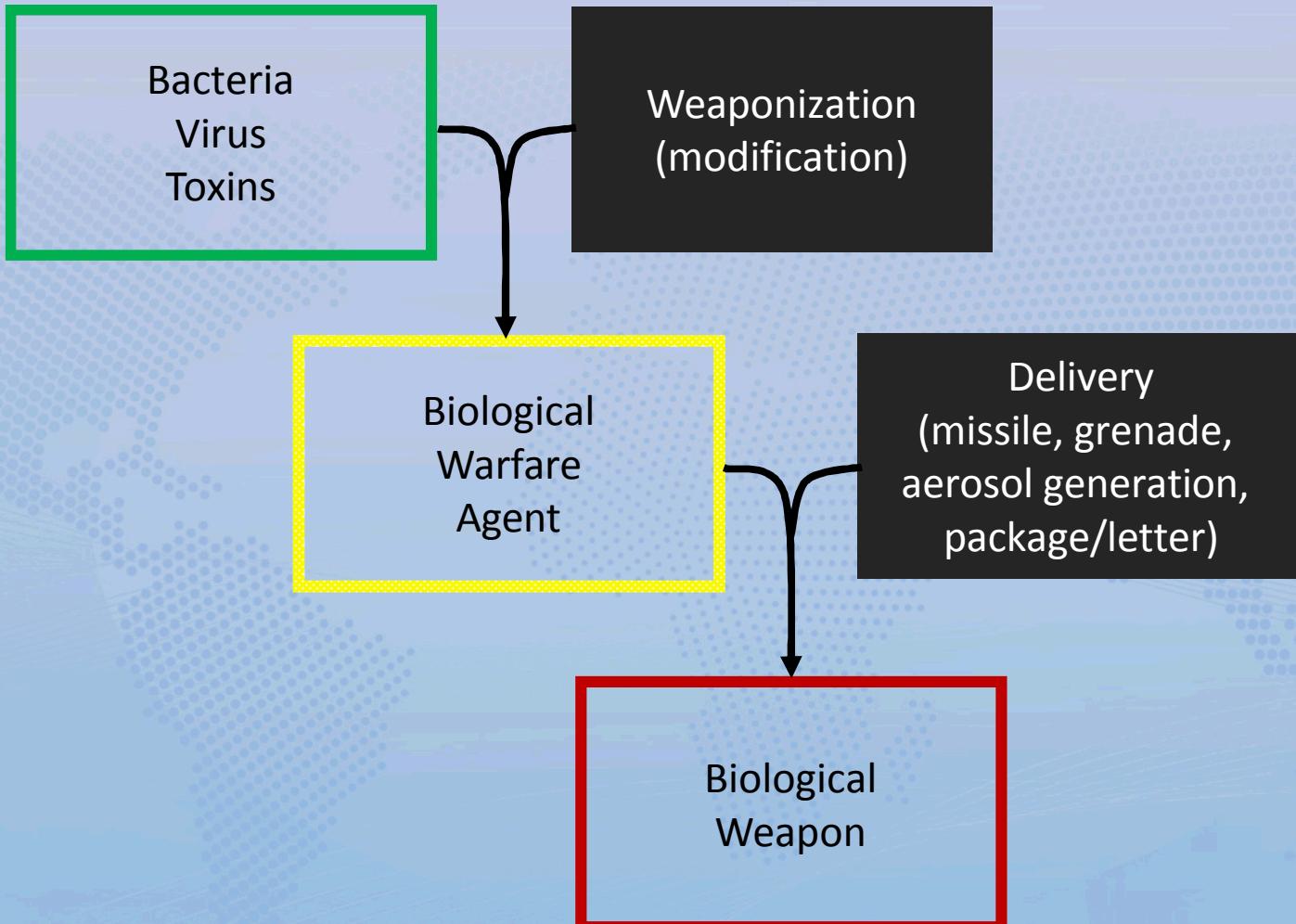
*Istanbul, March 29 2011*



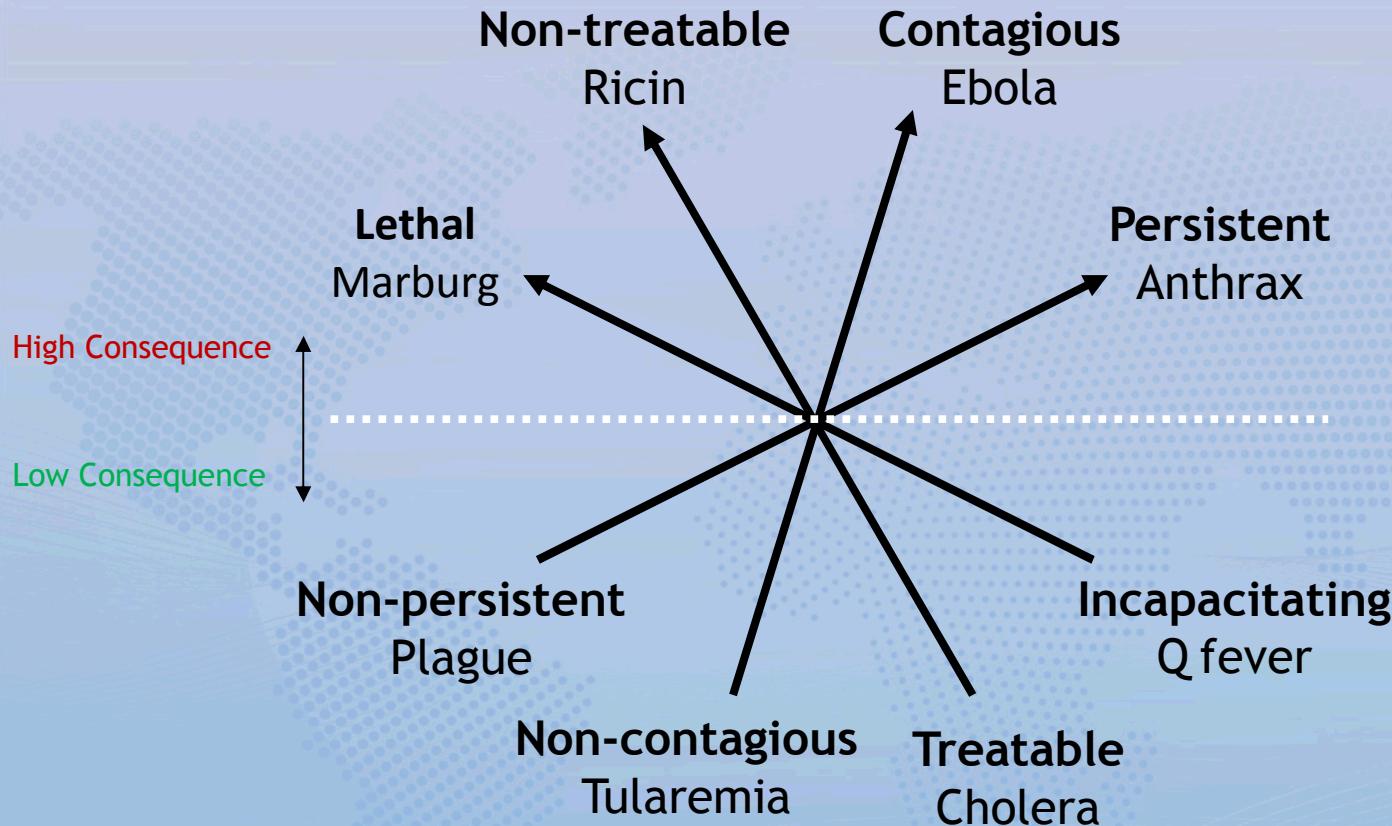
# CBRN risk ( $R = P \times C$ )



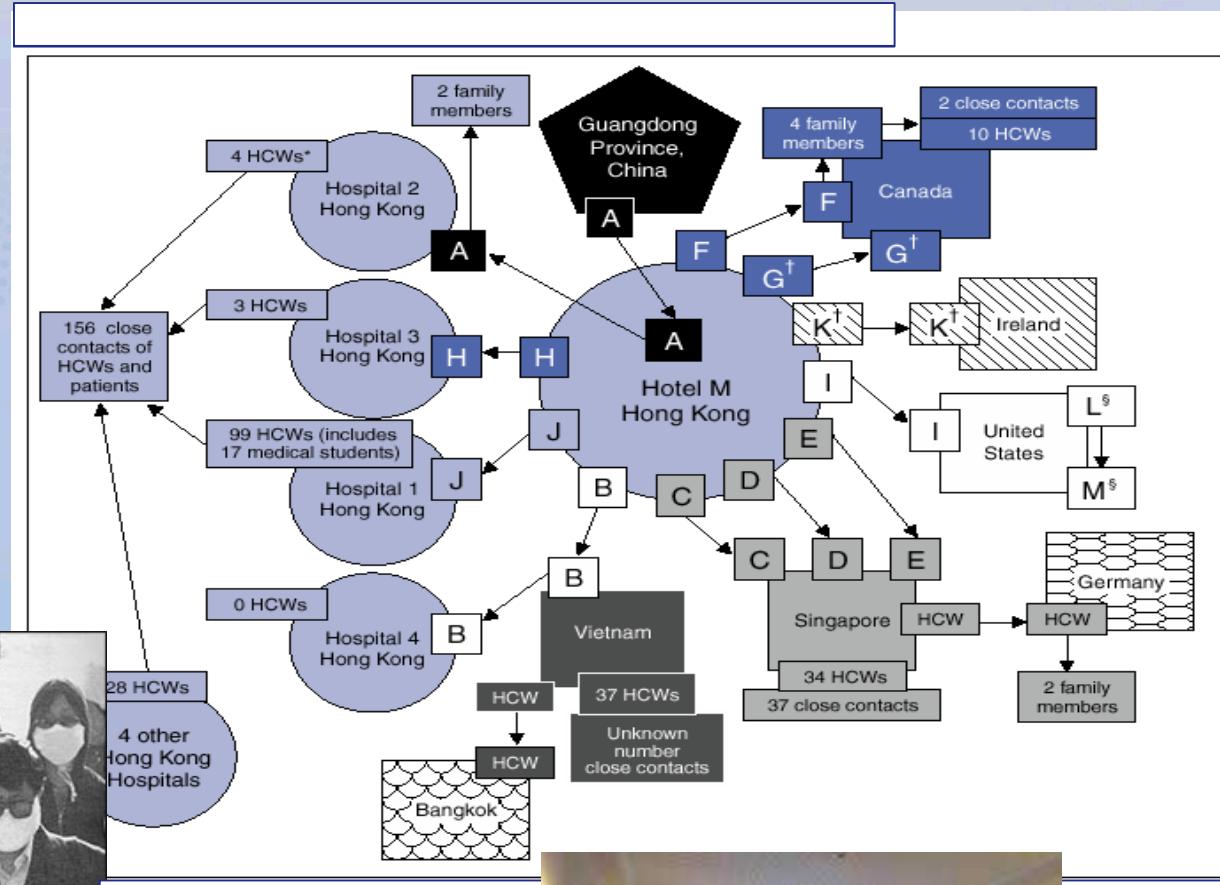
# Weaponization Process



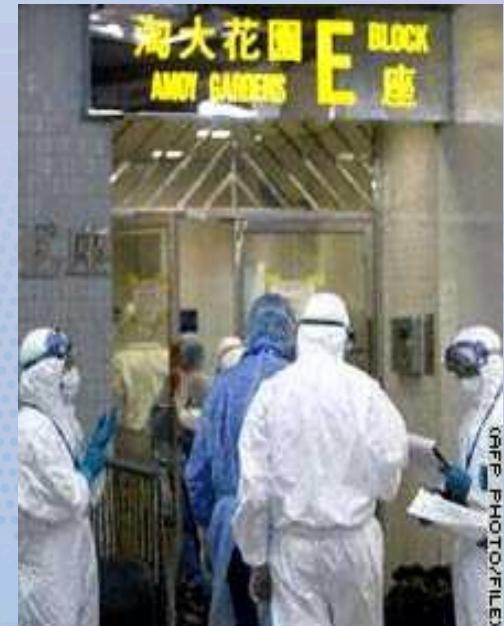
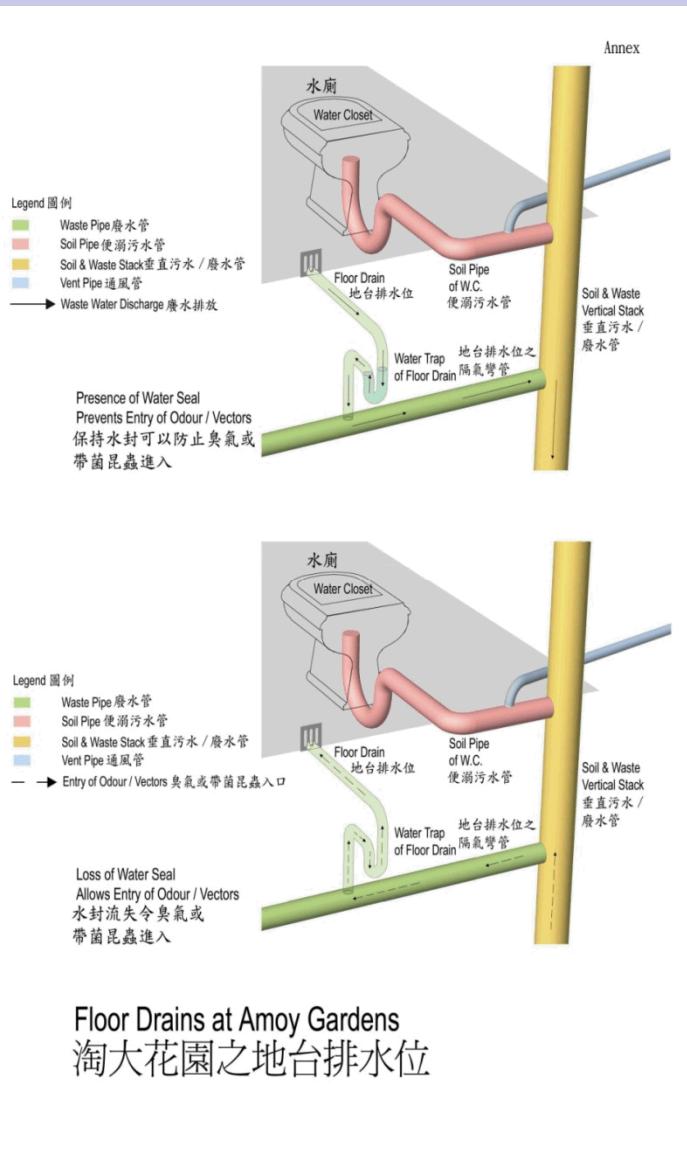
# Characteristics of biological weapons



# Natural Disease Outbreaks – 2003 SARS

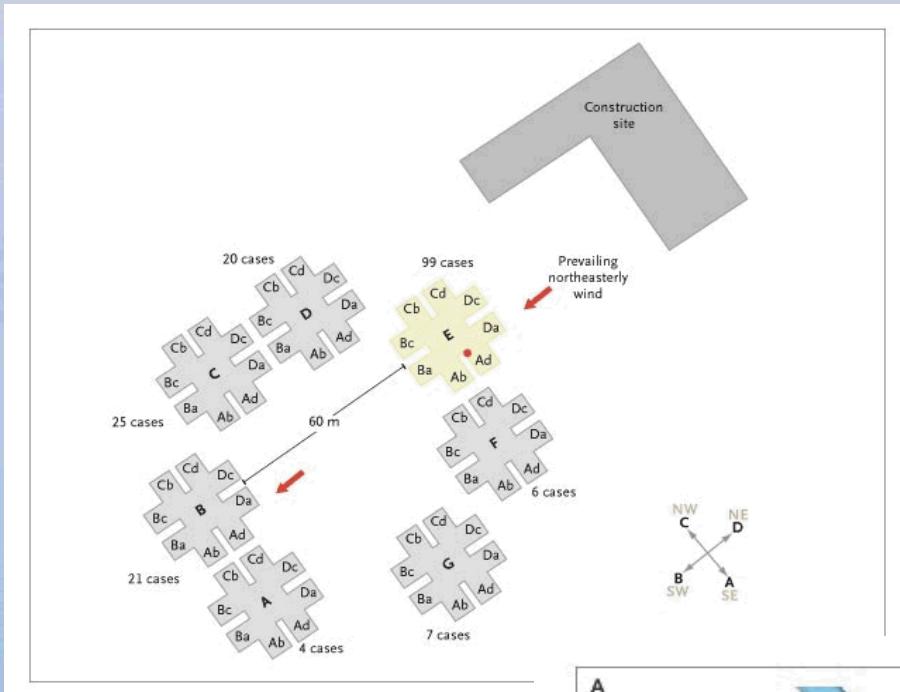


# SARS - Amoy Gardens



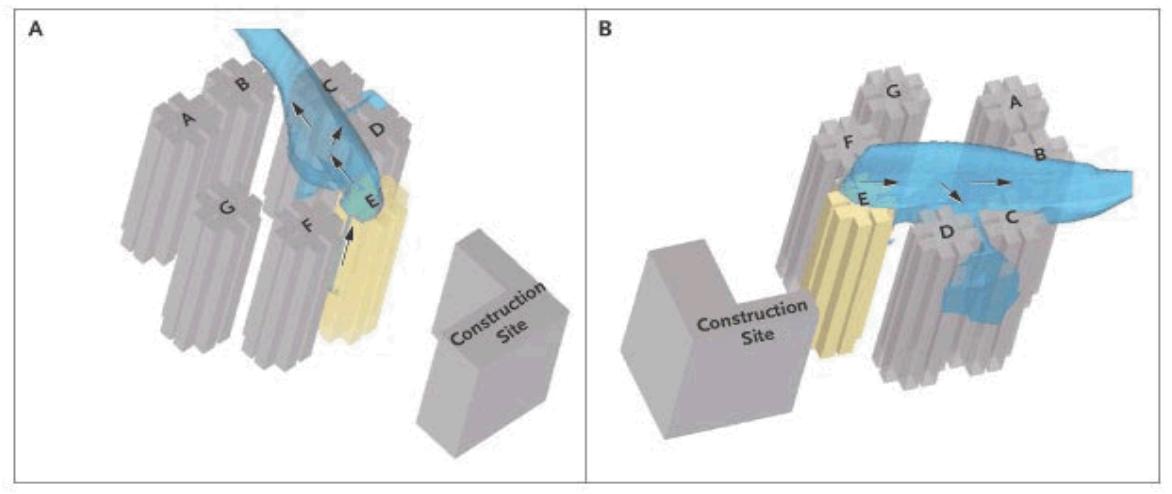
- Index person visiting 14-17 March 2003
- SARS with diarrhea
- Virus in the sewer
- Person-to-person transmission

# SARS in Hong Kong

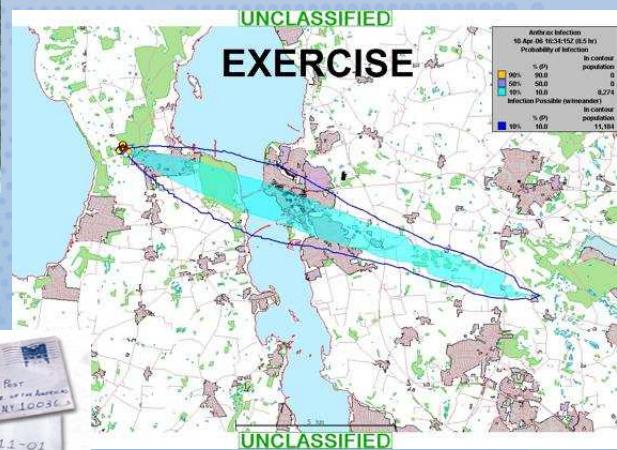


- 321 infected
- Mainly exposed 19 March

# Airborne !

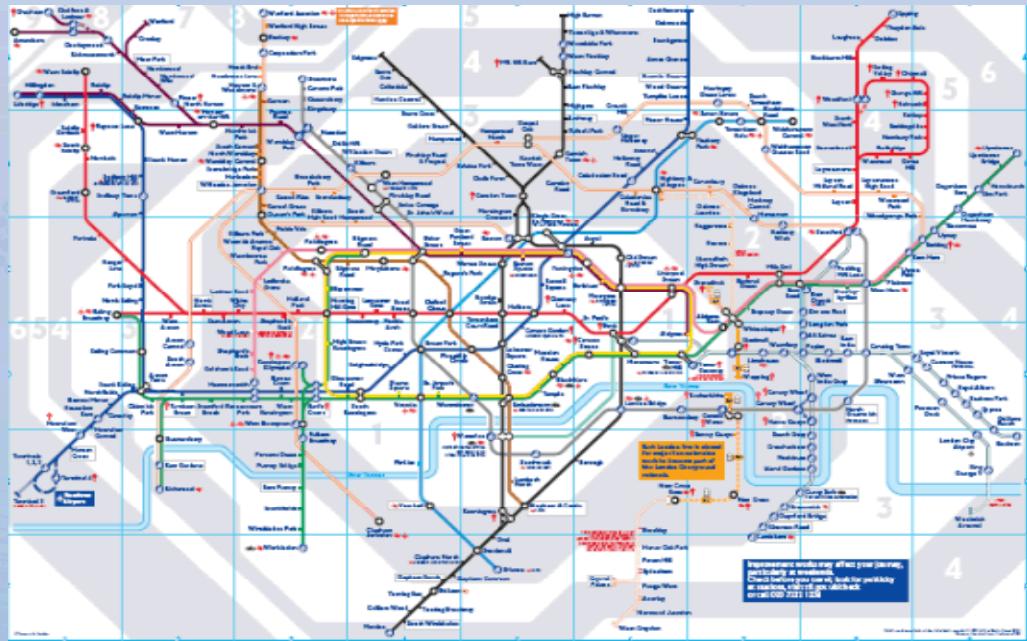


# BW Dispersal





# BW Dispersal



**Length of network**

408km

**Network in tunnels**

46 per cent

**Tunnel diameter**

3.8 metres

**Passengers entering rate**

146,000 people an hour

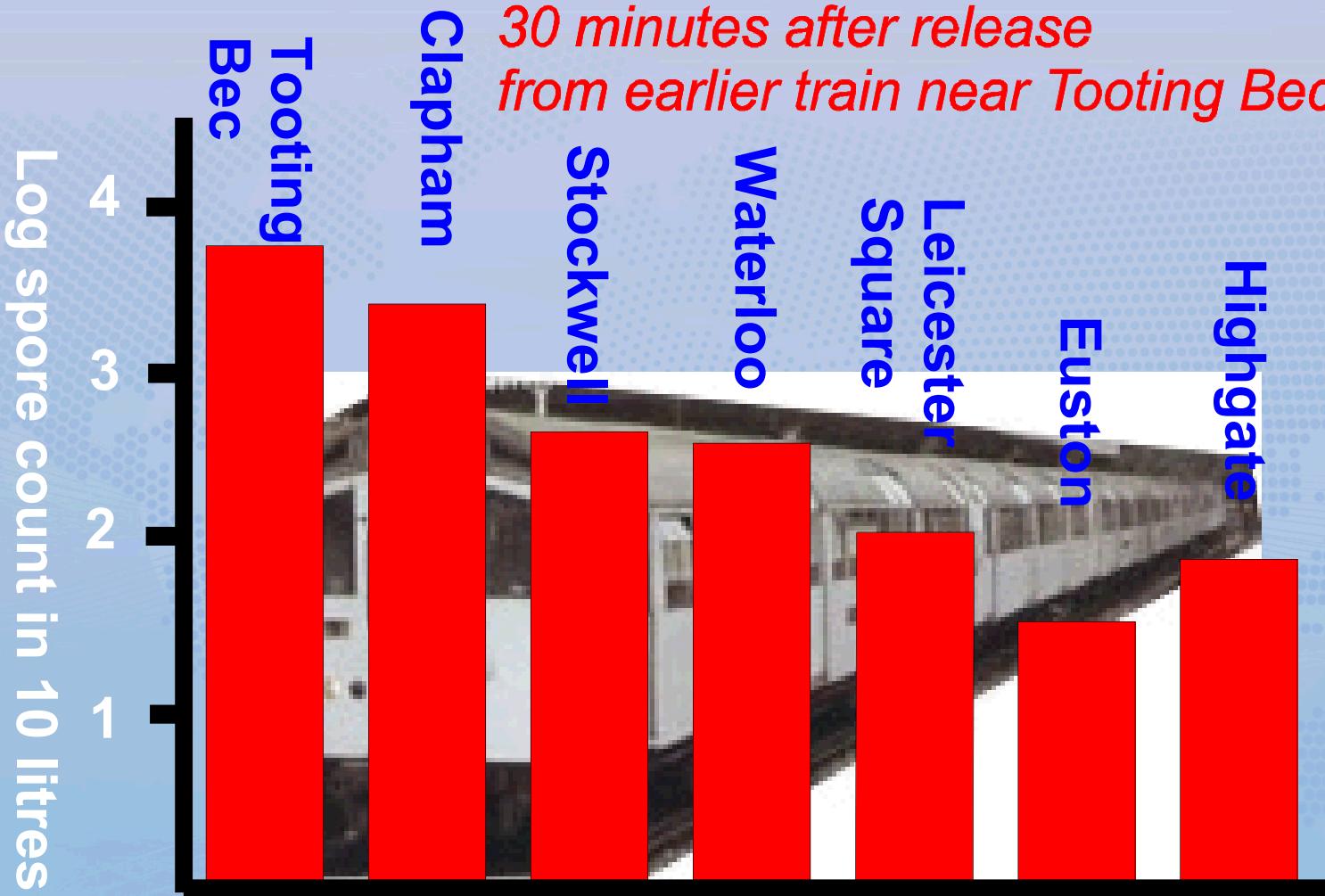
**Agent dispersal**

16 g *Bacillus globigii*  
( $8 \times 10^{12}$  spores)



# BW Dispersal

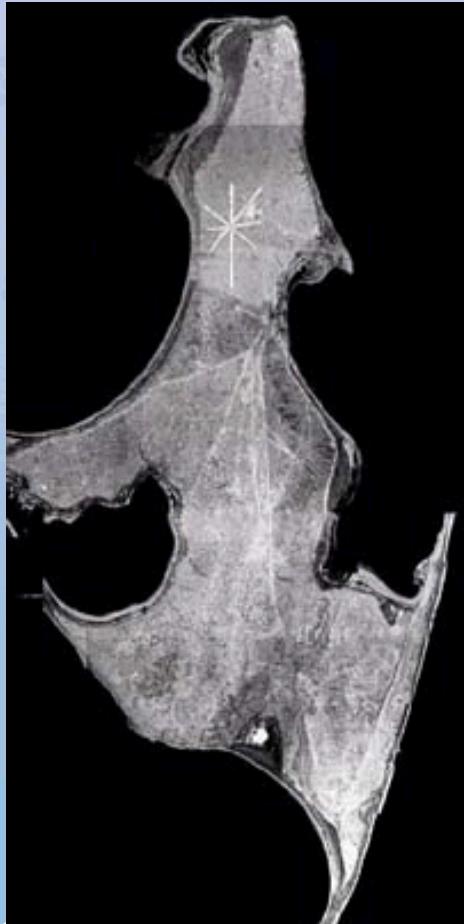
*Spores in train passing through tunnel  
30 minutes after release  
from earlier train near Tooting Bec*



# BW testing

Vozrozhdeniye Island - 1936-1992

Open-air release of smallpox



## Smallpox outbreak 1971

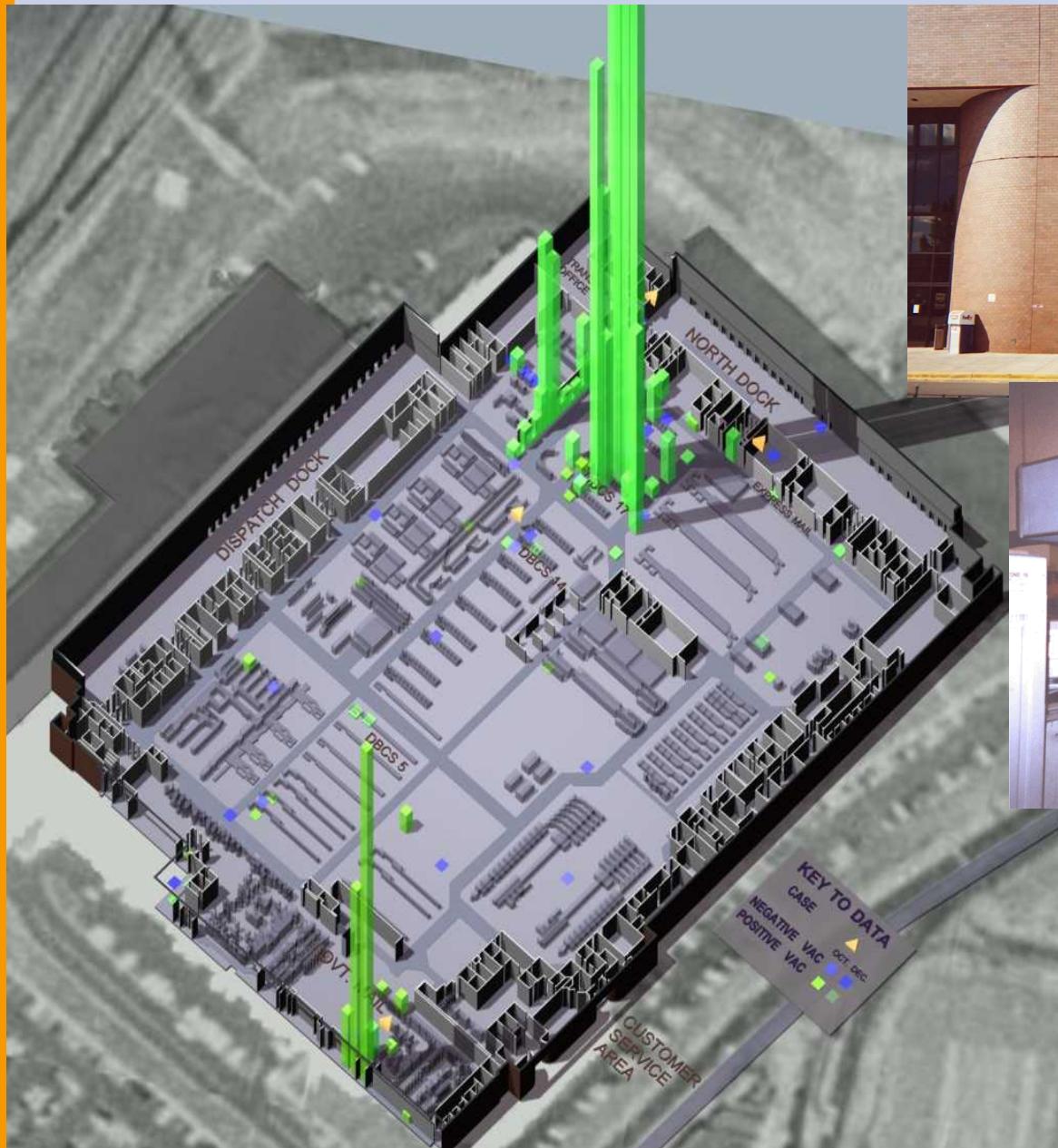
Case #1: 11 August, 23 yo, Aralsk, *Lev Berg*

Case #2: 27 August, 9 yo (vacc. 29.01.1963)

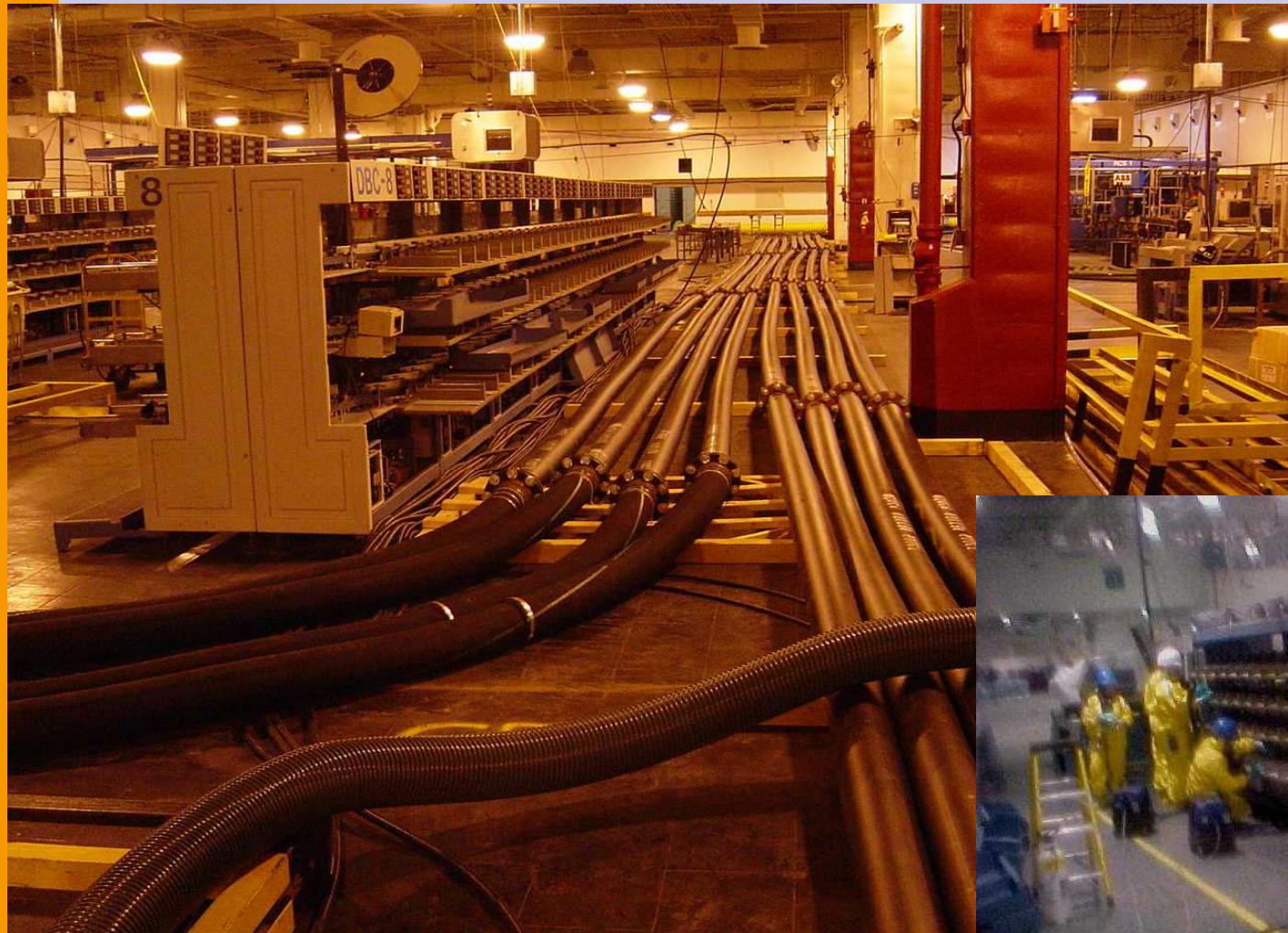
Case #3: 10 September, 24 yo teacher

23 September: Vaccination of 42,899





# Facility Decontamination



# Facility Decontamination

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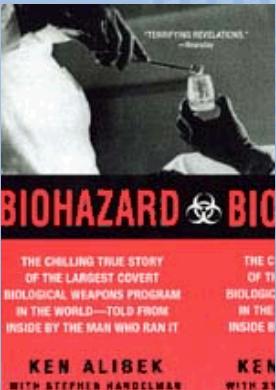


# Offensive actors

- States
- Terrorist organisations
- Individuals



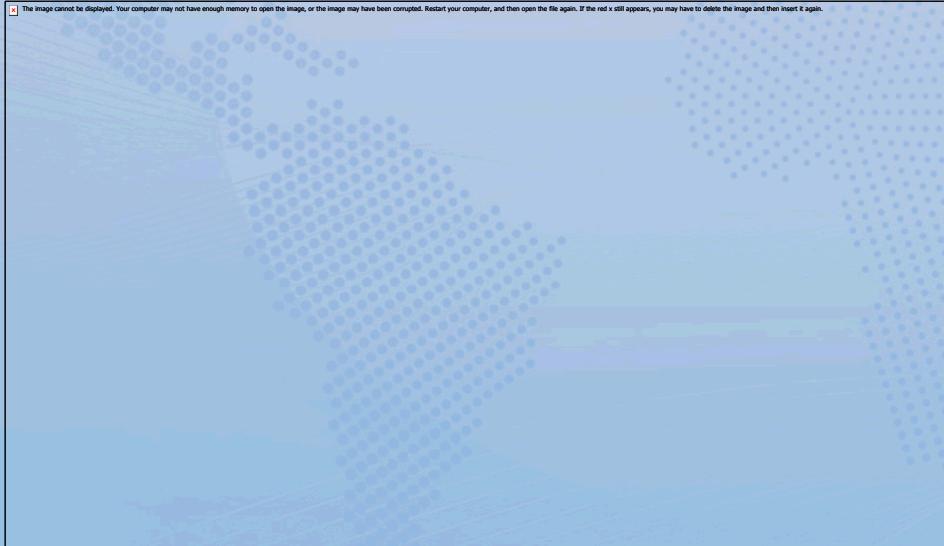
Wouter Basson  
“medicine is my profession,  
war is my hobby”  
South Africa’s Truth and  
Reconciliation Commission (TRC)  
April 11, 2002.



# Bio Attacks

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- Type 1: Suspicious material/object
- Type 2: Outbreak of disease/patients



# Bio Attack - Type 1 Phases

## Alert

- Threat assessment

## Incident response on crime scene

- Cordon off, evacuation, registration
- Sampling

## Analysis

- Analysis at certified lab
- Rapid analysis?

## Consequence management

- Negative: Police investigation
- Positive: Treatment, isolation, quarantine



# Type 1 - investigational assets



# Bio Attack - Threat assessment

- Other attacks?
- Exposed individuals?
- Known actor?
- Known warfare agent?
- Sensitive target?
- Dispersal method?
  - Passive aerosol
  - Active aerosol dissemination
  - Water
  - Food
- Incident reporting

Decision to deploy

Prioritize investigation

Recommendations on countermeasures

# Investigation and Sampling

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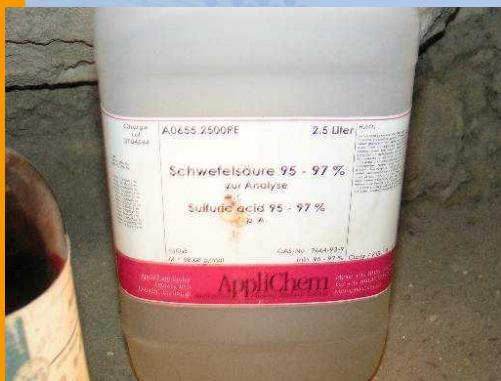


**Falluja - Operation Al Fajr - Nov 2004**  
1st Marine Division 1/8 Alpha Company 3rd Platoon

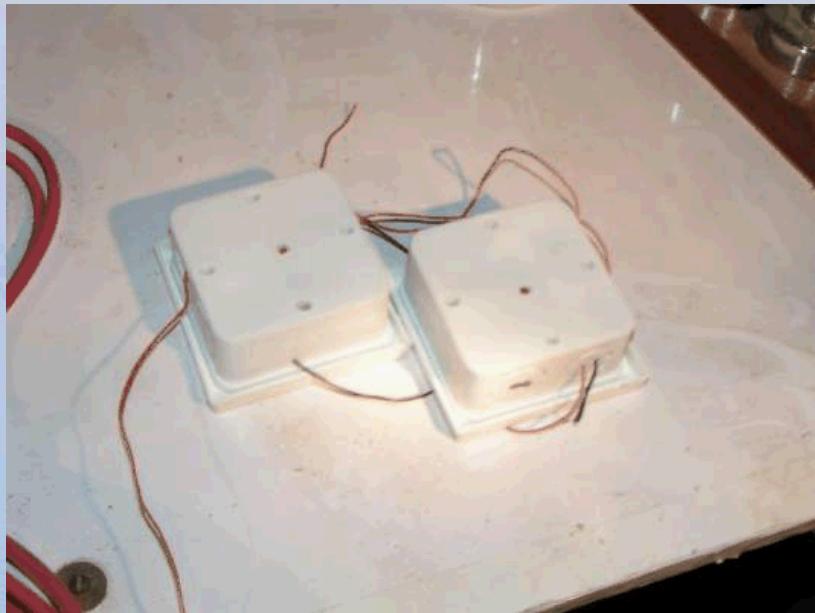


*Combat Camera Imagery*

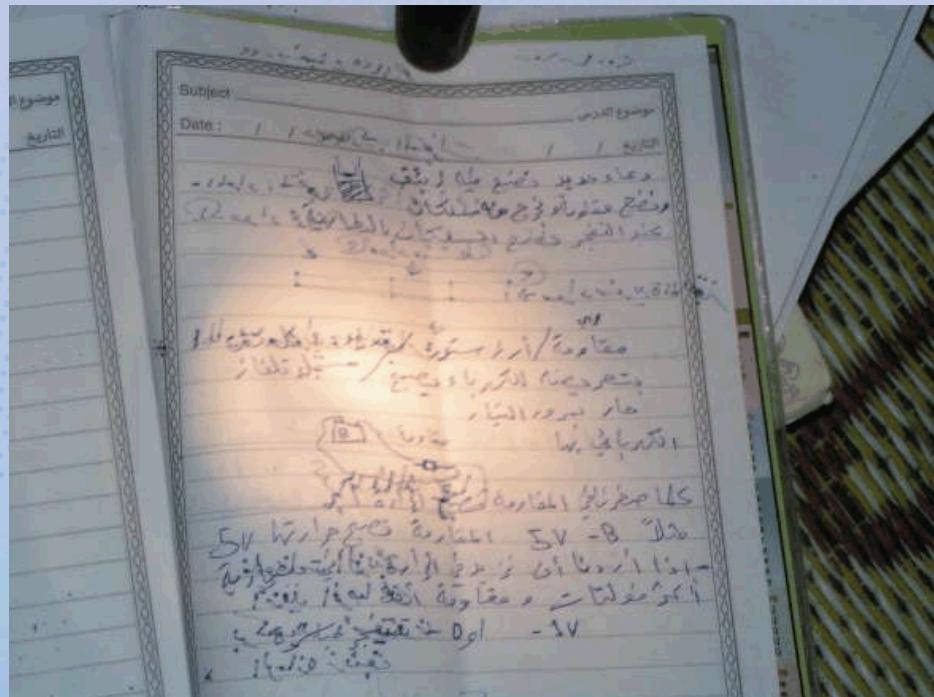
# Investigation and Sampling



# Investigation and Sampling



IED



# Cleaning vs. Decontamination

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## Cleaning

- Wash and change of clothes for exposed individuals
- Water and soap

## Decontamination

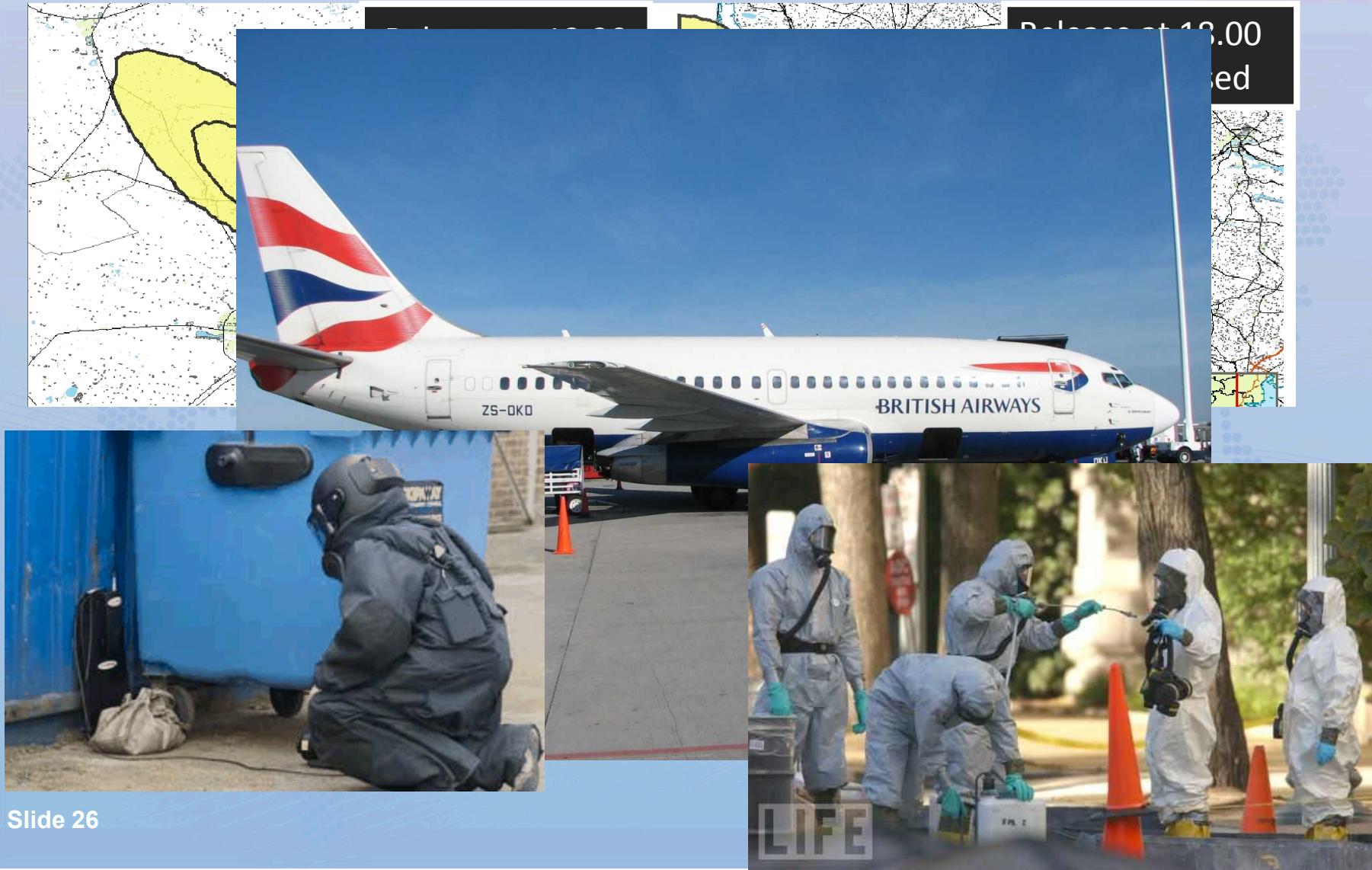
- Disinfecting non-infected personnel
- Use of chemicals (chlorine)



# Type 2 Incidents – Outbreak Signatures

WHO	FACTOR	WHEN
Epidemiologist/ public health	 Admissions Deaths	Late
Clinical labs	More samples Unusual samples	Late Early
Pharmacies	 Prescriptions OTC	Late
Mortician	More burials	Late
Vets	Disease and deaths among animals	Early (natural) Late (deliberate)
Clinicians	Unusual or rare diseases	Early

# Incident Reporting - Full-Scale Exercise Example



# Incident Reporting - Full-Scale Exercise Example

## Situational assessment

- Possible bio-bomb
- Unknown pathogen
- Exposed for 1-2 d
- Contagious?
- 60,000 exposed
- Countermeasures: Treatment?
- Prophylaxis?

## Prognosis

- Contagious following onset of symptoms
- Incubation?
- Improved survival if rapid treatment
- Casualty estimate without treatment: ?
- Contamination: Airport and plume area

## Recommendations

- PPE
- Prophylactic treatment of 1st liners
- Cohort isolation
- Dedicated diagnostics
- Countermeasures stockpiled, distributed and administered
- Triage
- Quarantine
- Hotline
- Press



# Bioterror essentials

- Security overrules health
- Avoid additional dissemination
- Avoid continued exposure
- Sampling and analysis has top priority
- Incubation period = not contagious



# Biopreparedness

Surveillance



Investigation



Countermeasures