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## Introduction and Overall Challenges to Microbial Risk Assessment

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April, 2008

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## Anthrax Letters of 2001



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## 1918 Flu Pandemic



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## Foot and Mouth Disease



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**EXPOSURE to a PATHOGEN**

**What's the RISK?**

**What's the RISK question?**

Prospective  
*Probability X Consequence*

- to assess the probability of a (similar) event occurring
- to assess the potential needs for medical countermeasures
- to identify the data gaps for future R&D budgets

Retrospective  
*Pathogenicity X Exposure*

- to identify the population exposed for medical treatment
- to quantify the extent of contamination for remediation

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Prospective  
*Probability X Consequence = RISK*

**Probability depends on:**

- Availability of agent
- Outbreak history
- Capability of adversary
- Past terrorist use
- Agent characteristics
- Existing security

**Consequence depends on:**

- Toxicity of agent
- Amount of agent
- Contagiousness
- Impact on infrastructure
- Availability of treatment
- Ease of detection
- Ease of dissemination
- Ease of decontamination

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Prospective  
*Probability X Consequence = RISK*

**Probability depends on:**

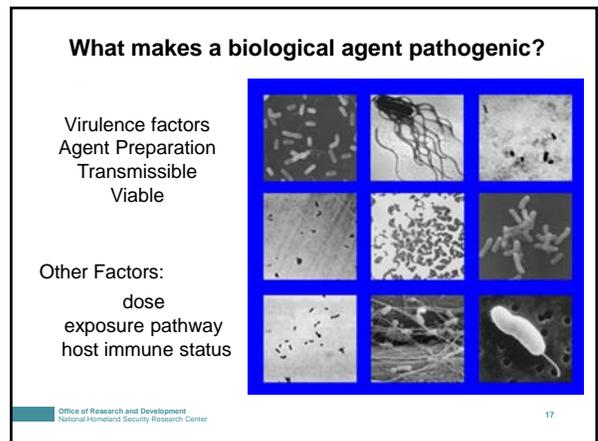
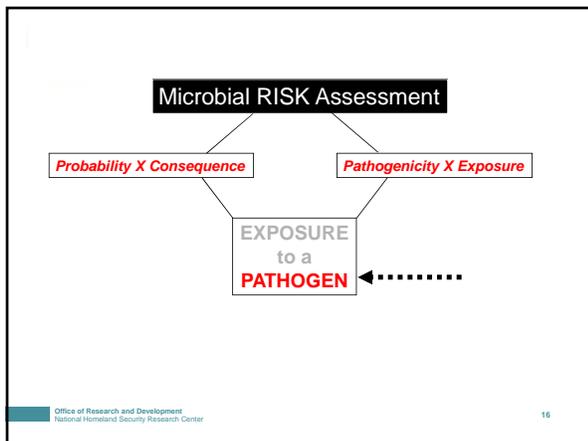
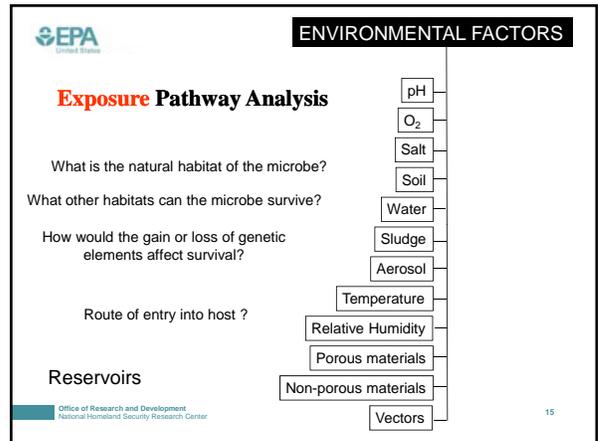
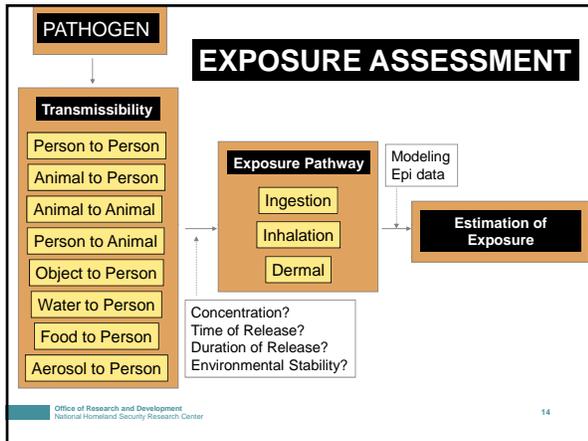
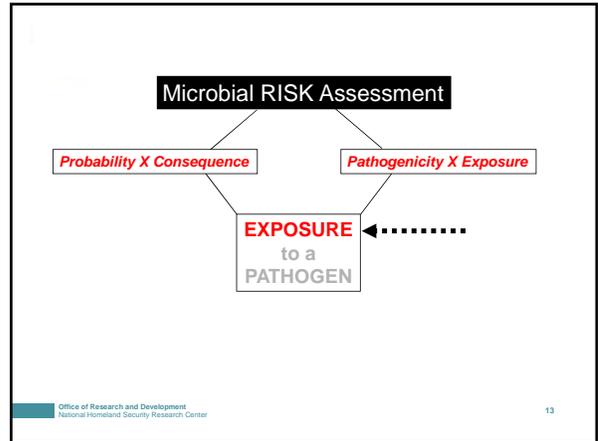
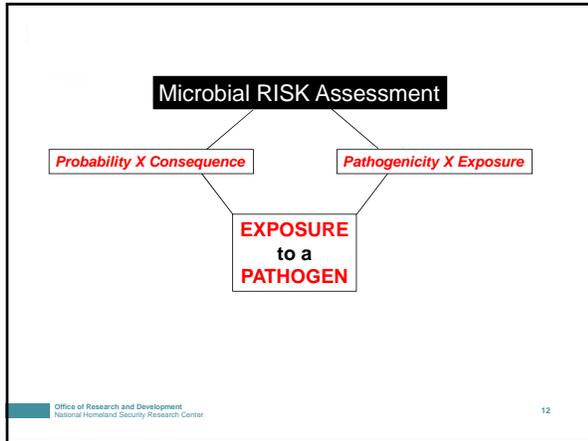
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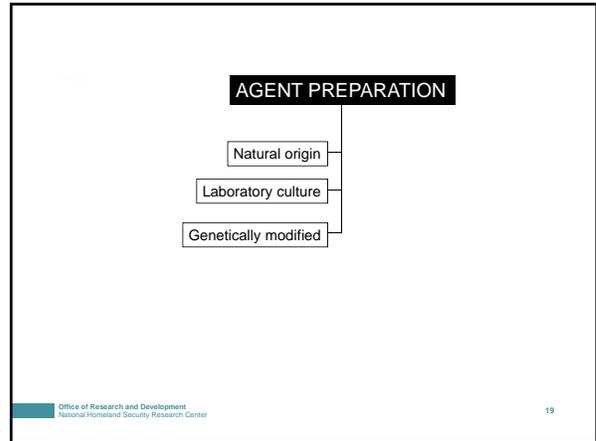
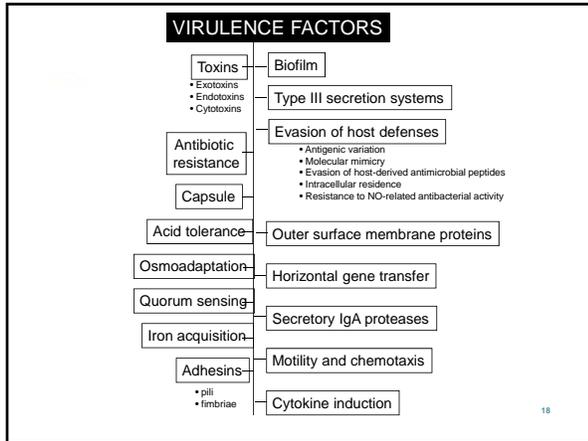
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- ### Additional Complexities:
- Different strains of agents
  - Difficulty in detection
  - Different exposure scenarios
  - Different host susceptibilities
  - Different health effects
  - Different presentation of symptoms
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