Biological Safety
SCAPA Panel Discussion

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PNNL Biological Safety Officer

Biological Safety Officer Role at PNNL

- Member of IBC
- Laboratory's ARO
- Consultant for IRB, IACUC, MTA
- Reviewer of rDNA, BWP protocols, BBP ECP's, Transportation Plans
- Laboratory Inspector, Accident Investigator
- Program Manager, Regulatory Reviewer
- Occupational Medicine Contact
- SME – Keeping Current (Technical Methods, Events)

Daily Contacts

- Managers
- Researchers
- Safety and Health Representatives
- Trainers
- Occupational Physicians
- CDC / USDA
- DOE
- Security
- EP

Technical Challenge: Biology is Messy

Exploding toads puzzle German scientists

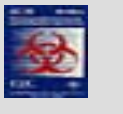
More than 1,000 creatures have puffed up and popped

The Associated Press Updated: 12:43 p.m. ET April 27, 2005

BERLIN - More than 1,000 toads have puffed up and exploded in a Hamburg pond in recent weeks, and scientists still have no explanation for what's causing the combustion, an official said Wednesday. Both the pond's water and body parts of the toads have been tested, but scientists have been unable to find a bacteria or virus that would cause the toads to swell up and pop,

Technical Challenge: Defining the Risk

- Select Agent Regulations (security) CDC, USDA
- OSHA BBP Regulations, Chemical Hygiene Regulations
- DOT Regulations
- NIH rDNA Guidelines (IBC structure)
- DOE (450.7)
  - BMBL (CDC Biological Safety Guidelines - Laboratory)
  - WHO (Biological Safety Guidelines - Laboratory)



Technical Challenge: Defining the Risk: Select Agent Bacteria BSL-1, BSL-2, and BSL-3

- **Bacillus anthracis**
- Brucella abortus
- Brucella melitensis
- Brucella suis
- Burkholderia mallei (formerly Pseudomonas mallei)
- Burkholderia pseudomallei (formerly Pseudomonas pseudomallei)
- Clostridium Botulinum (and botulinum nerurotoxin producing species of Clostriduim
- Cowdria Ruminantium (Heartwater)
- Coxiella burnetii
- Francisella tularensis
- Liberobacter africanus
- Liberobacter asiaticus
- Mycoplasma capricolum
- **Mycoplasma mycoides** (contagious bovine pleuropneumonia agent)
- Ralstonia solanacearum, Race 3, biovar 2
- Rickettsia prowazekii
- Rickettsia rickettsii
- **Xanthomonas oryzae pv. Oryzicola**
- Xylella fastidiosa (citrus variegated chlorosis strain)
- **Yersinia pestis**

Technical Challenge: Defining the Risk: Select Agent Toxins

- 100 mg of Abrin
- **0.5 mg of Botulinum neurotoxins**
- 100 mg of Clostridium perfringens epsilon toxin
- 100 mg of Conotoxins
- 1,000 mg of Diacetoxyscirpenol
- 100 mg of Ricin
- 100 mg of Saxitoxin
- 100 mg of Shigatoxin
- 100 mg of Shiga-like ribosome inactivating proteins
- 5 mg of Staphylococcal enterotoxins
- 100 mg of Tetrodotoxin
- 1,000 mg of T-2 toxin

Technical Challenges: Risk Assessment (TB is not a Select Agent)

Flaws detected after TB infects 3 at Seattle lab

By Warren King *Seattle Times medical reporter*
Friday, April 29, 2005 - Page updated at 12:00 a.m.

Three workers in a downtown Seattle research laboratory were infected with tuberculosis while working on a vaccine for the deadly disease, state officials say.

The accident at the Xxxxx Xxxxx Research Institute occurred when researchers were infecting guinea pigs in a small chamber containing aerosolized TB bacteria, according to institute officials and the state Department of Labor and Industries (L&I)... No one knows for certain how the workers were infected. But an extensive L&I investigation found there were leaks in the infection chamber ….

BSO Role in Emergency Response

- Emergency Response Procedures
  - Embedded in Laboratory Manuals
  - Discussed in Training
- Local Emergency Notification
  - Staff Notify Management
  - Management Calls Company Hotline
  - Hotline Notifies Affected Organizations*
- Drills (Select Agent Regulations)
- EOC

Emergency Response Challenges

- Coordination With Health Experts (Medical Service Providers, Public, Facilities, etc…)
- Communication of Health Risk
- Adequacy of Consequence Models

Do We Need a DOE Biosafety Working Group to help resolve problems across the complex?