Massachusetts Department of Public Health
Bureau of Infectious Disease and Laboratory Sciences

Biosecurity Risk Assessment

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Risk Assessment

is the

Basis of a Biosecurity Plan

Objectives

- Explain the five step biosecurity risk assessment process
- Apply the first three steps of the risk assessment process to a practice scenario

Risk

A risk is the likelihood (potential/chance) of negative impact (loss, injury, harm) to something of value that may arise from a future event.

Risk Assessment

Evaluation of

- The likelihood that an undesirable event may happen and
- The consequences of that event

Goal: To determine which events the security system must be designed to protect against.

Five Step Biosecurity Risk Assessment

1. Identify & Inventory Assets
2. Assess Potential Threats and Vulnerabilities
3. Prioritize the Threats/Risks of Specific Scenarios
4. Develop Overall Risk Management Program
5. Re-evaluate and Revise Biosecurity Plan

Step 1: Identify and Inventory Assets

- You need to know what you have to determine what to secure
- Inventory your Assets/
  - Biological Agents
  - Select Agents?
  - Check animals exposed to microbes?
- Sensitive Information
- Equipment
- Personnel

Step 2: Assess Potential Threats and Vulnerabilities

- Determine how undesired events might occur.
- Determine how unauthorized access might occur.
- Identify protective measures in place and how they could be breached.

Threat Assessment

- Judgment based on available information
- Security risk
- Potential for insider or outsider to do harm

Threats

Outsider
- Low Risk
- Public access to information
- May be armed
- May carry tools

Strategy:
Detect & Contain

Insider
- High Risk
- Unescorted access
- Non-violent
- Knowledge of facility
- Opportunity

Strategy:
Know employees

Environmental Threats

- Hurricane
- Tornado
- Flood
- Fire
- Earthquake
- (Power /Outage or Shortage)

Biosafety and Biosecurity Issue

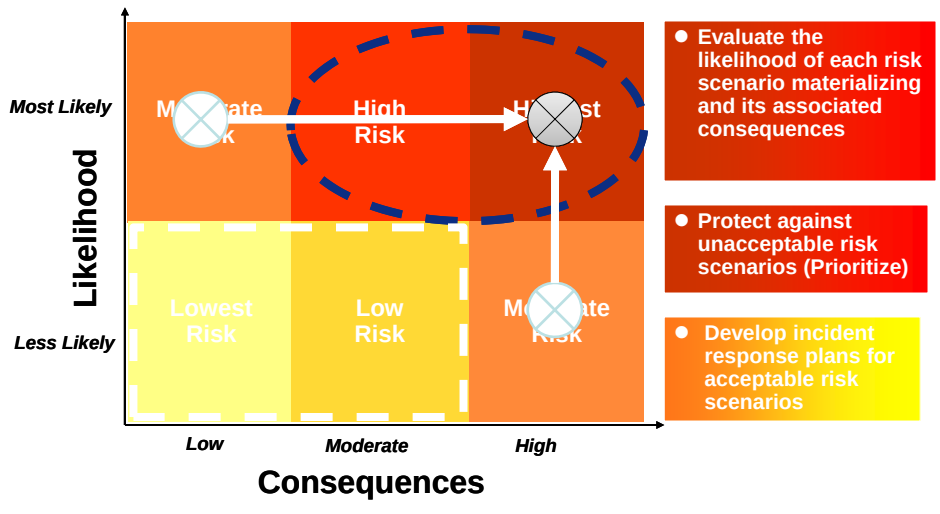
Vulnerability Assessment

- Evaluation of effectiveness of security
- Process to identify security gaps.
- Basis for mitigation measures.

Step 3: Prioritize the Threats/Risks of Specific Scenarios

- What is a biosecurity scenario?
  - A biosecurity scenario, or an undesired event, is a combination of an agent (or asset), an adversary, and an action.
- From step 2 you have generated a list of biosecurity weaknesses and identified the operational effectiveness of the security measures in place and how these measures might be disabled.
- The 3rd step is to consider how likely or how probable each of these scenarios are and how serious the consequences are if the security is breached.

Step 3: Prioritize the Threats/Risks of Specific Scenarios



Step 3: Analyze The Risk of Specific Biosecurity Scenarios

- Low Risk example: clinical samples – only amount needed for diagnostic testing
  - Mitigate: appropriate procedures and processes
- Moderate risk example: pure cultures of clinical specimens- only amounts needed
  - Mitigate: biosecurity procedures and response plans
- High risk example: large quantities of organisms especially if highly virulent
  - Mitigate: biosecurity procedures including special measures and response plans

Step 4: Design and Develop an Overall Risk Management Program

Management should ensure the following when designing a risk management program:

- Development of biosecurity risk statement
- Development of biosecurity plan
- Ensuring adequate resources
- Oversight, implementation, training, enforcement, testing the plan, and maintenance of a biosecurity plan

Step 4: Design and Develop an Overall Risk Management Program

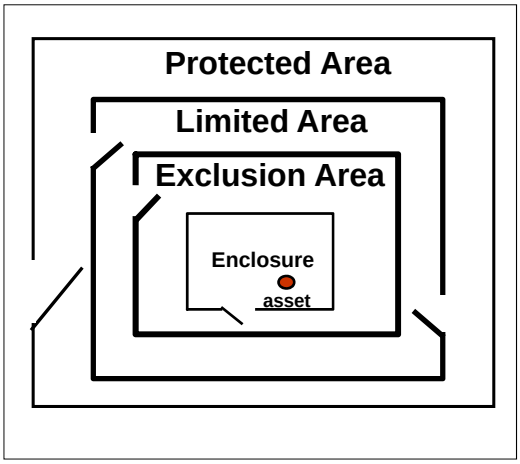
Risk Management:

- Understand risks
- Decide on actions to reduce risks
- Informed decision-making to reduce severity of risks.

Risk + Mitigation = Risk Management

Effective Layers of Security

- **Protection Areas**
  - ***Low consequence***
- **Limited Areas**
  - ***Moderate consequence***
- **Exclusion Areas**
  - ***High consequence***



Step 5: Re-evaluate

Re-evaluate and modify:

- Biosecurity risk statement
- Biosecurity risk assessment process
- Biosecurity plan
- Biosecurity systems

Re-enforce:

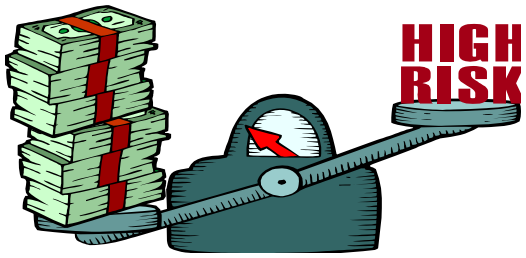
- Implementation, training, testing the plan, annual re-evaluation of biosecurity plan

Re-evaluations and Revisions

- At least annually
- After any biosecurity-related incident
- Changes to the facility
- After drills/exercises
- After plan audits
- Document

Risk Assessment Results

Allow management to make informed decisions to ensure that the cost of protective measures are proportional to the risk.



Biosecurity Risk Assessment

Risk Assessment Scenario

- An evening shift lab tech is having problems with a neighbor and wants to get back at him. He knows that there are cultures of *E. coli*O157:H7 in the lab.
  - *E. coli*O157:H7 and revengeful employee
  - Make neighbor and others ill
    - *Very likely*
    - *Severity of disease*
    - *Loss of work time*
  - Mitigate:
    - *Secure the culture materials*
    - *Employee Assistance Program for the employee*
  - Create a plan
  - Re-evaluate it

Biosecurity Key Considerations

- Protect defined assets against defined threats
- Evaluate likelihood and consequences
- Minimize impact on operations
  - Apply layered protection
  - Integrate procedures
  - Reduce risk to acceptable level
- Obtain strong management support

Additional Training Resources

For more MA SPHL training information, please go to:
http://www.mass.gov/eohhs/gov/departments/dph/programs/state-lab/emergency-prep/training.html
Cynthia Condon, LRN Coordinator 617-983-6675 cynthia.condon@state.ma.us

For more information on CDC laboratory training please go to: www.cdc.gov/labtraining
For more information please contact Centers for Disease Control and Prevention
1600 Clifton Road NE, Atlanta, GA 30333
Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
Visit: www.cdc.gov | Contact CDC at: 1-800-CDC-INFO or www.cdc.gov/info

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