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Biosafety and Biosecurity

Module 4, Part 4: Methods of Preventing Breaches of Biosecurity in Vital Bioscientific Facilities

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Objectives of Facility Biosecurity

- Policy oversight
- Reduce likelihood that select agents or biological constructs could be stolen





Biosecurity Cost-Benefit Consideration

- Bioscience facilities not unique repositories
- Not all agents equally attractive to adversaries
- Few agents can be easily grown, processed, weaponized, and deployed
- Methodology to make informed decisions
 - How to design an effective and efficient biosecurity system

Reynolds M. Salerno, "Balancing Security and Research at Biomedical and Bioscience Laboratories: The Security Risk and Threat Assessment," presented at the 46th Annual Biological Safety Conference, American Biological Safety Association, Philadelphia, PA, October 11, 2003.

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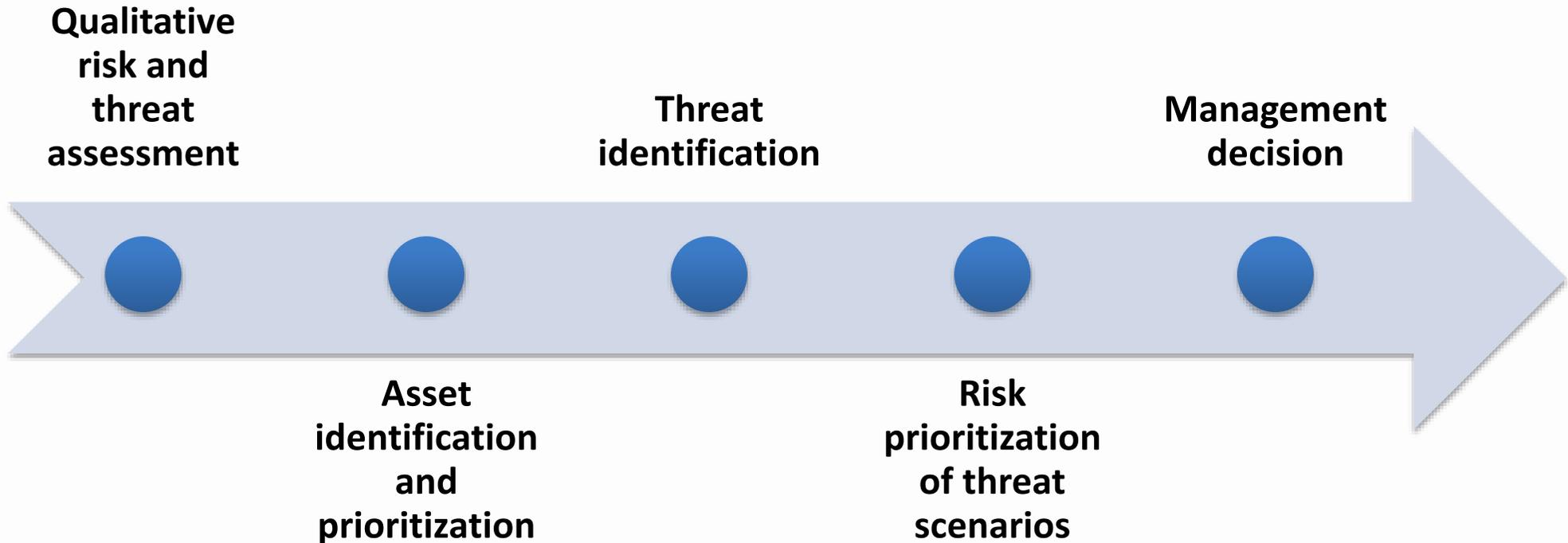


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Biosecurity Methodology



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Threat Identification

- Adversary categories
 - Insider with authorized access
 - Invited outsider(s) – visitor
 - Outsider(s) with limited access and system knowledge
 - Outsider(s) with no access but has general knowledge
 - Outsider(s) with no access and no general knowledge
 - Collusion between an insider and an outsider
- How will the adversaries perpetrate the event?
 - Alone or in a group?
 - Armed or unarmed?
 - Covert or overt?



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Asset/Threat Scenario Development

- Reasonable scenarios based on assets and threats
- What will the adversaries aim to do?
 - Steal, destroy, disperse agents
 - Steal, destroy information
 - Steal, destroy equipment
 - Destroy operational systems
 - Destroy or deface facility, injure or kill people
 - Etc.



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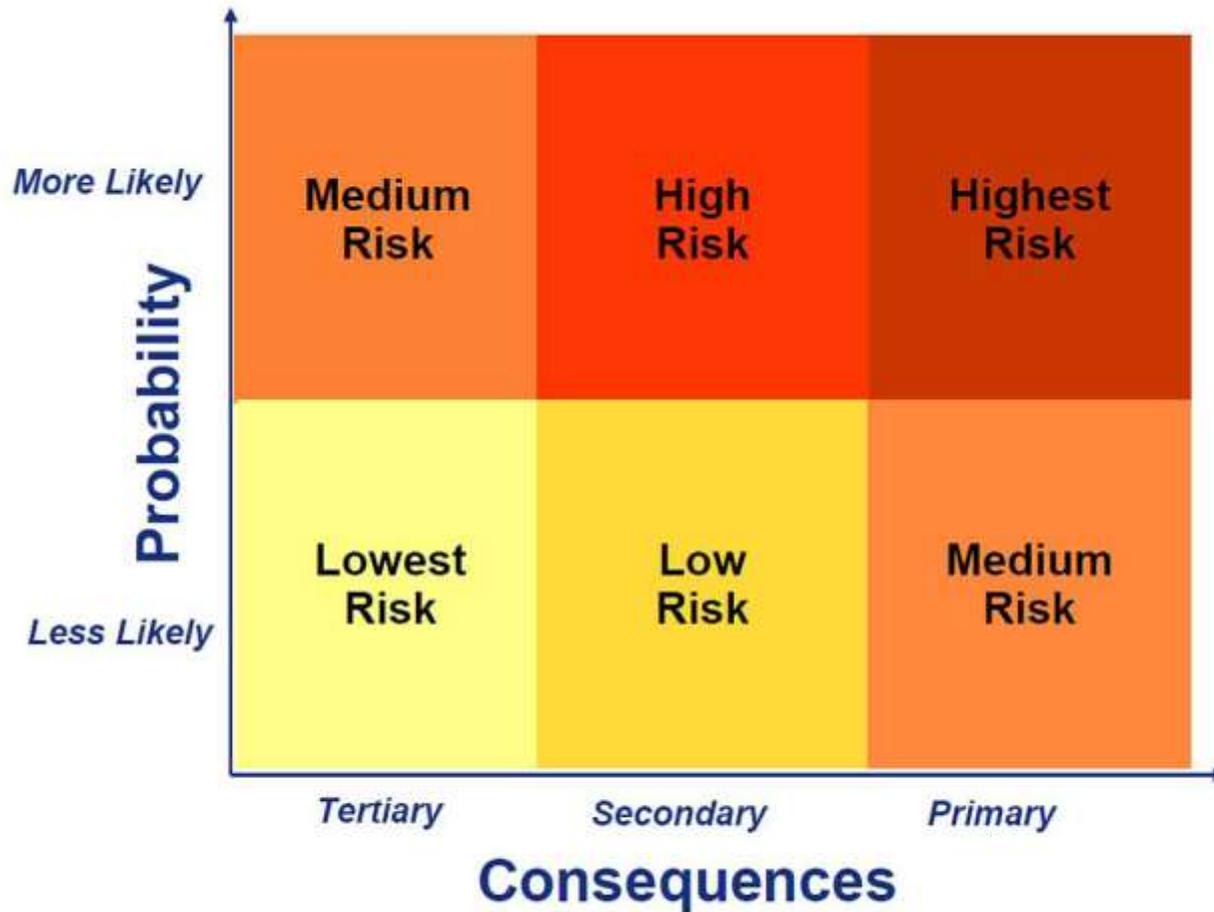


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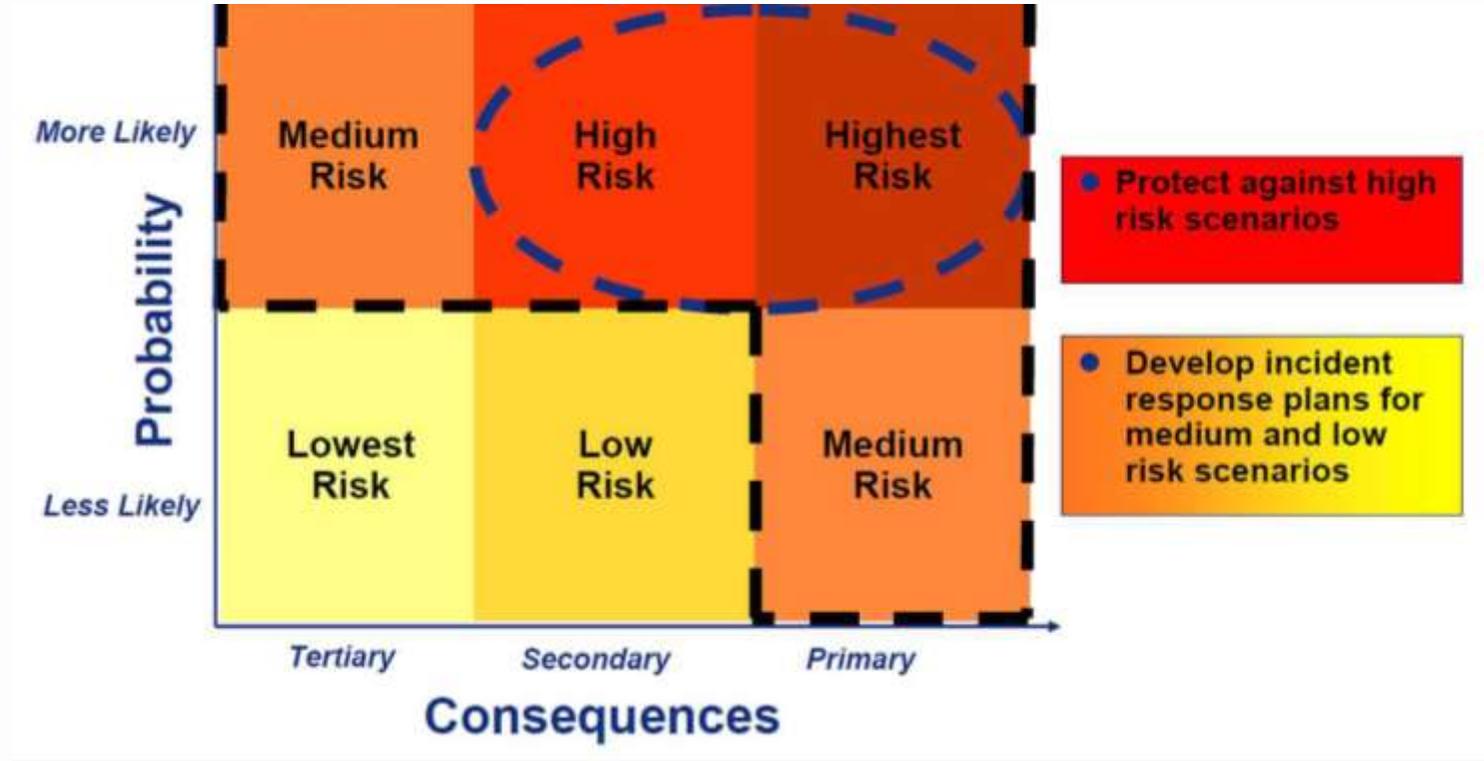


Risk Prioritization



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Management Risk Decision



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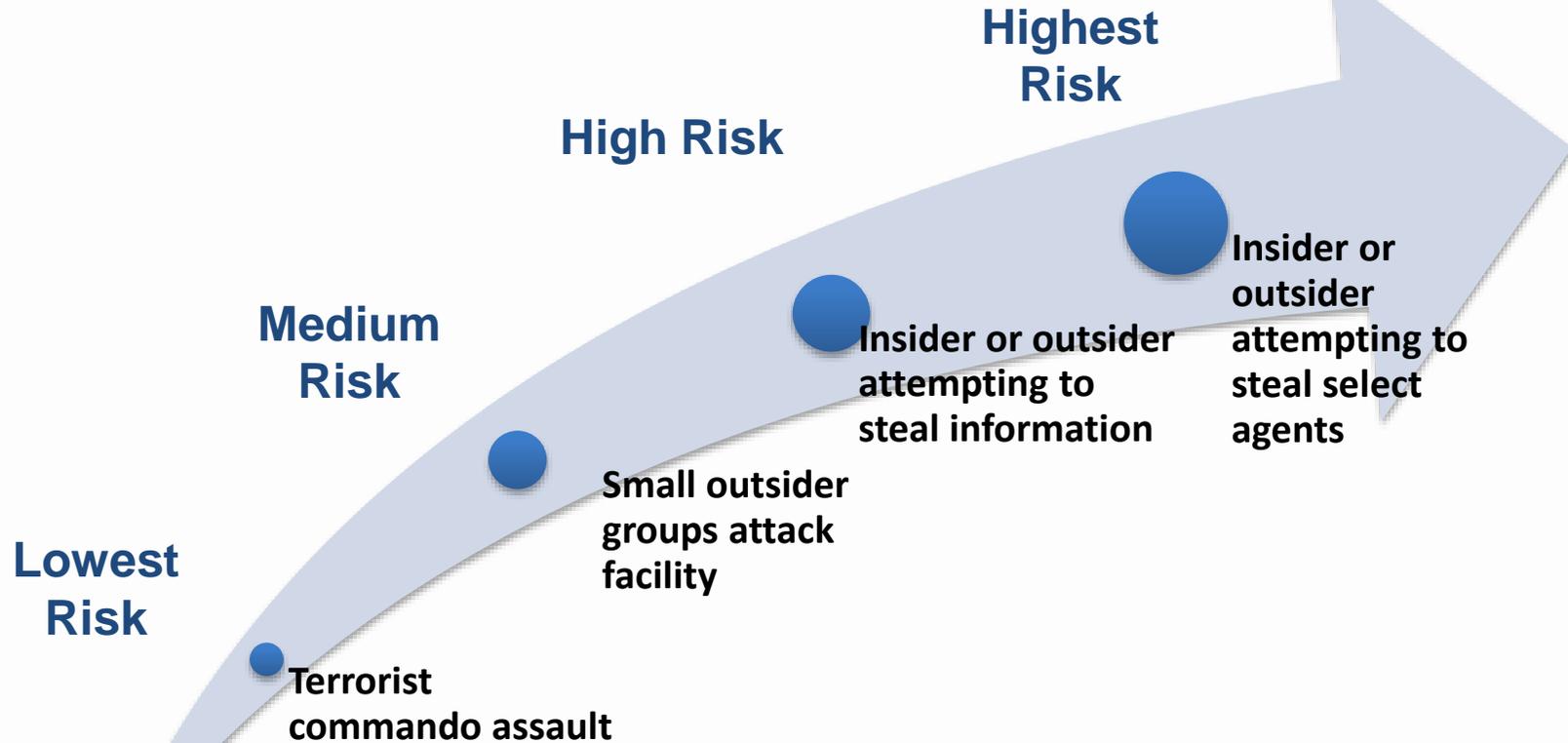


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Biosecurity Design Parameters



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Biosecurity Protection Principles

- Personnel Reliability
- Physical Security
- Information Technology Security
- Material Control and Accountability
- Material Transfer Security
- Program Management



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Personnel Reliability

- Background investigations on individuals who handle, use, or transfer select agents
- Access only to those individuals who have:
 - Legitimate need to handle select agents
 - Appropriate training
 - Registration with appropriate agencies
- Visitor interaction procedures
 - Screening, badging, and escorting
- Reporting of suspicious activity



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Physical Security

- Establish graded protection areas with:
 - Intrusion detection
 - Access controls and transaction recording
 - Alarm assessment capabilities
 - Physical barriers and delay systems
 - Law enforcement response capabilities



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Material Control and Accountability

- Develop systems to document:
 - What materials exist in a certain facility
 - Where they are located
 - Who is responsible for them
 - Who has access to them
 - In and out dates and times of select agents



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Material Transfer Security

- Document, account for, and control select agents when they are moving between protected areas within a facility
- Receive authorization and monitor external transfers between registered facilities before, during, and after transport



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Information Technology Security

- Control access to sensitive information related to select agents
- Establish policies and implement technologies for handling, using, and storing paper-based, telephonic, photographic, and electronic media

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Program Management

- Provide policy oversight and implementation of the biosecurity program
- Maintain documentation of:
 - Security plan
 - Incident response plan
 - Security training program
 - Self-assessment and auditing program

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Summary of Facility Biosecurity

- Take steps to reduce the likelihood that select agents could be stolen from bioscience facilities
- Design steps specifically for biological materials and research
- Balance science and security concerns

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National Legislation for Biosecurity

- Bound by the BWC
- Country's subjects forbidden to develop, produce, and store biological agents for offensive purposes
- All governments responsible for UNSCR 1540 implementation
- The law should provide for:
 - Procedures to protect public safety
 - Availability of agents for research, education, and other legitimate purposes
- Ministry of Agriculture standards and procedures
 - Use, possession, and transfer of biological agents