The insider threat to biocontainment facilities

Mitigation through organizational security

Ronald Barø, Dr. Morten Mærli, Alexander F. Christiansen and Dr. Stephen McAdam
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Common misperception of security

Security is much more than Guns, Guards and Gates

"Security is fundamentally not a technology problem- it's a people problem".

-(Bruce Schneier, Februar 2008)
Background

- The most likely security threat to any biological containment facility

- Relatively little research / studies into the insider threat with respect to biological containment facilities
What is the insider threat?

- The insider threat comes from trusted individual(s) that steal, distribute, sabotage, destroy, or release a dangerous biological agent, or other high consequence assets like sensitive information.
The following conditions are often required before an employee carries out a serious betrayal of trust:

- An opportunity to commit the crime
- A motive or need to be satisfied by the crime
- An ability to overcome natural inhibitions to criminal behavior
- A trigger that sets the betrayal in motion
PERSEREC Findings

- A negative work-related event triggered most of the insiders’ actions.
- 80% of the insiders exhibited unusual behaviour of a security concern in the workplace prior to carrying out their activities.
- 57% of insiders exploited systemic vulnerabilities in applications.
- 43% of insiders had authorised access at the time of the incident.

*Source: Defense Personnel Security Research Center (PERSEREC)*
Table 4: Acquisition of biological agents

<table>
<thead>
<tr>
<th>Type</th>
<th>Terrorist</th>
<th>Criminal</th>
<th>Other/ Uncertain</th>
<th>Total Instances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legitimate supplier</td>
<td>1</td>
<td>9</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>Theft</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Self-manufactured</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Natural source</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Unknown</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total instances</strong></td>
<td><strong>8</strong></td>
<td><strong>23</strong></td>
<td><strong>2</strong></td>
<td><strong>33</strong></td>
</tr>
</tbody>
</table>

Note: This table reflects the predominant method of acquisition; some individuals or groups acquired agent through multiple paths.

- 11 of the 33 cases involving non-state actors - obtained biological agents or toxins from legitimate suppliers (data from 1900 to 2000)

  All thefts involved people who had legitimate access to the facilities where the biological agents were kept

*Source: Bioterrorism and Biocrimes; The Illicit Use of Biological Agents Since 1900 - W. Seth Carus*
External/internal adversaries

Capability

Intention

LOW MEDIUM HIGH

LOW MEDIUM HIGH

LOW MEDIUM HIGH

LOW MEDIUM HIGH
External/internal adversaries

Intention

Capability

LOW

MEDIUM

HIGH

LOW

MEDIUM

HIGH
Insider pre-attack behavior

- Previous incidents have shown
  - Insiders acted in a concerning manner in the workplace prior to the event
  - Most insiders planned their activities in advance
  - In many cases, others had information about their intentions, plans, and/or activities
  - Many insiders communicated negative sentiments to others, and even made threats of harm

- Organizations should document reports of problematic behavior and develop procedures to respond to such reports
Recognition of behavior, not stereotypes

- No demographic “profile” of insiders
  - ages range from late teens to retirement
  - both men and women
  - at all levels: technicians, managers, executives, current / past and temporary employees, contractors

- Security awareness training needs to focus on behavior, not on stereotypical characteristics

- Behaviors that should be a cause for concern include:
  - threats against the organization
  - statements that damage could be done
  - attempts to obtain access to restricted areas through trickery or exploitation of trust
Examples of behavioural precursors

- Drug/alcohol abuse
- Conflicts (co-workers, supervisor)
- Aggressive or violent behaviour
- Mood swings over time
- Turning more and more introvert
- Poor performance or apathetic behaviour
- Excessive money spending
- Frequently absent with no apparent reason
- Unusual interest in information outside job scope
- Unusual work hours

U.S Secret Service and CERT Insider Threat Study 2002
What is organizational security?

- How the organization deals with security – from a human perspective
- Leadership and management
- Policies, standards, procedures
- Organizational culture
- Human Resources (HR)
- Communication
- Training and security awareness
Mitigation through organizational security

- Executive commitment to biosecurity – top down process
- Recruiting and vetting – get the right people onboard
- Policies and procedures reinforced by education and controls
- Security awareness training with focus on behavior, not on stereotypical characteristics.
  - Conduct activities to promote deterrence, greater possibility for detection and guard against the potential threat from the insider
Mitigation through organizational security

- There is a delicate balance between rigid security systems and productivity
- Enforce separation of activities
- Proactive access controls based on need
- Protect of “whistleblowers”
- To recognize behavioural change, we need to know what is a person’s typical behaviour
Not necessarily expensive

- First rate management – know and care about your colleagues
- Organizational security is a process, not a product
- Emphasize, define and prioritize the desired organizational culture
- Implement processes to promote responsibility regardless of position in the organization
- Organizational security can be effective without significant capital investment

- Working with organizational security = changing mindsets
Security awareness - not paranoia

- It is essential to encourage and promote a climate of trust, versus one of apprehension, oppression, paranoia and distrust.
Conclusions

- Executive commitment to biosecurity is vital to mitigate the insider threat
- To identify and stop the insider threat, we must focus on human behavior and not just stereotypes
- Organizational security is the key strategy in mitigating the insider threat
- The first line of defense: colleagues and managers