

# **Application of Threat Assessment Approaches in Reliability and Suitability in Biosecurity**

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# Overview

- Insider threat mitigation is a critical concern in Biosecurity
- Threats are people
- Threat assessment uses observable behaviors as indicators of potential to do harm
- Threat assessment tools can be adapted to mitigate insider threats in Biosecurity

# Background

- The most critical step in known bioterror/biocrime incidents is the acquisition of biological agents or toxins and related sensitive information (e.g. sequence, antibiotic resistance, geographic data) required to develop biological weapons: Valuable Biological Material
- Clinical, veterinary medicine, research science and public health communities are at risk for exploitation by threats (persons) who seek to acquire, develop and use biological weapons
- Biosecurity should be threat-driven to prevent the diversion of pathogens and information from relevant communities
- Biosecurity can borrow from best practices in high-stakes, threat-driven security operations, and adapt them to address threat in the Bioenterprise (Public Health, Research and Medical Communities), while minimizing intrusive measures

# U.S. Criminal Acts with Biological Agents

<b>1916</b>	Arthur Warren Waite	Dentist / Bacteriologist	Poisoning with infectious agent and murder of In-laws
<b>1984</b>	Diane Onang (Rajneeshi Cult)	Nurse Practitioner	Acquired <i>Salmonella typhii</i> for an attack on local residents of the Dales, Oregon
<b>1992</b>	Brian T. Stewart	Phlebotomist	Injected son with HIV contaminated blood
<b>1994</b>	Dr. Richard J. Schmidt	Gastroenterologist	Injected lover with HIV infected blood from one of Schmidt's patients
<b>1995</b>	Dr. Deborah Green	Oncologist	Attempted murder of estranged husband with Ricin, convicted of arson/murder of children
<b>1996</b>	Diane Thompson	Clinical Lab Technician	Attacked colleagues with <i>S. dysenteriae</i> type 2 contaminated blueberry muffins and doughnuts
<b>2001</b>	Dr. Bruce Ivins	U.S. Army Microbiologist	Primary suspect in the Amerithrax Case at the time of his death by suicide (not convicted)

Adapted from W. S. Carus (2001), "Illicit Use of Biological Agents Since 1900."

# Insider Threat: Biomedical Faculty



**Amy Bishop**, killed three colleagues and wounded 3 others in 2009 after being denied tenure in the Biology Department at the University of Alabama, Huntsville. She had a history of violence dating back to the 1984 shot-gun killing of her brother (initially ruled an accident by investigators) and a violent attack at a public location.

# Insider Threat: Vivarium



**Raymond Clark**, veterinary technician at a Yale University vivarium. Clark pled guilty to the 2009 murder of graduate student Anne Le, also entered an “Alford” plea to the included charge of sexual assault. Clark’s co-workers reported that he had complained about Yale researchers not following animal husbandry protocols.

# Group Adversaries: Animal Rights



## **Heather Nicolson, Greg Avery and Natasha Bellemagne**

*(Group: Stop Huntingdon Animal Cruelty)*

Founders and leaders of an active international animal rights campaign that utilizes violent action and intimidation to disrupt Huntingdon Life Sciences, a large research company that performs contracted animal testing for other life sciences firms. SHAC uses secondary and tertiary targeting, like the fire bombing of the house of Novartis chief Daniel Vassella in Switzerland.

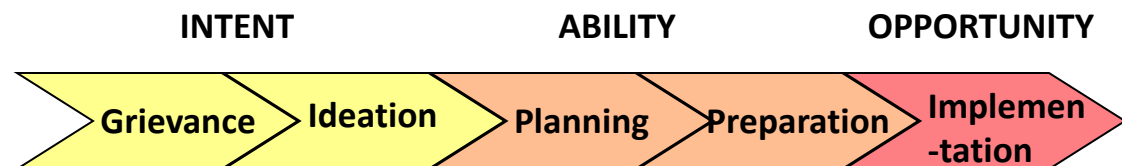
# What is a Threat Assessment?

- Analysis of threatening behavior to mitigate and prevent hostile actions
- Threat assessments are used to evaluate patterns of behavior that are typically associated with unwanted behaviors and may result from communicated or demonstrated events.
- Threatening behaviors are usually the primary study point within an assessment
  - Threatening behavior is very different from eccentric behavior
  - Not all improper communication or action is threatening
- Threat assessment may be included as part of a suitability or reliability program to address the insider threat



# The Targeted Violence Process

- “Violence is a process, as well as an act. Violent behavior does not occur in a vacuum. Careful analysis of violent incidents shows that violent acts often are the culmination of long-developing, identifiable trails of problems, conflicts, disputes, and failures.”
  - Fein *et al.*, 1995, *Threat Assessment: An Approach to Prevent Targeted Violence*, *Research in Action*, U.S. Department of Justice, Office of Justice Programs, National Institute of Justice)
- The Targeted Violence Process involves three developmental categories; Each category has sub-categories that determine the severity of the threat posed
  - Intent – Grievance, Ideation (conceptualizing)
  - Ability – Planning, Preparation
  - Opportunity – Implementation (action)
- These sub-categories also help to determine the level of intervention and mitigation needed



# Threat Assessment in Prevention

- Threat assessment *evaluates the likelihood of an individual carrying out threatening or harmful behavior*, and include obtaining:
  - Multiple sources of information to learn about a subject's behavior, interests, and state of mind at various points in time
  - Behavioral data about the subject's motives, intentions, and capacities
- Establish strong working relationship between relevant institutional functions:
- Establish and formalize necessary liaisons with outside entities:
- Set clearly defined thresholds for threat investigations and empower referrals from managers
- **Act on information from referrals!**
  - Virginia Tech Panel



# U.S. Government Policy Direction

- The SRA is a limited scope national data-base check that only covers a set of prohibitors defined in the Biological Weapons and Toxins Criminal Statute (18 USC 175) and the U.S. Select Agent Regulations
- The current Proposed Final Rule issued by all three Select Agent Programs (CDC and APHIS) includes elements of a mandatory reliability program for certain “Tier 1” entities (determined based on which agents they possess)
- Elements of suitability programs are increasingly being voluntarily implemented at U.S. institutions that sponsor select agent and other infectious disease research
- Suitability and reliability programs seek to establish an initial behavioral base-line and reliability programs actually select for, or reinforce, a behavioral standard
- Many suitability and reliability concepts are already part of Biosafety (BMBL-5)

# Insider Threat Mitigation

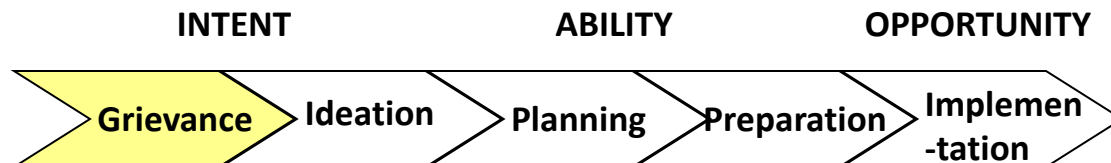
- Suitability Program
  - Draws on preemptive measures from the threat assessment process
  - Active assessment of individual suitability
- Reliability Program
  - Passive, on-going assessment of individual suitability
  - Detect behaviors of concern through self and peer reporting
  - Detect abrupt changes in baseline behaviors through peer and self reporting
  - Detect personal sources of stress through self reporting
  - Safeguards against reprisal and false reports
- Occupational Health and Wellness
  - Medical fitness and response
  - Psychiatric/Psychological fitness and response
- Personal Security Program
  - Security and threat awareness training
  - Peer and Self reporting requirements
  - Surveillance, elicitation and manipulation detection

# Case Study: Mental Health History

- Reported psychiatric treatment for job-related stress dating back to early adulthood during occupational medical reviews
- Medical self-reports were inconsistent, *e.g.* different medications and diagnoses listed in each reports
- Failed to list antipsychotic medications
- Question mark re “psychotic symptoms” on one form
- Over career, signed multiple releases granting access to his records investigators
- Substance abuse, *e.g.* alcohol and sedative-hypnotics
- Clinical depression

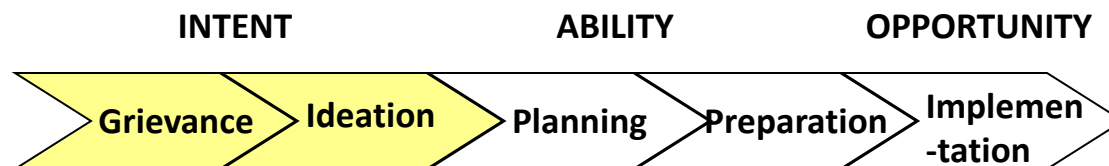
# Case Study: Grievance

- Dysfunctional home life, *e.g.* mother beat and injured his father
- Both parents suffered form alcoholism and depression
- Mother was diagnosed with Schizophrenia
- Limited social life in school
- Sensitive to rejection
- History of writing ranting opinion articles to media, sometimes using aliases
- Unrequited, love-obsessional relationships included colleagues and reality TV personalities
- Dependence on obsessional relationships, abandonment when they end
- Persecutory beliefs



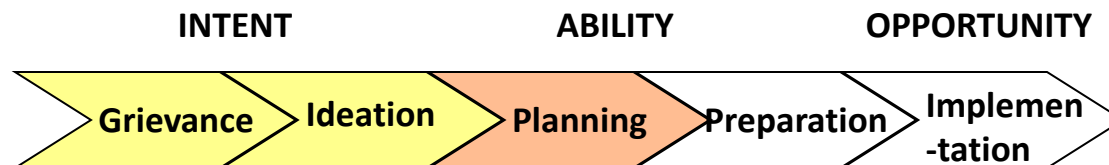
# Case Study: Ideation

- Obsession with particular national sorority beginning in sophomore year of college
- Homicidal fantasies
- Shared self-described “delusional thoughts” with colleagues
- Veiled threats to roommates/friends regarding his knowledge of poisons



# Case Study: Planning

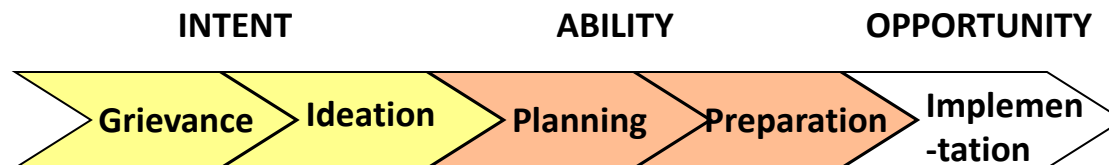
- Homicidal plans *e.g.* bomb materials and cyanide, obtained from on-line vendors
- Mass homicide/suicide plans for retribution towards those who had harmed him, “blaze of glory” reference





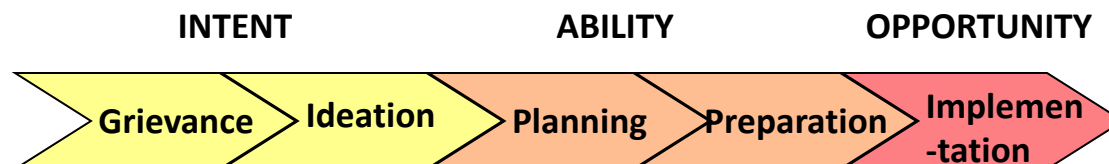
# Case Study: Preparation

- Illegally carried loaded and cocked guns on campus while in college/grad school
- Long distance drives at night for break-ins, avoiding detection by family and colleagues
- History of using false names to obtain Post Office boxes for clandestine receipt of pornography and mailed, stolen sorority material
- Learned to disguise handwriting in the form of childish printing to cover identity
- Possessed ballistic vest and small arms



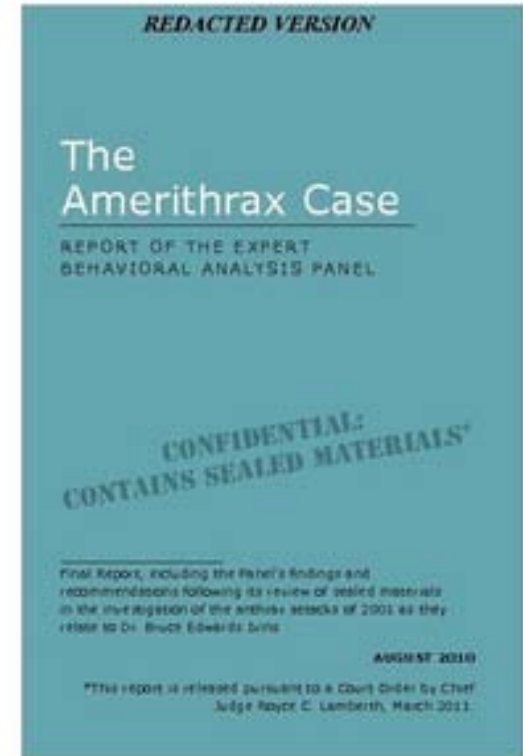
# Case Study: Implementation

- Juvenile vandalism of neighbor's home
- Propensity for violent retribution for criticism
- Illegally discharged weapons at college residence hall
- Armed at dissertation defense
- Sabotage/theft/vandalism targeting fellow graduate student, also a sister in the sorority in question, who rejected his interest
- Breaking and entering at sorority houses in several states



# Expert Behavioral Analysis Panel

- Case Study materials were drawn from the EBAP Report
- The EBAP was formed by order of the U.S. District Court for the District of Columbia to review the pertinent mental health and behavioral aspects found over the course of the Amerithrax Investigation.
- The EBAP was multidisciplinary in composition: Psychiatry, Clinical Psychology, Security, Criminal Investigation and Law, Science, etc.
  - Saathoff et al.  
<http://www.dcd.uscourts.gov/dcd/sites/dcd/files/unsealedDoc031011.pdf>



# Summary

- Insider threat mitigation is a critical concern in Biosecurity
- Threats are people who exhibit a spectrum of well-characterized behavioral indicators
- Threat assessment mitigates insider threats by using behavioral indicators to guide the use of preemptive and responsive measures
- Threat assessment tools establish a baseline of behavior and can be used to complement a suitability or reliability program