Defending the Food Supply Chain
A Look at Bioterrorism, Agroterrorism & Food Terrorism

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Overview

1. Background
2. Terrorist Threats to Food
3. The Food Chain
4. Contamination of the Food Chain
5. Potential Effects of Food Terrorism
6. Security of the Food Chain
7. Conclusion and Questions
Background

• Biological warfare (bioterrorism) has been noted in historical events as a means to meet military and strategic objectives
  – The relatively recent ban of biological warfare agent production ended most nation states from involvement
  – Several less developed nation states and terrorist have seen this as an effective mass casualty weapon
    • Against military targets
    • Against civilian populations
• Agroterrorism is a sub-category of bioterrorism
  – Biological or chemical agents intentionally introduced into the food chain
• Food terrorism is an intentional attack or hoax aimed at food, especially that which is mass distributed
Statistics

• An estimated 76 million illnesses caused by food poisoning occur in the U.S. each year, resulting in approximately 325,000 hospitalizations and 5,000 deaths each year.
  
  – *New York Times Guide to Essential Knowledge*

• Contamination to the food supply need not be intentional to trigger panic. The Centers for Disease Control and Prevention records 10,000 accidental cases of food borne illness for every one case of intentional adulteration.
  
Interconnected Threats

- Bioterrorism
- Agroterrorism
- Food Terrorism
Bioterrorism

• Definition
  – Bioterrorism is defined as the intentional release of biological agents such as viruses, bacteria or other germs to cause illness or death in people, animals, or plants, or to harm and terrorize civilians in the name of political or other cause.

• Biological agents are typically found in nature, but can be changed to increase ability to cause disease and to spread into the environment.
  – spread through the air, through water, or in food.
  – difficult to detect and do not cause illness for several hours to several days.
    – *U.S. Centers for Disease Control and Prevention*
Agroterrorism

• Definition
  – Agroterrorism is defined as the deliberate introduction of an animal or plant disease with the goal of generating fear over the safety of food, causing economic losses, and/or undermining social stability.

• Typically involves pathogens such as viruses, bacteria or fungi.

• Goal
  – To cause economic crisis in agriculture and food industries, social unrest, loss of confidence in government, and to put human health at risk.
    – U.S. Congressional Research Service
Food Terrorism

• Definition
  – Food terrorism is defined as an act or threat of deliberate contamination of food for human consumption with chemical, biological or radionuclear agents for the purpose of causing injury or death to civilian populations and/or disrupting social, economic or political stability.

• The chemical agents are man-made or natural toxins

• The biological agents are communicably infectious or non-infectious pathogenic microorganisms, including viruses, bacteria and parasites.
  – Food Safety Department, World Health Organization, “Terrorist Threats to Food”

• Goal
  – To cause widespread incapacitation and injury to effect terror and panic, in order to seek personal revenge or gain.
Overview of the Food Chain

1. Agricultural Production and Harvest
2. Storage and Transport of Raw Commodities
3. Processing and Manufacturing
4. Storage and Transport of Processed and Manufactured Products
5. Wholesale and Retail Distribution
6. Food Service Section

Terrorist Threats to the Food Chain

• Food can be contaminated at any point along the food chain

• The attack has the most chance of success where the fewest bio-security measures are in place
  – Increasingly, bio-security protocols are being introduced through farm management protocols that both protect animals and crops from the introduction of infectious disease, and from spreading to other farms if an outbreak occurs
    • i.e., millions of chickens in BC in 2004

• The process of being able to verify one step forward and one step back in the food chain provides fast verification of reliability
  – Contain real incidents and defuse hoax events
Potential Effects of Food Terrorism

• Threaten Public Health through illness, injury and death
• Overwhelm Public Health Services and Emergency Response Systems
• Disrupt normal urban routine and shut down facilities
• Economic effects disruption of global trade
• Political Instability and reduced confidence in government
• Social instability, public anxiety, panic and confusion
• Undermine the viability of the food supply
• Damage public confidence in the safety of the food we eat
Food Contamination Case Study

Spinach E. coli Recall

- 199 people living in 26 US states got sick between August and mid-October 2006
  - 31 developed kidney failure
  - 3 died
- Problem was traced to spinach grown in California’s Salinas Valley in fields fouled by cow manure near the farm
- First FBI search warrants executed at NSF, Growers Express and Primus Labs on 04 October
- Remember 4 W’s
  - Water
  - Wildlife
  - Workers
  - Waste (manure)
Security of the Food Chain

Solutions to Protect Against Terrorist Threats

• Knowledge networks
• Prevention strategies
• Protection Strategies
• Preparedness planning
• Surveillance
• Detection
• Evaluation systems
• Response systems
• Multi-stakeholder approach
Knowledge and Information Networks

• Multi-stakeholder approach
  – Partnerships, including public-private section solutions
• Increased coordination and collaboration
• Improved communication strategies
  – Communicating best practices and lessons
  – Communication of new programs and successful initiatives
• Training sessions
• Situational awareness
Preparedness Planning

- Policies and Procedures: screening staff, encourage staff to report suspicious behavior and activities
- Food security plan and planning initiatives
- Preparedness activities
- Develop strategies and countermeasures to reduce or eliminate the potential risks at vulnerable points along the farm-to-table continuum
- Develop strategies and procedures to anticipate, prepare for, prevent, respond to and recover from potential attacks
- Develop information guidance documents
Prevention Strategies

- Understanding the Role of the Food Industry throughout the Food Chain
- Enhanced access control
- Asset protection programs for the food supply chain
Detection

• Heightened surveillance and monitoring systems
  – Bio-surveillance initiatives

• Rapid detection measures

• Vigilance and awareness

• Tracking systems
  – Food-related consumer complaints
  – Identify early warning systems

• Tracking and inspection of the food supply chain

• Bio-forensics
  – Determine the source of a biological agent used in an attack
Surveillance Strategies

• Design surveillance strategies
• Coordinate and integrate surveillance activities
• Enhance surveillance programs
• Enhance monitoring systems
  – web-based tracking system for disaster reporting, maintaining databases
Protection Strategies

• Deploying mitigation and protective strategies
• New tools and technologies for scanning shipments
• Border protection
  – Trained and certified staff to detect and intercept shipments, and to perform Bio-Terrorism Act related work at ports of entry
  – Surveillance liaison inspectors
  – Better guidance on potential foreign diseases that may be animal or agriculture borne
  – Public/private partnerships are necessary on oversight issues
    • Oversight needs to span national boundaries and protectionist actions of lobby groups
Response Systems

• Coordinate and support emergency response
• Enhance emergency preparedness programs
• Investigation of suspected food safety emergencies
  – Enhance laboratory resources
Evaluation Systems

• Develop measurable objectives
• Provide continuous evaluation
• Provide vulnerability assessment
• Assessment and decision-making based upon information derived from surveillance network systems
• Develop methods for identifying vulnerabilities and developing security strategies, with guidelines and models
Discussion and Questions

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