Food Defense – Where are We Heading?

AFDO Annual Meeting
Food Defense Workshop
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Overview

• What are we talking about?
  • Food Security vs. Food Defense
  • Food Safety vs. Food Defense

• Why we are concerned about food defense?

• What have we done since 9/11/2001 for food defense?
  • Overall approach
  • Major areas of focus
  • Current activity

• Where should we be heading in the future?
Food Security vs. Food Defense?

- **Food Security**
  - Having an adequate food supply

- **Food Defense**
  - Having a safe and protected food supply
Food Safety vs. Food Defense?

• Food Safety
  • Unintentional
  • Ongoing
  • “Real”
    • 76 million cases per year
    • 325,000 hospitalizations per year
    • 5000 deaths per year
Food Safety vs. Food Defense?

- **Food Safety**
  - Unintentional
  - Ongoing
  - “Real”
- **Terrorism involving foods**
  - Intentional
  - Sporadic
  - Plausible but Unknown Threat
Common themes between Food Safety and Defense

- Many of the same agents
- Many of the same approaches
- Common resources
  - Industry
  - Regulators
- Common tools
  - Methods
Traditional Food Safety Issues

- Microbiological
  - *Salmonella*, etc.
- Chemical
  - Mercury, etc.
- Physical
  - Filth
Food Defense Issues

• Microbiological
  • *Bacillus anthracis*

• Chemical
  • Ricin

• Physical
  • Cyber security

• Radiological
Why Are We Concerned About Food Defense?

- Intelligence indicates terrorists have discussed components of the food sector
- Manuals for intentional contamination of food are widely available
- Food and Agriculture are critical assets and concern exists for exploitation of soft targets, such as the food supply
- Use of biological or chemical weapons against our food supply could cause mass casualties
- Even an ineffective attack could cause significant economic and psychological damage
General Approach to Food Defense

- Preparedness
  - Awareness
  - Prevention
  - Build Response Capacity
- Response
- Recovery
Food Defense Goals

• To *prevent* an attack if possible
• To *respond* rapidly and efficiently if needed
• To *recover* rapidly and restore consumer confidence in the food supply
Major Areas of Focus

• Where are the risks?
  • Vulnerability Assessments
    • Operational Risk Management
    • CARVER + Shock
• How to respond to the risks?
  • Guidance
  • Preventive Measures
  • 2002 Bioterrorism Act
• Focused Research
• Emergency Preparedness and Response
• Recovery
• Bioterrorism Act 2002
Ways to Assess Vulnerabilities

- Operational Risk Management (ORM)
- CARVER
Operational Risk Management
Food Assessment Process

- Identify Agents
- Identify Foods
- Food/agent scenarios
Identification of Agents

• Develop list of priority terrorism agents with potential for dissemination via food
  • Started with CDC list
  • Modified based on:
    • Stability of agent in food matrix
    • Odor/flavor/color of agent in food matrix
    • Severity of public health outcomes
    • Oral infective/toxic dose
    • Availability of agent
    • Threat intelligence
Evaluate Foods Regulated by FDA

- Baby Food
- Breaded Food
- Canned food, low-acid
- Cereal
- Deli Salads
- Dietary Supplements
- Entrees, cooked
- Flour
- Fruit Juice
- Gum arabic (ingredient)
- High fructose corn syrup (ingredient)
- Honey
- Ice Cream
- Infant Formula
- Milk
- Peanut Butter
- Produce
- Seafood, cooked
- Soft Drinks
- Spices
- Vitamins
- Yogurt
- Water, bottled
Food/Agent Scenarios

• Assess risk for specific product-agent-activity combinations covering harvest, production and delivery - farm to table:
  • Farm/dairy farm/orchard/apiary/fishing vessel
  • Bulk transportation
  • Manufacturing (including packing houses)
  • Finished product transportation
  • Warehousing
  • Retail/food service
## ORM Model

### Assess Level of Risk

<table>
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### RISK LEVELS

- Higher Risk
- Lower Risk
ORM Application
Lessons Learned

Common features of higher risk foods:

- Large batch size = large number of servings
- Short shelf life = rapid turnaround at retail and rapid consumption
- Uniform mixing of contaminant into food
- High accessibility to critical node
CARVER

• Breaks a food system into its smallest pieces (nodes) in the farm to table continuum

• Identifies “critical nodes” that are the most likely targets for terrorist attack, by applying the analysis to each node

• Leads to the identification of countermeasures to reduce the risk at those nodes
CARVER + Shock

Considers seven factors that affect the desirability of a target:

- **Criticality** – Public health and economic impacts to achieve the attacker’s intent
- **Accessibility** – Physical access to the target
- **Recuperability** – Ability of the system to recover from the attack
- **Vulnerability** – Ease of accomplishing the attack
- **Effect** – Amount of direct loss from an attack
- **Recognizability** – Ease of identifying a target
- **Shock** – Combined physical, public health, psychological, and economic effects of an attack
Apply what is learned from vulnerability assessments

- FDA Guidance Documents
- Training
- Emergency Response Planning
  - LRN/FERN
  - Medical Countermeasures
- Research Priorities
- Preventive Measures/Shields
- CARVER
Food Security Guidance Documents

- Food Producers, Processors, and Transporters
- Importers and Filers
- Retail Food Stores and Food Service Establishments
- Cosmetic Processors and Transporters
- Dairy Farms, Bulk Milk Transporters, Bulk Milk Transfer Stations and Fluid Milk Processors

http://www.cfsan.fda.gov/fooddefense

- Use guidance to develop preventive measures
Food Security Guidance Documents

- **AID** to operators of food producers, processors, and transporters
- **MINIMIZE** the **RISK** that food under their control will be subject to tampering or other malicious, criminal, or terrorist actions
- **REQUIRES** the **COMMITTMENT** of management and employees to be successful
Focused Research

• **New Methods**
  - Development of rapid, reliable methods to detect, enumerate and identify potential agents in foods

• **Prevention Technologies**
  - Technologies to improve safety of foods
  - Provide “shields” in the event of contamination of foods

• **Agent Characteristics**
  - Ability of threat agents to survive and grow in foods, and means to inactivate

• **Dose Response/Threat Assessments**
  - Ability of foodborne threat agents to cause mass casualties
Bioterrorism Act 2002

• Directed FDA to take aggressive steps to protect the public health from deliberate and accidental contamination of our food supply.
  • Recordkeeping
    • Published final rule Dec, 9, 2004
  • Administrative Detention
    • Published final rule June 4, 2004
  • Registration
    • Published final rule Oct. 3, 2005
  • Prior Notice
    • Interim final rule Prior Notice Systems operational Oct 10th, 2003
Emergency Preparedness and Response

- Emergency Plans
- Emergency Exercises
- Lab Capacity/Surge Capacity
  - Food Emergency Response Network (FERN)
- Training
FDA and FSIS, in conjunction with AMS and FNS, developed Food Defense Awareness training

- Targeted for federal, state, and local regulators; local law enforcement; food program administrators; and industry
- Increase awareness of the potential for intentional adulteration of the food supply
- Conducted 14 face-to-face sessions across the country (over 1,200 attendees)
Food Defense Awareness Satellite Downlink

• Done under the auspices of the Council of State Associations
• Held on March 29, 2006
• The program was structured in three segments:
  • A panel discussion between FDA, CDC, and State subject-area experts;
  • A "documentary" segment that discusses issues and solutions concerning daily food defense activities (farm, transportation, manufacturing and retail); and
  • A "town hall meeting" taped live in-studio with expanded discussion on the subject.
Food Defense Awareness Satellite Downlink

• Emphasized that food defense is a cross-cutting topic, requiring communication and collaboration among those working in agriculture, food and public health specialties.

• Included segments aimed at helping state and local inspectors gain a better understanding of their role in protecting the food supply and how to integrate food defense topics into daily routines.
FOOD DEFENSE AWARENESS BROADCAST

THE PROGRAM WAS PRESENTED WITH THE COOPERATION AND SUPPORT OF:

The Association of American Feed Control Officials (AAFCO) www.aafco.org
The Association of Food and Drug Officials (AFDO) www.afdo.org
The Association of Public Health Laboratories (APHL) www.aphl.org
The Association of State and Territorial Health Officers (ASTHO) www.astho.org
The Council of State and Territorial Epidemiologists (CSTE) www.cste.org
The National Association of County and City Health Officials (NACCHO) www.naccho.org
The National Association of Local Boards of Health (NALBOH) www.nalboh.org
The National Association of State Departments of Agriculture (NASDA) www.nasda.org
The National Environmental Health Association (NEHA) www.neha.org
The United States Animal Health Association (USAHA) www.usaha.org
The Centers for Disease Control and Prevention (CDC) www.cdc.gov
The Food and Drug Administration (FDA) www.fda.gov
How do I ALERT the operators of the establishments to make them more aware of Food Defense issues?
In today’s world it is important to be **ALERT** to protect your business.

How do you **ASSURE** that the supplies and ingredients you use are from safe and secure sources?

How do you **LOOK** after the security of the products and ingredients in your facility?

What do you know about your **EMPLOYEES** and People coming in and out of your facility?

Could you provide **REPORTS** about the security of your products while under your control?

What do you do and whom do you notify if you have a **THREAT** or issue at your facility, including suspicious behavior?

Can you answer these questions?

An **ALERT** for owners and operators of food establishments about the security of your facilities …
ALERT

• Target Audience – Federal, State, and local regulators and industry

• Release – Mid-July 2006 with associated PowerPoint Slides

• Additional Training – resource materials
**BROADCAST FOLLOW-UP**

- **Distribution of "Food Defense Awareness" DVD**
  - SEND AN EMAIL REQUESTING A DVD COPY OF THE PROGRAM TO: dfsr@ora.fda.gov (please put "requesting a copy of Food Defense Awareness Broadcast" in the subject line)
  - SEND ADDITIONAL COMMENTS OR QUESTIONS ABOUT THE PROGRAM TO: dfsr@ora.fda.gov (please put "Food Defense Awareness Broadcast" in the subject line)

- **Development of a n On-Line Training Course: "ALERT"**

- **National meeting of Food Safety and Food Defense Task Forces and Council of Association Presidents**
Strategic Partnership Program on Agroterrorism

Overall goal is to undertake or validate vulnerability assessments

• A joint effort of the FBI, DHS, USDA and FDA
• Announced July 26, 2005
• Collaborate with private industry and the states
• Use CARVER + Shock assessment tool
• Involve both HQ and local participants
# SPPA Initiative – Assessments

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F=FDA  U=USDA
CARVER
Software Tool

- IFT Contract
  - Subcontract with Sandia National Laboratories
- Develop a software-based system to undertake CARVER
  - Use of questions
  - Drop down menus
  - Relative ranking of nodes
- Provide to industry and others free of charge
- Available in the Fall of 2006 with associated training.
Recovery

- Decontamination and Disposal
  - Equipment
  - Food
  - Facilities
- Ability to say the food supply is safe
  - Testing
  - Clean up
- Communication with Consumers
Current Activity
Focused Research

• **Long-Term Research**
  - New methods
  - Prevention technologies
  - Agent characteristics
  - Dose response/threat assessments

• **Short-Term Research**
  - Industry generated CARVER questions
  - Deliver results back to industry
Current Activity

- National Infrastructure Protection Plan (NIPP)
  - Sector Specific Plan (SSP)
- CARVER
  - Strategic Partnership Program on Agroterrorism
  - Software tool
  - Research
- Interaction with States and Locals
The Future

- Continue to raise awareness
- Continue to focus on risk
  - Direct resources to areas of maximum risk
- Identify mitigation strategies
- Ensure the ability to respond is robust
- Have a plan for recovery
- Integrate Food Defense with Food Safety
Questions?