Preparing for the New Reality

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Preparing for the New Reality

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Preaching to the AFDO Choir
Current Events & Context

- Avian influenza spreading rapidly
- Pandemic human influenza concerns mounting
- Nation’s capability to respond to natural disasters challenged by Katrina
- Increased “chatter” on terrorism threats
- Health care crisis looming
- Budget deficits mounting
- Why are we worried about food defense?
The Consumer Assumes
A Safe and Plentiful Food Supply
U.S. Agriculture - a National Resource

Value Toward GDP

$1.24 Trillion
or
12.3% of GDP

Direct and Related Employment
16.7%

Largest in the world
or
1 in 6 Jobs

- Highly concentrated – Efficient but poses new risks
- Vast transportation systems – spread disease rapidly, highly dependent upon other infrastructures: energy, water, transportation, etc.
- Increased regional, national and international travel, tourism & trade – multiplies risks

Source: Agricultural Statistics Board (National Agricultural Statistics Service)
Today we have heard about:

- Vulnerability & Risk Assessment
- Biosurveillance & Consumer Complaints Monitoring
- DHS National Communications
- Awareness Initiatives
- Protecting the Infrastructure
- Food Defense Strategies in Industry
- Food Emergency Response Planning
- Crisis Management & Recovery Planning
Principles of Delivery

- The delivery of that food supply is highly dependent on the many facets of the food system and supply chain
- No longer a simple system
Fresh-cut lettuce distribution chain
Lettuce/romaine distribution chain
Imported Foods

- $58.5 billion in ag imports
- 143,391 foreign facilities registered
- Only ~ 3% of imported food is inspected at the border
- Borders are porous

Over 90% of green onions and up to 60% of cucumbers sold in the United States were from Mexico in 2001.

Mexican trucks make about 4.5 million border crossings each year, according to US government figures. DOT 6-24-05
Where is this?
USA? PERU? MEXICO? CHILE?
Where is this?

USA? PERU? MEXICO? CHILE?
Supply Chain Complexity

- Primary Production
- Harvest
- Transportation
- Storage
- Processing
- Distribution
- Retail/Food Service
- Consumer
Intelligence on Food Terrorism

“Terrorist groups have a lesser interest in biological materials and are most interested in chemicals such as cyanide salts to contaminate food and water supplies”

CIA Testimony to Congress 2002

Documents Seized in Afghanistan (Tarnak Farms) Indicate Interest
Organizations and Clientele

- Government
  - International
  - National
  - State
  - County
  - Local
- Industry
- Academic
- Independent Consultant
- Agencies
- Departments
- Producers
- Manufacturers
- Distributors
- Retailers
- Restaurateurs
- Institutions
- Consumers
Principles & Perception

- Food Quality
- Food Safety
- Food Defense
- Food Protection
  - Animal Protection
  - Crop Protection
Principles & Perception

- Systems thinking is imperative
- Principles are fundamentally same
- Must recognize similarities & differences
- Food Quality
- Food Safety
- Food Defense
- Food Protection
  - Animal Protection
  - Crop Protection
Principles & Perception

- Symmetrical
  vs.
- Asymmetrical

- Food Quality
- Food Safety
- Food Defense
- Food Protection
  - Animal Protection
  - Crop Protection
Principles & Perception

- System failure
- System attack
- Food Quality
- Food Safety
- Food Defense
- Food Protection
  - Animal Protection
  - Crop Protection
Magnitude of Impact

Harassment
Hoax
Tampering
Illnesses
Deaths
Disaster
Catastrophe
Pandemic

MORBIDITY & MORTALITY

ECONOMIC
The Problem: Challenges Come in Various Forms

- “Mother Nature”
- Disgruntled employees
- Violent activist groups
- Criminals/subversives
- International/government supported or directed groups or individuals [terrorists]
The Problem: Challenges of a Food Situation

- Food supply system is extremely complex
- Global challenge acknowledged
- Food as a desirable terrorist vehicle
- Intentional vs. accidental contamination
- New paradigm for threats to food safety and defense management
The Problem: Multiple Food System Vulnerabilities

- Opportunities for contaminant access
- Lack of subsequent adequate inactivation treatment
- Large volume and/or maximum mixing
- Product environment for agent growth/preservation
- Rapid distribution to consumers
- Rapid consumption by consumers
- Disproportionate consumption by “high risk populations”
The Problem:
Setting Priorities
Among the Solutions

■ Public Health
■ Real vs. perceived vs. precautionary
■ Business survival
■ Community survival
The Problem:
e.g.; Differentiating “Normal” from Intentional Contamination

- Types of information, reports, situations
- Types of agents
- Concentration of agents
- Choice of targets
- Scale/number of targets
- Recognition of illness, cause, response
Much effort has been or is being put into planning for protection, detection, containment, and decontamination of intentional and/or natural contamination of food/ag production facilities.

What has not been done is to plan for dealing with the 2\textsuperscript{nd}, 3\textsuperscript{rd} and 4\textsuperscript{th} order effects of such an event.
We have not addressed the 2\textsuperscript{nd}, 3\textsuperscript{rd} and 4\textsuperscript{th} order effects of such events.

This applies to:
- traditional natural/accidental contamination by pathogens/pesticides/allergens
- intentional contamination at lethal or injurious levels by select agents
- intentional contamination at incidental harmless levels by select agents
- diseases in plants or animals that have little or no human consequences
e.g., 2\textsuperscript{nd} Order Effects

- The primary production component of the industry
- The wholesale, distribution and retail components
- The subsequent employment impact
e.g., 3\textsuperscript{rd} Order Effects

- The financial and insurance sectors
- The cross infrastructure impact (such as with transportation sector)
e.g., 4th Order Effects

- The loss of tax revenue at the local and state levels
- The overall cost to government of the response
- The social disruption effects

(These may range from local movement restrictions as the event is dealt with on farms or along the supply chain, loss of commodities to the market and potential disrupted delivery of a wide range of products and services to broader public panic)
Trajectory of Effects

Order
First
Second
Third
Fourth

- Individual
- Group
- Company
- Industry
- Population
- Community
- Government
A Solution

Defending the safety of the food system through research and education
NCFPD - Vision

Defending the safety of the food system through research and education
A Solution –
Universal principles to reduce potential

- Preparation for variety of challenges from routine to catastrophic
- Rendering systems resistant to potential problems
- Rapidly and accurately detecting problems
- Responding effectively to minimize consequences
- Rapid delivery of effective recovery efforts
- Training
Food Defense Strategies

Reduce the potential for catastrophic events by:

- Rendering targets unattractive
- Rapidly and accurately detecting attacks
- Responding effectively to minimize consequences
- Rapid delivery of effective recovery efforts
- Training new scientists and professionals
Food Defense Strategies

Rendering targets unattractive
- Multiple barriers to effective contamination
- Guns, gates and guards
- “Hardened” processes
- Minimizing impact of an effective contamination
- Agent inactivation via processing or formulation
- Vaccines/anti-virals/probiotics

KEY: Where to focus interventions
Food Defense Strategies

Rapidly and accurately detecting attacks

- Real time detection of contaminants in food
  - Detect to prevent
  - Detect to protect
  - Detect to recover

**KEY:** Detection strategies that meet the speed, sensitivity and specificity needs of the situation
National Center for Food Protection and Defense

A Department of Homeland Security Center of Excellence

Who are we?

University of Minnesota
Broad Academic Collaboration

University of Minnesota

[Logos of various universities and organizations]

Primary Production ➔ Harvest ➔ Transportation ➔ Storage ➔ Processing ➔ Distribution ➔ Retail/Food Service ➔ Consumer
Diverse Industry and Association Collaboration
Collaborating Across Agencies

U.S. Food and Drug Administration

Centers for Disease Control and Prevention

United States Department of Agriculture

Agricultural Research Service

Cooperative State Research, Education, and Extension Service

ECONOMIC RESEARCH SERVICE

State/Local Agencies

Primary Production ➤ Harvest ➤ Transportation ➤ Storage ➤ Processing ➤ Distribution ➤ Retail/Food Service ➤ Consumer
NCFPD Primary Themes

**System Focus**
- Supply Chain Resiliency
- Public Health Response
- Economic Models For Evaluating Interventions

**Agent Focus**
- Rapid detection
- Decontamination
- Inactivation
- Disposal

**Training Focus**
- Disseminating NCFPD products
- Training scholars and professionals
- Risk communication

**Primary Production ➤ Harvest ➤ Transportation ➤ Storage ➤ Processing ➤ Distribution ➤ Retail/Food Service ➤ Consumer**
NCFPD Primary Themes

System Focus

• Supply Chain

Agent Focus

Training Focus

Primary Production ➤ Harvest ➤ Transportation ➤ Storage ➤ Processing ➤ Distribution ➤ Retail/Food Service ➤ Consumer
NCFPD Primary Themes

System Focus

- Public Health

Agent Focus

Training Focus
NCFPD Primary Themes

System Focus

• Economics

Agent Focus

Training Focus
NCFPD Primary Themes

System Focus

Agent Focus

Training Focus

• Detection
NCFPD Primary Themes

System Focus

Agent Focus

Training Focus

• Inactivation
NCFPD Primary Themes

System Focus

Agent Focus

Training Focus

• Decontamination
NCFPD Primary Themes

- System Focus
- Agent Focus
- Training Focus
  - Education

HomeLand Security

National Center for Food Protection and Defense
A Homeland Security Center of Excellence

Primary Production ➔ Harvest ➔ Transportation ➔ Storage ➔ Processing ➔ Distribution ➔ Retail/Food Service ➔ Consumer
NCFPD Primary Themes

System Focus

Agent Focus

Training Focus

- Risk
- Communication
Systems thinking through complexity, change, consequences

- Plan & organize team actions
- Discover & document trends
- Create & relate explanations
- Apply system archetypes
- Apply modified/adjusted plans
- Identify higher levels of intervention
- Identify unintended consequences
Defending the safety of the food system through research and education
Take-Home Message

Check your own situation

- Are you prepared, ready to respond, capable of recovery?
- Assess / minimize your vulnerabilities!
- Consider an all-hazards approach [quality to pandemic]!
- Insist on a systems approach [failure vs. attack]!
- Understand the product, process, distribution, consumer, responsible agencies, and all associated characteristics!
‘Fighting terrorism is like being a goalkeeper. You can make a hundred brilliant saves but the one shot that people remember is the one that gets past you.’

Paul Wilkinson, Daily Telegraph, London, 9/1/92
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