

Application of Homeland Security Concepts in Agricultural and Food Systems

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The 2003 Public Health Institute
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- Public Health Preparedness, Response and Recovery
- Occupational Health and Safety
- Food Safety and Food Security
- Agricultural Safety and Health
- Public Health Leadership


Presented in collaboration with:
College of Veterinary Medicine • College of Agricultural, Food, and Environmental Sciences



- Food Safety and Biosecurity
- Agricultural Safety and Health
- Public Health Preparedness, Response and Recovery

From October 4, 2001 NY Times -- Retired CIA Official Peter Probst

- "Agriculture is the soft underbelly of the American economy. It's an absolutely vital sector, but it's terribly difficult to protect."



According to Mike Osterholm, author of "Living Terrors"

- 9/11 should not have been a surprise
- More terrorist attacks "will come" . . . not "if"
- Our domestic food supply is very vulnerable
- The foods we import are at risk

. . . and we are not ready

Minneapolis Star- Tribune
July 2002



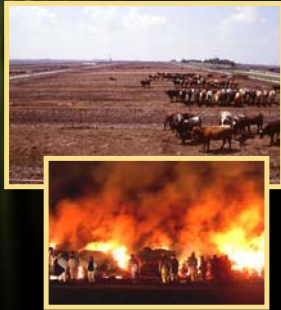
Why is Our System Vulnerable?

- Immense size - \$2 trillion, 15% of GDP
- MN Agriculture industries 18.5% of economy
- MN Dairy \$2.7 billion 54,000 jobs, 7400 farms
- Food affects us all
- Dispersed, control is difficult
- Increased concentration (throughout the system)
- Much of work done by low skill workers

What COULD Happen?

Intentional Introduction of Animal or Plant Disease Agent

- Could be crippling to entire economy.
- UK foot and mouth disease outbreak -- \$12.5 billion.
- CA Department of Agriculture estimates the impact would be at least that great in the U.S.



Use of an Ag Input Product or Technology

- Recall T. McVeigh and ammonium nitrate
- Organophosphates originally developed for war-time use
- Many of our technologies are used to disperse products/chemicals evenly



Intentional Environmental Breach

- From waste storage
- Chemical storage
- Food processor



Product Contamination



Fresh Fruit & Vegetable Consumption Late 70's to Late 90's

FRESH FRUIT & VEGETABLE CONSUMPTION LATE '70's TO LATE '90's			
Three Year Average	Fresh Vegetables	Fresh Fruit	Total Fresh Fruit & Vegetables
<i>Pounds per capita</i>			
1977-79	158.8	101.0	259.8
1996-98	210.5	132.0	342.5
% Change	32.5%	30.7%	31.8%

Source: USDA, 2000

Lettuce Processing

Harvested and packaged as individual heads of lettuce or sent off to processing for bagged salads





Lettuce Processing

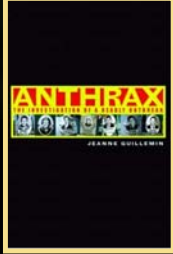
Packed product is moved from field to a cooling/shipping facility





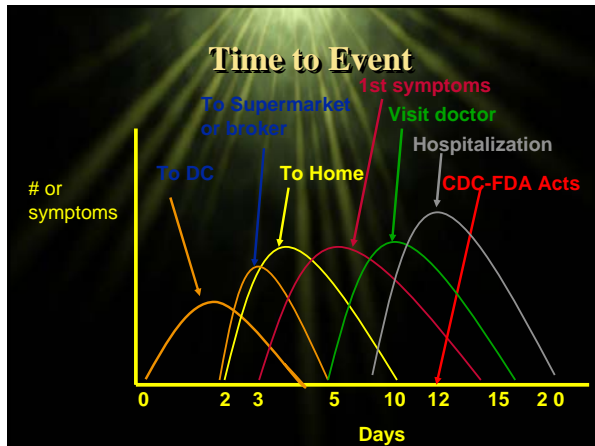
Scenario : *Lettuce Contamination by Anthrax Spores*

- Assumptions:
- Spores applied in field just prior to harvest or on packaging machine
- Lettuce harvested and packed in field
- All lettuce run through single distribution facility during one week period
- Spores survive on packed lettuce
- Ingestion results in 25-60% mortality




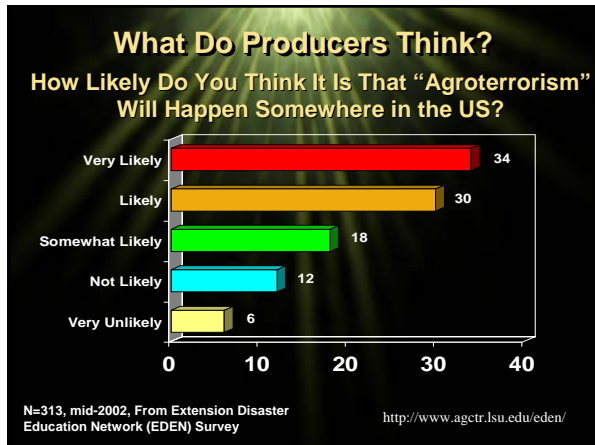
- ### Questions
- When will field workers become ill
 - When will packaging employees show illness
 - Will retail workers become contaminated as handle produce (breathing holes)
 - When will product enter home
 - When will consumers get ill






Other Concerns

- In the event of a man-made or natural disaster, what do we do with:
 - animals
 - feed
 - milk
 - stored crops

Threats - The “Who” Question

- al Qaeda?
- Local activists
- Others with an agenda
- Unhappy workers
- Vandals/thieves
- The food industry needs to be realistic in their assessment



Bhagwan Shree Rajneesh

Prioritizing

- Issues of agro-security can be overwhelming.
- Changes likely will cost \$\$
- Need a way to set priorities

Begin With Developing an Intimate Knowledge of a Particular Operation or System

- The flow of inputs and products
- Contact points between inputs, outputs, and people
- Physical layout, access points
- Storage, security measures

Evaluate Different Hazards and Scenarios Based on Probability of Occurrence and Severity of Outcome

Hazard = An act or condition posing threat or harm
Describe hazard by looking at source, mechanism, and outcome

Example:

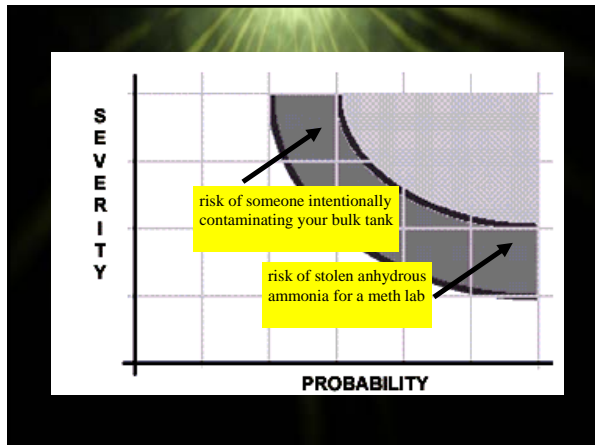
- Unsecured chemical storage shed, theft of insecticides (relatively high probability of theft, severity of outcome potentially great including economic impact or illicit use)
- Open, accessible milkhouse area and bulk tank tampering (very low probability of occurrence, potentially catastrophic consequences)
- Unsecured loading dock at local grocery store with some products occasionally stored for short periods outside (medium level of occurrence, potentially catastrophic consequences)

Severity Of Consequences	Probability of Mishap**					
	F Impossible	E Improbable	D Remote	C Occasional	B Probable	A Frequent
I Catastrophic					①	
II Critical				②		
III Marginal			③			
IV Negligible						

RISK CODE/ ACTIONS

- ① Imperative to suppress risk to lower levels
- ② Operation requires written, time-limited waiver, endorsed by management
- ③ Operation permissible

• **Note:** Risk is a product of Probability x Severity...Bring either close to zero, risk approaches zero



“Solutions” to Agroterrorism Vulnerabilities May Have Multiple Benefits

- Carefully selecting, screening, training workers = productivity, worker’s comp, etc.
- Basic security - limiting access points, locks, lighting.
- Storage facility design for safety and security.
- Thinking through threats and hazards will also help protect workers and family from safety/health risks.

September 2002

Other Resources

- Processing, transporting and selling food products from MDA
• <http://www.mda.state.mn.us/dairyfood/alertfood.pdf>
- Food Supply Safety and Security in Minnesota
• <http://www.health.state.mn.us/divs/eh/emergency/food/foodsafety.pdf>

Summary

- Awareness is important.
- Start with assessing the issue of “who?”
- Put the system on paper (a schematic, or list of processes, inputs, outputs, points of contact).
- Evaluate various hazards based on (probability x severity)
- Simple solutions are often adequate and have multiple benefits.

Note:

- The best way to do this is through applying these concepts to an actual farm/processing operation!
- (An educational field trip with a 2 or 3 hour de-briefing and discussion session).

Thanks!