Food Defense: Essential to a Comprehensive Emergency Management Plan

U.S. Department of Education, Office of Safe and Drug-Free Schools
Potomac Center Plaza, 550 12thStreet, SW, 10th Floor
Washington, DC 20202

Session Objectives

- **Increase awareness**
- **Understand importance of school food defense**
- **Highlight available resources**

National School Lunch Program (NSLP)

- **NSLP serves 30 million lunches and nearly 9 million breakfasts per day**
- **Over 100,000 schools and**
- **Over 20,000 school districts participate**
- **Safety record of NSLP is very, very good, but problems do occur**

School Foodservice Operations: Central Kitchens

Use of Central Kitchens:

- 54 percent of schools use Central Kitchens in some capacity
- 40 percent of schools use a combination of Central Kitchen and Satellite Preparation
- 14 percent of schools use Central Kitchens only

*National Food Service Management Institute (NFSMI) study

Foodborne Illness : What Do We Know?

- **CDC estimates that foodborne pathogens cause:**
  - **76 million illnesses per year**
  - **325,000 hospitalizations per year**
  - **5,000 deaths per year**
  - **Estimated annual cost is $5 billion dollars**

Mead, P.S., et al., Food-Related Illness and Death in the United States. *Emerging Infectious Diseases*, 1999. 5

- **Children are a high risk population for foodborne illness**

- **Approximately 1/3 of the U.S. population attends, works for, or has children in schools**

Foodborne Illness Outbreaks at Schools

Relatively rare in schools

- 195 outbreaks reported in schools between 1990 and 1999
- Less than 4% of the total US foodborne illness outbreaks reported are in schools

Schools represent larger percentages of illness

- Responsible for about 10% of all outbreak-related illnesses reported
- 67% of large outbreaks in schools were associated with Federal school meals programs

Source: GAO. 2003. *School Meal Programs: Few Instances of Foodborne Outbreaks Reported, but Opportunities Exist to Enhance Outbreak Data and Food Safety Practices.* GAO-03-530.

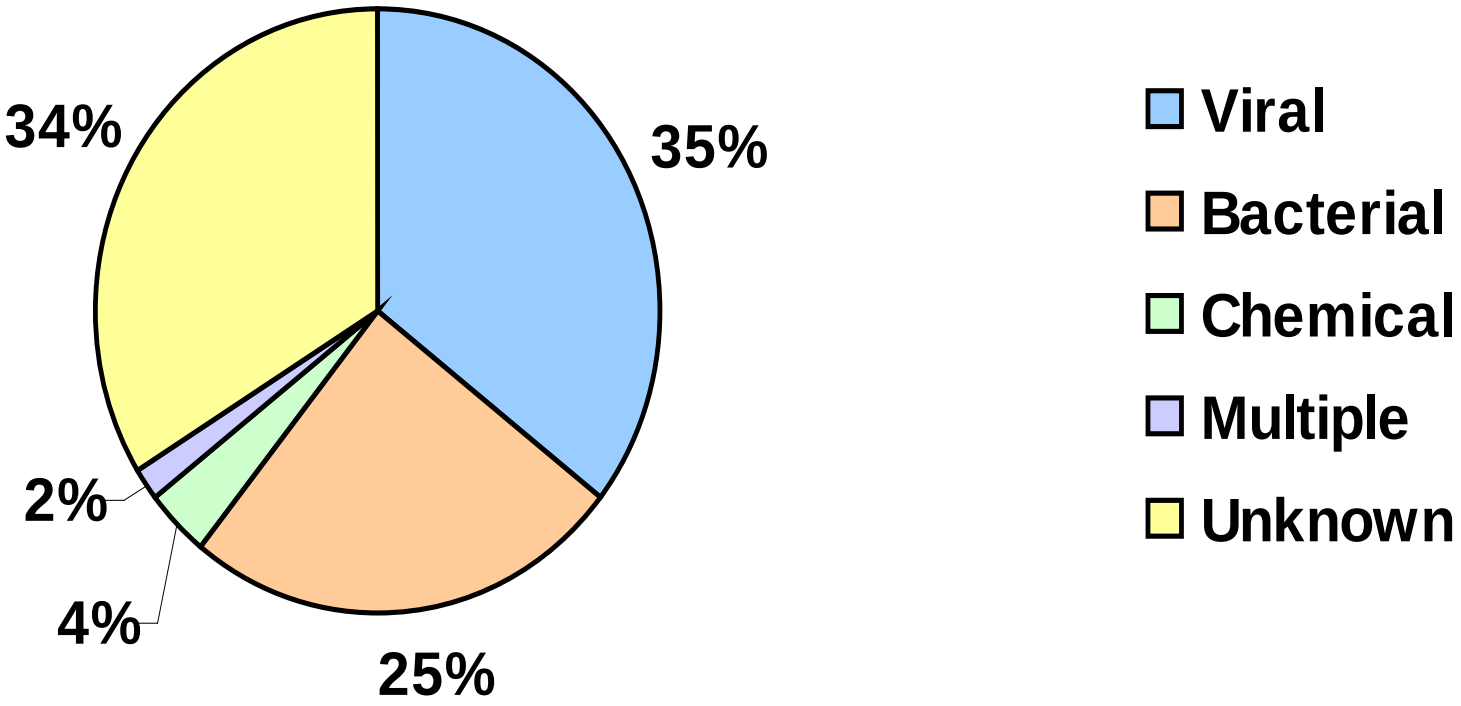
School-Associated Foodborne Outbreaks Where Food Prepared on School Premises, 1998-2006

Food Group	Total Number of Outbreaks	Illnesses
Meat and Poultry	33	1444
Dairy	3	367
Eggs	1	29
Produce	17	1178
Other	6	182
Complex Foods**	92	5901
Unknown	146	9328
Total	298	18429

** Complex Foods comprise foods that contain more than one food group

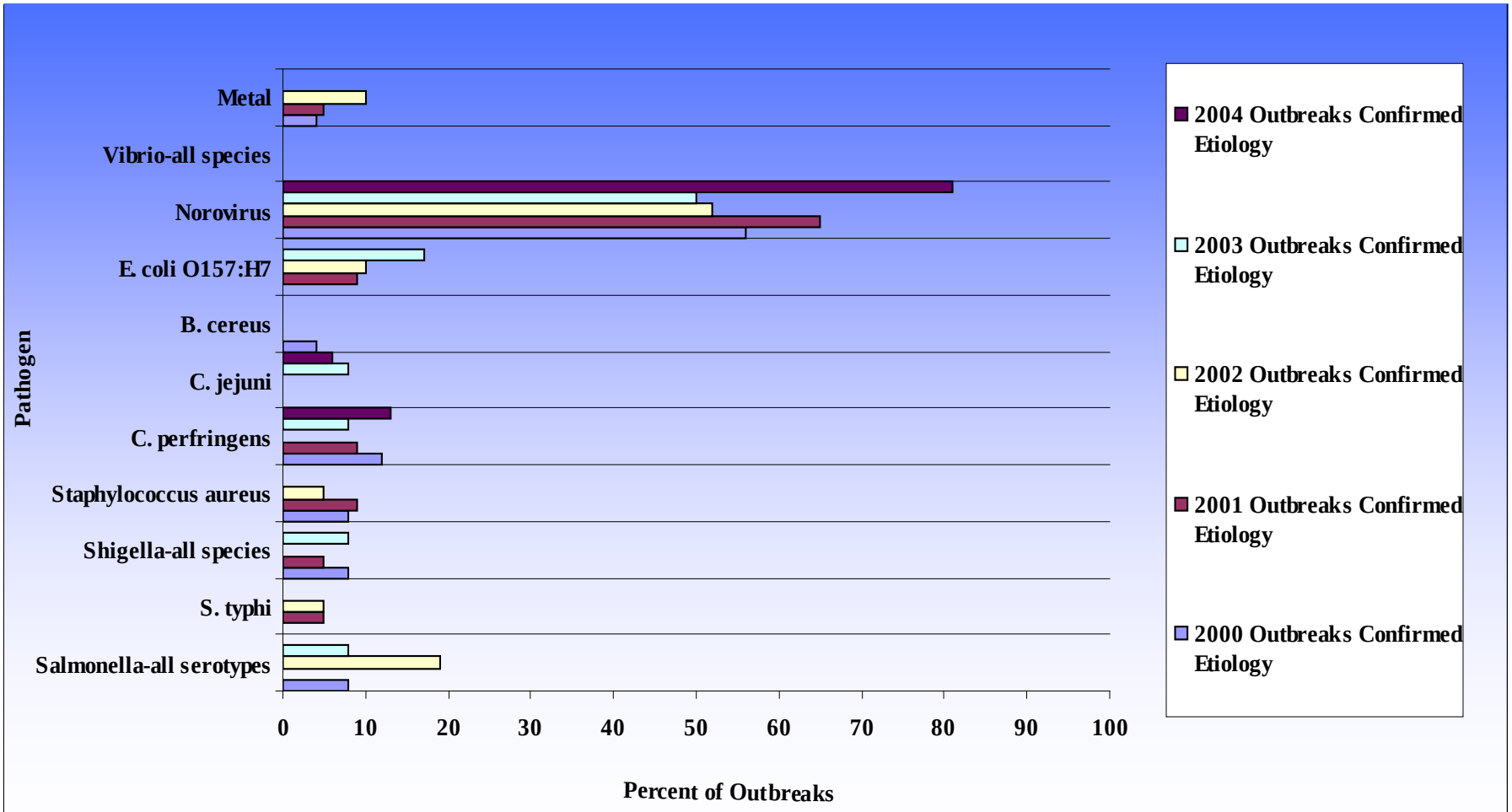
Source: Pogostin et al. 2008. School-*Associated Foodborne Outbreaks in the United States- 1998-2006.* Presented at OutbreakNet Conference.

Outbreaks from Food Prepared on School Premises by Major Etiology, 1998-2006 N=298



Source: Pogostin et al. 2008. School-*Associated Foodborne Outbreaks in the United States- 1998-2006.* Presented at OutbreakNet Conference.

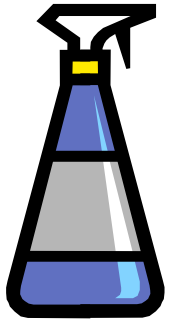
Percent of Outbreaks of Confirmed Etiology in School Settings by Pathogen (2000-2004)

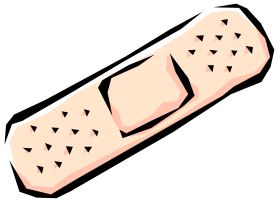


Source: USDA Food and Nutrition Service analysis of CDC data.

Food Safety Hazards

- **Goal: Control/prevent/minimize food safety hazards that may cause illness or injury**





Biological
Bacteria
Viruses
Parasites

Chemical
Allergens
Pesticides
Sanitizers
Food additives

Physical
Plastic
Glass
Metal

What is Food Defense?

FOOD DEFENSE is defined as the protection of food products from <u>intentional</u> adulteration by biological, chemical, physical or radiological agents

In contrast, FOOD SAFETY is defined as the protection of food products from <u>unintentional</u> contamination by agents

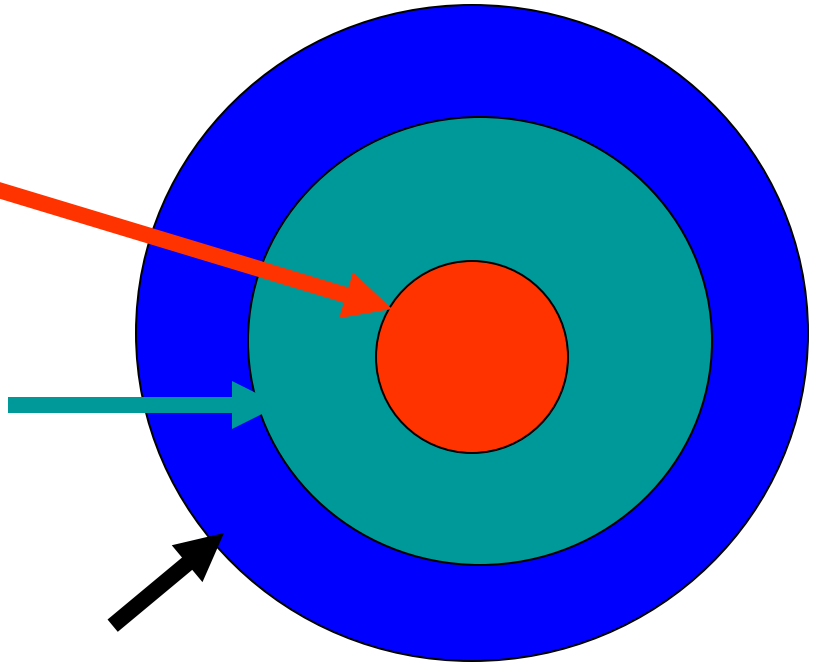
Food Safety vs. Food Defense

Sound Science

Microbiology
Chemistry
Toxicology
Risk Assessments

Food Safety Programs

Food Code
GMPs
HACCP
Surveillance



Food Defense Enhancements

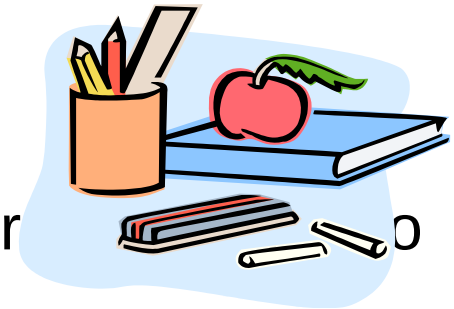
Physical security risks
Personnel risks

Food Defense: High Risk Foods Identified

- **Bottled water**
- **Dairy foods**
- **Infant formula**
- **Juice**
- **Produce**
- **Soft drinks**
- **Spices**

Why Target the NSLP?

NSLP offers:



- Vulnerable population
- Major emotional impact of harming childr o are assumed to be safe at school
- Very large numbers of servings per day
- Very large batches of single food dispensed in any given day
- Transportation of foods

How would you know?

How would you know whether a foodborne outbreak at your school was unintentional, or intentional?

- What are the signs and symptoms?
- How quickly will symptoms appear?
- How do you determine whether food is the source?
- If food, which one is most likely?
- What should you do?

Where are we vulnerable?

The opportunity for attack exists at multiple levels:

- Crops
- Livestock
- Processing
- Distribution
- Storage
- Transportation
- Retail

Where Are We Vulnerable? Central Kitchens

Central Kitchens have most, if not all, of the characteristics of a vulnerable target:

- Large Batches
- Thorough Mixing
- Short Shelf-Life
- Wide Distribution

It Can't Happen Here? Example: Retail Food Terrorism

- **1984 Incident in The Dalles, OR**
- **751 Cases of Salmonellosis, 45 Hospitalized, No Fatalities**
- **10 Salad Bars Intentionally Contaminated**
- **Small Cult led by Bhagwan Shree Rajneesh in an attempt to control a local election**

It Can't Happen Here?
Example: School Food Tampering

Examples of tampering with Federal school meal program commodities:

- Cocaine in ground beef
- Runaway truck
- Chicken fajitas

The Threats…

- **Unintentional contamination**
  - (foodborne illness outbreaks)
- **Deliberate contamination**
  - (ex. explosive or spray device/open container)
- **Transportation incidents**
  - (train/truck)
- **Natural Disasters**
  - (floods, hurricanes, tornadoes, fires)
- **Building events**
  - (explosions/ammonia leaks)
- **Hoaxes**

The Defense…

- **Emergency Management/Food Defense Plans**
- **HACCP Plans**
- **Employee Training**
- **Traceability**
- **Recall Strategy**
- **Be Alert and Aware**
- **Assess and Address Vulnerabilities**
- **Encourage Communication**
- **Constant Supervision**
- **Due Diligence**

Written Emergency Management Plans in Schools

Event	% of Districts Requiring	% of Districts Recommending	% Schools with Written Plan
Equipment failure (e.g., freezer breakdown)	42.6	35.6	69.6
Food biosecurity breaches	37.9	27.5	53.0
Food Recall	50.4	30.5	72.9
Natural disasters (e.g. blizzards or tornadoes)	54.6	24.4	71.7
Other terrorist events (e.g. bomb threat	52.7	24.3	60.1
Suspected foodborne illness outbreak	49.3	30.9	69.4
Water, gas, or electrical outages	47.9	31.5	66.6

Source: CDC. 2007. *SHPPS 2006 School Health Policies and Programs Study: Food Safety Fact Sheet.*

Food Defense and the Four Phases of Emergency Management

Four Phases of Emergency Management

- **Prevention-Mitigation**
- **Preparedness**
- **Response**
- **Recovery**

Has your district/school established the following:

- Food defense management team?
- Plan for completing vulnerability assessments?
- Preventive measures based on assessments?
- Written food defense plan?
- Training program?

Prevention-Mitigation Vulnerability Assessment

Benefits:

- First step in preventing attack
- Necessary to developing food defense strategy
- Closes gaps
- Minimizes risks

The process rates seven factors that affect the desirability of a target:

- Criticality –public health or economic impact
- Accessibility – physical access to target
- Recuperability – ability of the system to recover from the attack
- Vulnerability – ease of accomplishing the attack
- Effect – amount of actual direct loss from an attack
- Recognizability – ease of identifying target
- Shock – combined measure of the physical, health, psychological and economic effects of an attack

Prevention-Mitigation
CARVER + Shock (cont'd)

Make employees aware of risk factors

- **Criticality**: Central Kitchens and cafeterias are attractive targets because of large numbers of meals served from these facilities.
- **Accessibility**: Poorly managed and maintained facilities may allow undetected access …. How "open" is a facility?

Prevention-Mitigation CARVER + Shock (cont'd)

- **Recuperability**: How long would it take to resume operations in a cafeteria or Central Kitchen after attack?
- **Vulnerability**: How easily can a contaminant be added to food or ingredients?
- **Effect**: What would be the impact of targeting one location, such as a Central Kitchen?

Prevention-Mitigation
CARVER + Shock (cont'd)

- **Recognizability**: Central Kitchens and cafeterias are easily located and distinguished from other school facilities.
- **Shock**: A successful attack on the school food supply would result in significant psychological and economic impact.

How Vulnerability Assessments Can Work for School Foodservice: Protect Central Kitchens

- **Strategic Partnership Program for Agroterrorism (SPPA) – FBI initiative**
- **Central Kitchen vulnerability assessment**
- **Site in Lowell, North Carolina**
- **Spent one week**
- **FSIS, FNS, AMS, State, local, school officials**

How to Protect Central Kitchens*

High-risk areas in Central Kitchen operation:

- Transport
- Ingredients
  - Measuring liquid and dry
- Mixing and Cooking – large batch
- Storage
  - Dry
  - Cooler
  - Freezer

* Strategic Partnership Program in Agroterrorism (SPPA) Initiative

How to Protect Central Kitchens
Central Kitchen SPPA: Best Practices*

Highlights:

- Dual control – 2 people always present
- Retrofit open systems (kettles, mixers)
- Monitor temperature fluctuation
- Restrict access in critical areas; secure when not in use
- Color-coded smocks/uniforms for work areas
- Employee background investigations and re-investigations
- Employee education and training on Food Defense
- Develop policies and procedures
- Note changes in staff health condition

* SPPA Initiative

Food Defense Training:

- Food defense topics should be included in food safety and facilities security training
- Heighten employee awareness
- Don’t think, “It can’t happen here”
- Don’t think co-workers are immune to persuasion
- Those who would do harm are tenacious

Prevention-Mitigation Training (cont'd)

- Disgruntled, financially struggling employees could be compromised
- Employees might be too trusting
- Everyone should be alert and aware of any changes to the "norm"

Components of a food defense plan:

- Coordination with state/county/district plan
- Communication of a surveillance plan
- Identification of a the chain of command
- Contact directory of key staff
- Clear identification of roles and responsibilities
- Includes drills or tabletop exercises

Food Defense Plans (cont'd):

- Stand-alone plan not necessary
- Is a component of the Emergency Management Plan, which could include the following:
  - Foodborne illness
  - Food recalls
  - Natural disasters
  - Pandemic
  - Civil unrest

Develop an emergency management team and contacts:

- Interdepartmental contacts
  - Local and State Health Departments
  - Local, State, and Federal law enforcement agencies
  - State Education Agencies

Develop an emergency management team and contacts:

- Intra-departmental school system contacts
  - Board of Education
  - Central Office Administration
  - Facilities Services
  - Transportation
  - Student Health Services

Once you have a plan developed:

- DRILL
- DRILL
- DRILL

Response

- What actions do you take to deal with contaminated foods?
- Are you involved in the relief effort?
- What is your administrative authority?
- Agreements with community agencies?
- Communication plan, including responding to questions from relief organizations?

Response

- Always consider that a foodborne illness event could be intentional
- Notify stakeholders
- Have a communication plan ready
- Implement emergency preparedness procedures

Response

- Suspend operations until all product and/or agent has been identified
- Destroy and dispose of contaminated products according to instructions
  - Consider that some should be held for analysis
- Clean and sanitize facilities and equipment

Recovery

Do food defense plans include:

- Written recovery plans?
- Plans for disposal of solid waste?
- Sanitization and disinfection procedures?
- Aftermath review and lessons learned?
- Process to implement corrective actions?

After Action Review:

- Review processes and identify where the vulnerability breach occurred
- Revise procedures
- Re-train employees
- Re-fit and up-grade facilities

Barriers to Food Defense Planning

- Complacency
- Employee turnover
- Financial limitations (resources)

Session Activity

Week 1 – Current Status

- **Threat level elevated from yellow to orange**
- **Increased absenteeism in XYZ school district including students, teachers and food service staff. Symptoms: nausea, vomiting, diarrhea**
- **Three of eighty schools in the district are involved, total number ill = 30**

Week 1 – Discussion

1. **Would you take any actions based on an elevated threat level?**

2. **What do you do and who do you call regarding an increased level of absenteeism?**

3. **Would your existing plans, policies, or procedures address an elevated threat condition or an increased level of absenteeism?**

Week 2 – Current Status

- **3 deaths of ill children**
- **Jump in number of children and other school staff illnesses**
- **Thirty of eighty schools in the district are involved, total number ill = 500**
- **Food histories point to food served in school**
- **Food samples are being tested**
- **Parents stop sending children to school**

Week 2 – Discussion

1. **Do your plans, policies, and procedures address actions required for an incident covering contaminated food?**
2. **What actions do you take?**
3. **What information is shared and with whom? How often?**
4. **Is there a need to put out a press release or hold a press conference? How is this coordinated with other groups? Who decides what the key message is and who delivers it?**

Week 3 – Current Status

- **25 deaths of children or adults who had been ill with the symptoms**
- **50 of eighty schools in the district are involved, total number ill = 1200**
- **Schools in the district are closed by the superintendent**
- **A terrorist group claims responsibility for contaminating a food product shipped to schools**
- **Jump in number of hospitalizations**
- **CDC confirms a substance found in the suspect food product was a specific hazardous agent that could cause death.**

Week 4 – Current Status

- **97 deaths**
- **Suspects arrested**
- **No new cases in the last week**
- **Many are still hospitalized**

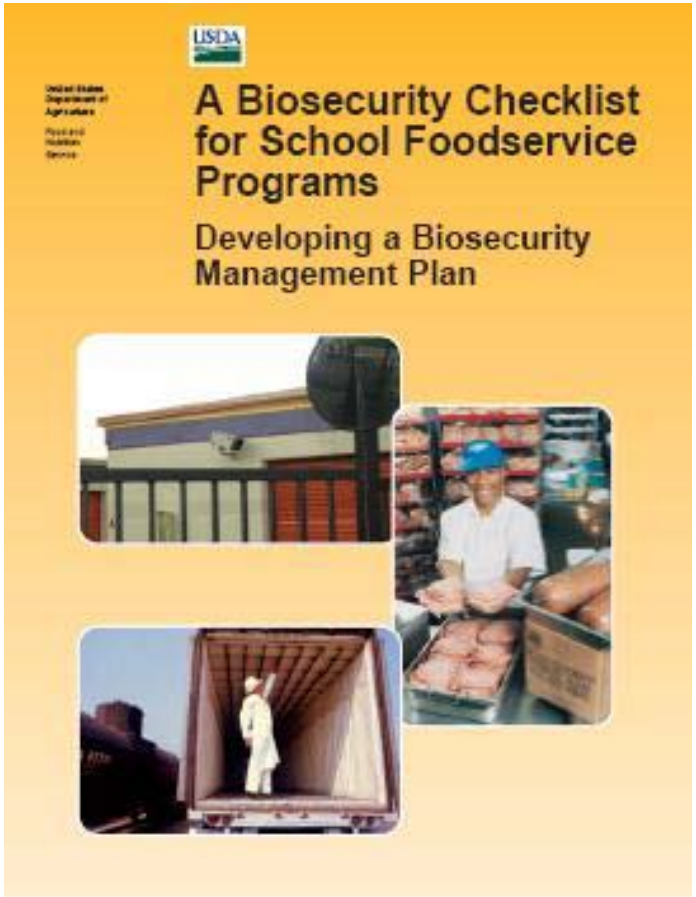
Week 4 – Discussion

1. **What actions are taken to recover from the incident?**
2. **What activities have to occur to allow the schools to re-open and provide food again?**
3. **What triggers local, state or federal support for recovery operations? What support is available?**
4. **Is there a plan to regain the confidence of the community? What actions can be taken?**

Resources

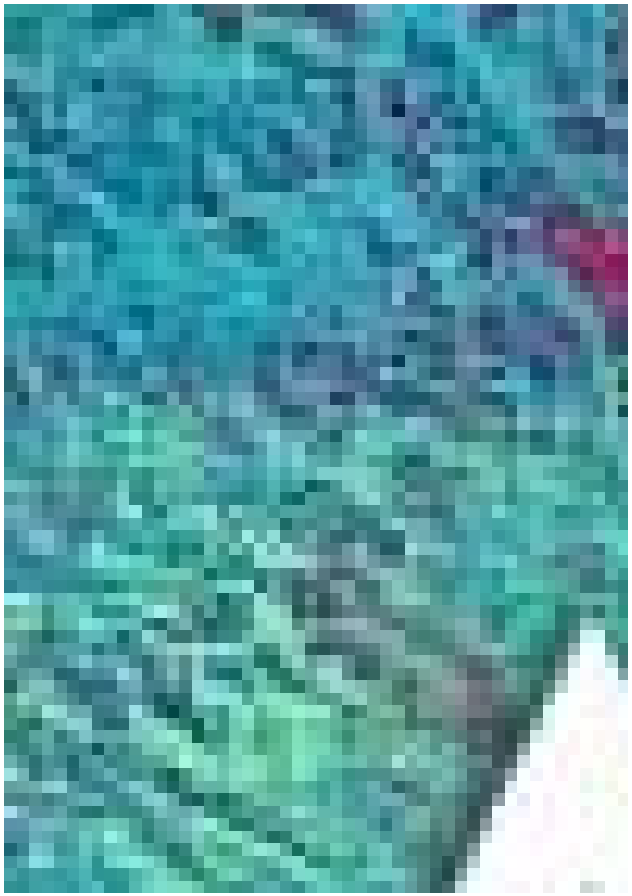
Resources
Biosecurity Checklist

- Checklists to help you determine priorities
- A tool to help you develop a biosecurity management plan
- Interactive CD-ROM and video also available



http://healthymeals.nal.usda.gov/hsmrs/biosecurity.pdf

Resources
Responding to a Food Recall

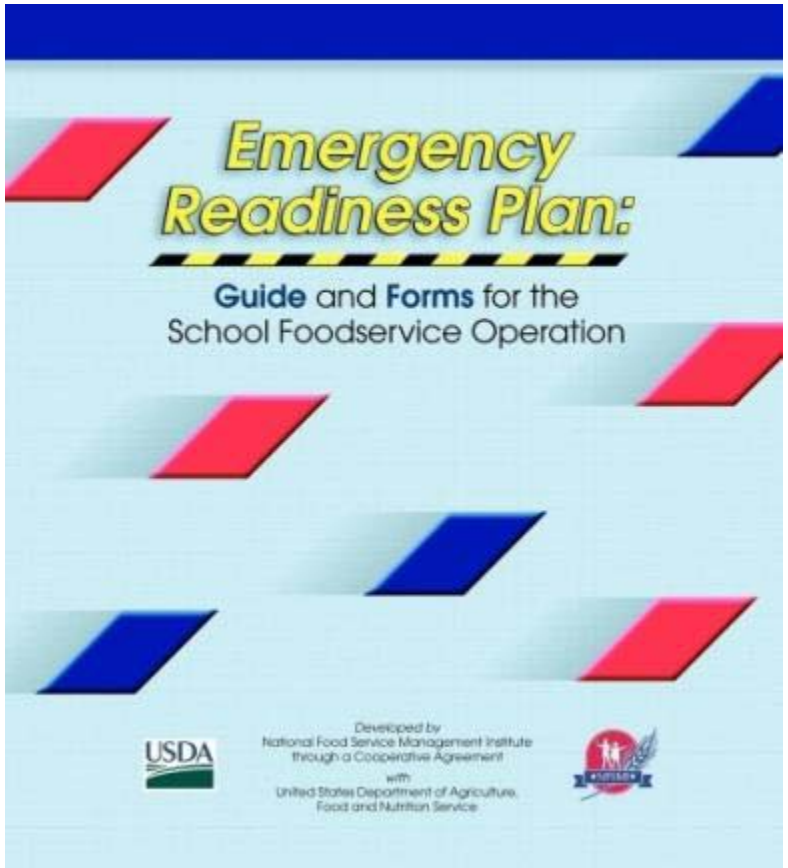


- Under revision!
- Resource for foodservice directors and managers.
  - Contains a checklist with procedures for responding to a food recall.

From NFSMI:

http://www.olemiss.edu/depts/nfsmi/Information/recallmanual.pdf

Resources
Emergency Readiness



Guide and Forms for the School Foodservice Operation CD-ROM and copy-ready forms

Video: “When Disaster Strikes”

FROM NFSMI:
http://www.nfsmi.org/ResourceOverview.aspx?ID=61

Other Training and Resources

National Foodservice Management Institute (NFSMI) Training and Education for NSLP program operators:

- Biosecurity Checklist training
- Responding to a Food Recall
- Other basic food safety resources
- Train-the-trainer network
- emergency management resource, link:
- http://nfsmi-web01.nfsmi.olemiss.edu/ResourceOverview.aspx?ID=214

Everyone Has a Role in the Safety of Food

National Coalition for Food Safe Schools Action Guide and Tool Kit

www.foodsafeschools.org

Training Resources

FDA online course:

- www.fda.gov/ora/training/orau/FoodSecurity/startpage.html

National Food Service Management Institute:

- www.nfsmi.org

FNS Food Safety Unit Web site:

- http://www.fns.usda.gov/fns/food_safety.htm

Other Resources

Healthy School Meals Resource Web page with biosecurity resources and links:

- http://schoolmeals.nal.usda.gov/Safety/EmergencyReadiness.htm
- CDC gateway web site: www.cdc.gov/nceh/ehs/ETP/food.htm

FBI International Symposium on Agroterrorism Presentations:

- http://www.fbi-isa.org/program.html

Other Resources (cont'd)

National Association of State Departments of Agriculture:

- www.NASDA.org
- Food Safety and Security Page
- Emergency Response Plan, Food Emergency Template

Conference for Food Protection:

- www.foodprotect.org
- Emergency Guidance for Retail Food Establishments

Reporting Resources

- Local and/or State Health Department
- Local Law Enforcement
- Local Fire Department

Elevated Concerns:

- FSIS – Office of Food Defense and Emergency Response
  - (800) 333-1284
- FDA – Office of Emergency Operations
  - (301) 443-1240

Resources
FDA's ALERT Initiative

- Intended to raise awareness of food defense
- Applies to all aspects of the farm-to-table continuum
- Identifies 5 key food defense points:
  - **A**ssure - supplies and ingredients are from safe and secure sources
  - **L**ook – keep an eye on the security of your ingredients and products
  - **E**mployees – use strategies to monitor staff and visitors
  - **R**eport – document the security of your products
  - **T**hreat – know how and who you notify about threats or suspicious activities

U.S. Food and Drug Administration

Department of Health and Human Services

CENTER FOR FOOD SAFETY AND APPLIED NUTRITION

Food Defense and Terrorism

July 17, 2006

ALERT: The Basics

The ALERT initiative is intended to raise the awareness of state and local government agency and industry representatives regarding food defense issues and preparedness. It is generic enough to apply to all aspects of the farm-to-table supply chain and is designed to spark thought and discussion with a variety of stakeholders. ALERT identifies five key points that industry and businesses can use to decrease the risk of intentional food contamination at their facility.

Select each link below for additional background information in support of each letter of the ALERT acronym.

In today's world it is important to be ALERT to protect your business.

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

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

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

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

T What do you do and who do you notify if you have a **THREAT** or issue at your

Resources
FDA's FIRST Initiative for Front Line Staff

- **F<u>ollow</u> company food defense plans and procedures**
- **I<u>nspect</u> your work area and surrounding areas**
- **R<u>ecognize</u> anything out of the ordinary**
- **S<u>ecure</u> all ingredients, supplies, and finished product**
- **T<u>ell</u> management if you notice anything unusual or suspicious**

Web link for ALERT and FIRST:

- http://www.fda.gov/Food/FoodDefense/default.htm

Resources
Homeland Security Advisory System

- **Consider having your emergency management plans correspond to the threat levels**

http://www.dhs.gov/xinfoshare/programs/gc_1156876241477.shtm

In Conclusion: What You Can Do

- **Assemble a food defense team**
- **Develop a food defense plan**
- **Incorporate it into overall emergency management plan**
- **Practice with all internal & external partners**

“Plans are only good intentions unless they immediately degenerate into hard work.”

Peter Drucker

Presentation Credits

Thank you to the following persons for their role as lead authors of this presentation:

- **Marion Hinners,** Food Safety Specialist, Food Safety Staff, Office of Emergency Management and Food Safety, Food and Nutrition Service, US Department of Agriculture
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