



U.S. Department of Education  
Office of Safe and Healthy Students



# Food Defense: Essential to a Comprehensive Emergency Management Plan



# Session Objectives

- Increase awareness and understand impact of food vulnerabilities in schools
- Incorporate school food defense and food safety into emergency management plans
- Highlight available resources





# Presentation Outline

- Overview of Food Safety and Food Defense
- Managing Threats Using the Four-Phases Approach
- Barriers to Planning
- Tabletop Activity
- Resources



# Common Acronyms

- **FNS : Food and Nutrition Service (USDA)**
- **NSLP: National School Lunch Program**
- **TTX :Tabletop Exercise**



# What is Food Safety and Defense?

**FOOD SAFETY** is defined as the protection of food products from unintentional contamination by biological, chemical or physical hazards.

In contrast, **FOOD DEFENSE** is defined as the protection of food products from intentional adulteration by biological, chemical, physical or radiological agents.



# Why Does It Matter?

- During the week of April 9, 2007, **91** people became ill at Central Junior High School in East Peoria, Illinois. Officials with the county health department concluded that norovirus in cafeteria food was the likely culprit.
- At Polk County High School in North Carolina, **24** students were sickened in September 2006 in a salmonella outbreak traced to sweet tea. At least one student was treated at an emergency room.
- A cafeteria worker from Trinity High School in Dickinson, North Dakota, spent part of her weekend vomiting and racked with diarrhea. But on Monday, May 2, 2005, she reported to work, chopping lettuce served for lunch. The next day, students began to feel sick, and by that Wednesday, **52** students and **8** faculty members had fallen ill with the same symptoms the sick worker had suffered.



# Foodborne Illness: Why Should We Pay Attention?

## **CDC estimates that foodborne pathogens cause<sup>a</sup>:**

- 76 million illnesses per year
- 325,000 hospitalizations per year
- 5,000 deaths per year
- Estimated annual cost is \$5 billion dollars

## **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**

<sup>A</sup> Mead, P.S., et al., Food-Related Illness and Death in the United States. Emerging Infectious Diseases, 1999. 5



# What's In It For Schools?

- **Student and Teacher Health Safety**
- **Community Confidence**





# The National School Lunch Program (NSLP)

- **NSLP serves 31 million lunches and 10 million breakfasts per day**
- **Over 100,000 schools in over 20,000 school districts participate**
- **Safety record of NSLP is very, very good, but problems do occur**





# Food Defense in the NSLP

## Risks Associated with the National School Lunch Program (NSLP)

- **Vulnerable population**
- **Emotional impact of perceived harm to children**
- **Very large numbers of servings per day**
- **Very large batches of single food dispensed in any given day**
- **Transportation of foods presents opportunity for contamination**



# How is Food Contaminated?



- In the field or on the farm
- Harvested, transported or processed
- Improperly handled at any stage
- Cross-contaminated
- Stored at incorrect temperatures
- Insufficiently cooked or cooled
- Deliberately contaminated



***Vulnerabilities exist from farm to table.***



# How Would You Know?

## How would you know whether you had a foodborne outbreak at your school?

- 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?



# Foodborne Illness Sources and Symptoms

## Sources

- Bacteria
- Viruses
- Parasites
- Toxins/Chemicals
- Contaminants

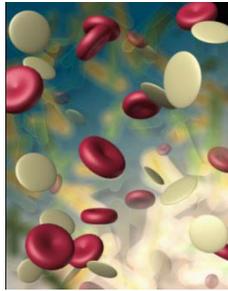
## Symptoms

- Diarrhea
- Vomiting
- Stomach Cramps
- Headache





# Types of Food Hazards



| Biological | Chemical       | Physical |
|------------|----------------|----------|
| Bacteria   | Allergens      | Plastic  |
| Viruses    | Pesticides     | Glass    |
| Parasites  | Sanitizers     | Metal    |
|            | Food additives |          |



# Unintentional Threats

## **Most result from improper food handling at any stage:**

- Operational negligence
- Poor employee training
- Poor process control

## **Threats can also occur outside of the NSLP:**

- Food brought from home or other sources
- Food in the classroom
- Vending machines
- Concessions
- Use of facilities by outside groups
- Access to the school kitchen
- Natural disasters (e.g., tornado, flood, power outage)



# Intentional Threats

- Can involve food product, process, company or organization
- May be biological or chemical
- May cause public health consequences
- May be hard to distinguish from unintentional incidents

## School-related examples:

- Cocaine in ground beef
- Chicken fajitas





# The Defense...

- **Emergency Management/Food Defense Plans**
- **Assess and Address Vulnerabilities**
- **Employee Training**
- **Recall Strategy**
- **Be Alert and Aware**
- **Encourage Communication**
- **Diligent Supervision**



# Managing Threats Using the Four-Phases, All-Hazards Approach

- **Prevention-Mitigation**
  - Conduct vulnerability assessments
  - Implement preventive measures/strategies
- **Preparedness**
  - Add food service staff to your emergency management team
  - Develop plan
  - Training
- **Response**
- **Recovery**





## **Conduct vulnerability assessments**

- Example: CARVER+Shock method

## **Implement Prevention-Mitigation measures**

- Focus efforts on identified risks
- Develop/implement managerial systems



## Conduct Vulnerability Assessments: The FDA's CARVER+Shock Process\*

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

- **C**riticality – public health or economic impact
- **A**ccessibility – physical access to target
- **R**ecuperability – ability of the system to recover from the attack
- **V**ulnerability – ease of accomplishing the attack
- **E**ffect – amount of actual direct loss from an attack
- **R**ecognizability – ease of identifying target
- **Shock** – combined measure of the physical, health, psychological and economic effects of an attack

\* Source: <http://www.fda.gov/Food/FoodDefense/CARVER/default.htm>



# Prevention-Mitigation: Mitigating *Internal* Threats

## Can be managed through:

- Diligent supervision
- Proper food preparation
- Secure storage
- Proper inventory control
- Controlled access to food supply
- Properly labeling food, supplies, chemicals
- Raising awareness through discussion and training
- Reporting suspicious activities





# Prevention-Mitigation: Mitigating *External* Threats

## Threats can be mitigated by:

- Securing access to food supply and kitchens
  - Fencing
  - Access control
- Ensuring sufficient lighting to ward off nighttime vandalism
- Controlling vendor delivery points
- Instituting an identification system for all visitors to the school sites



# Prevention-Mitigation: 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



National Food Service Management Institute (NFSMI) study



# Prevention-Mitigation: High-Risk Areas in 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



# Prevention-Mitigation: Central Kitchen SPPA Best Practices\*

- Dual control – 2 people always present for accountability
- Retrofit open systems (kettles, mixers) to avoid accidents
- Monitor temperature fluctuation to avoid undercooking
- Restrict access in critical areas; secure when not in use
- Color-coded smocks/uniforms for work areas for easier identification
- 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



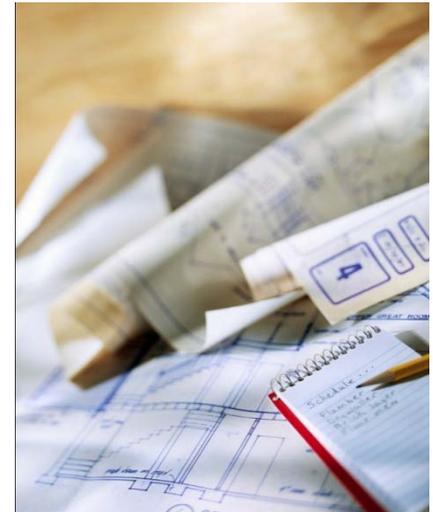
## Challenges to Food Defense Planning

- Not a priority or requirement
- Employee turnover
- Financial limitations (resources)
- Lack of administrative support
- Lack of local leadership/coordinator
- Lack of expertise or guidance
- Limited training, limited training time



# Preparedness

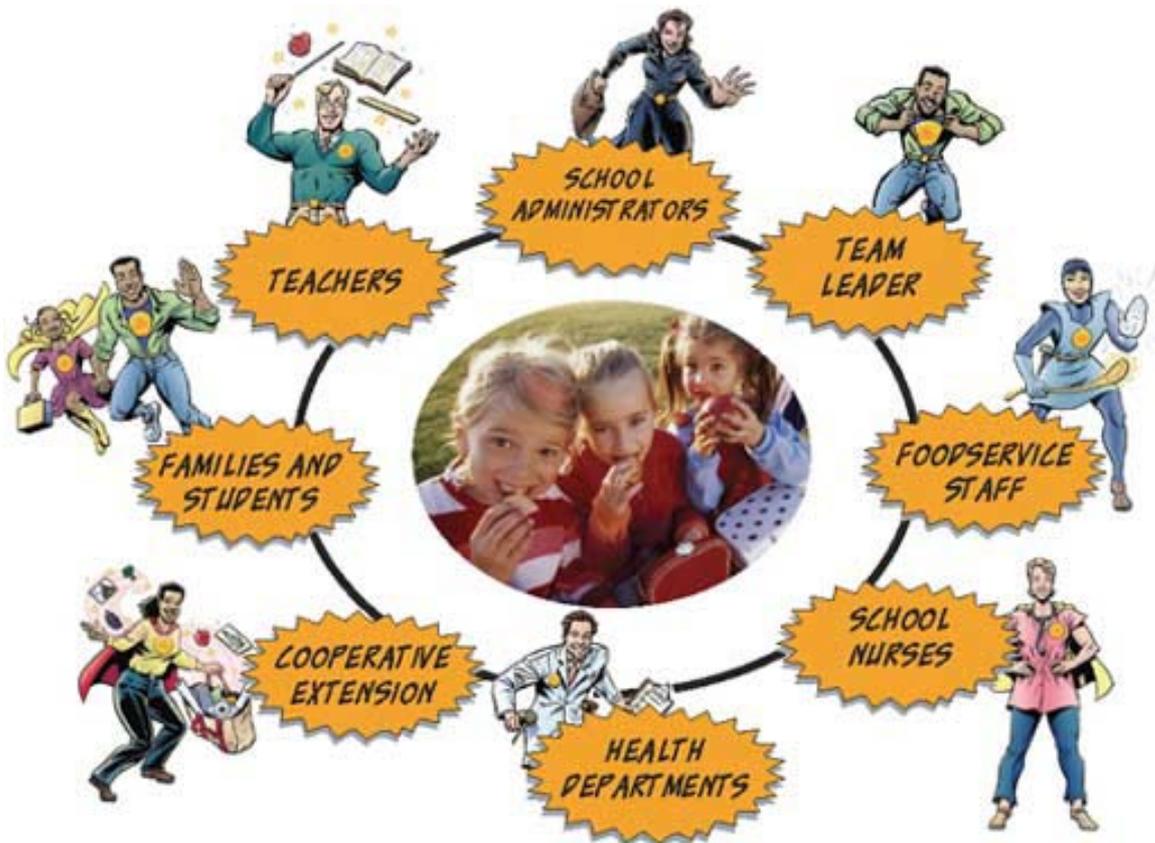
- **Develop a food safety-specific emergency management team**
  - Cafeteria staff, school nurse, first responders, school faculty
  - Maintain current contact list
- **Develop a food defense plan**
- **Provide ongoing training to staff**





# Preparedness: Assemble a Team

## Everyone Has a Role in the Safety of Food





# Preparedness: Team and Contact Information

- Interdepartmental contacts
  - Local and State Health Departments
  - Local, State and Federal law enforcement agencies
  - State Education Agencies
- Intra-departmental school system contacts
  - Student Health Services
  - Board of Education
  - Central Office Administration
  - School Food and Nutrition Services
  - Facilities Services
  - Transportation



## **Components of a food defense plan:**

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



## Training

- Food defense topics should be included in food safety and facilities security training
- Heighten employee awareness
- Dispel myth, “It can’t happen here”
- Enhance preparedness
- Increase timeliness of response
- Build confidence of trainees as well as public



## Potential Training Components

- Basic food safety training
- Standard operating procedures for food safety and food defense:
  - Purchase specifications/receiving procedures
  - Equipment/facility design and maintenance
  - Monitoring procedures
  - Record keeping
- Employee health policy
- Bioterrorism awareness

U.S. FDA offers an online course covering the basics of food defense awareness. Available online at <http://www.fda.gov/Food/FoodDefense/default.htm>



# Response: Considerations During Emergency



- **Food contamination**
- **Food recall**
- **Community notification**



# Response: Food Contamination

- Report incident to local health department
  - Include estimates of affected children and staff
- Communicate with parents and the school community
- Suspend operations until 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



## Food Contaminations: Considerations

- Do you have a plan or standard operating procedure detailing the actions you take if:
  - There are many ill students and staff in your school/district?
  - You suspect or discover your food has been contaminated?
- Are any authorities different if you suspect the event is an act of terrorism?
- When should law enforcement get involved?



# Response: Food Recall

## Administrative Actions

- Activate school district plans
- Notify local health department
- Work with district's public communication contact person to facilitate community notification
- Employ procedures for locating, counting, segregating, and securing the food product
- Document actions, submit data and appropriate forms

Excerpted from *Responding to a Food Recall*, available online at <http://www.olemiss.edu/depts/nfsmi/Information/recallmanual.pdf>



# Response: Food Recall

## School-Site Actions

- Identify the recalled food product immediately
- Physically separate the product
- Determine if the product was used and account for usage:
  - date it was received
  - when it was used/who it was served to
  - any health problems reported
- Follow instructions for destruction of the recalled product
- Submit any necessary data, reports and forms

Excerpted from *Responding to a Food Recall*, available online at <http://www.olemiss.edu/depts/nfsmi/Information/recallmanual.pdf>



## **Do food defense plans include:**

- Written recovery plans?
- Plans for handling sick students and staff?
- Plans for disposal of solid waste?
- Sanitization and disinfection procedures?
- Plans for reassuring students and family members?
- Aftermath review and lessons learned?
- Process to implement corrective actions?



## After-action Review:

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



# 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 team members**
- **Incorporate lessons learned**



# Tabletop Exercises (TTX)



# What is a Tabletop Exercise (TTX)?

- A tabletop exercise (TTX) is a discussion-based exercise designed to familiarize participants with current plans, policies, agreements, and procedures; or the need to develop them
- TTXs typically are aimed at facilitating understanding of concepts, identifying strengths and shortfalls, and achieving changes in the approach to a particular situation
  - Involves key personnel discussing hypothetical scenarios in an informal (non-threatening) setting
  - Focus on in-depth discussion of issues and development of decisions through slow-paced problem solving



# Why Develop a Food Defense TTX?

- **Purpose:** Enhance the ability to respond to a district-wide food contamination event, exercise participants' knowledge and understanding of current food defense emergency plans, policies, procedures
- **Goal:** Evaluate food defense policies, plans, and procedures for response following a serious/major food contamination event involving the public school lunch program



# Benefits of Food Defense TTX?

- Schools can develop or refine emergency management plans for food-related problems.
- Designed to improve coordination of response among community partners.
- Dispels the myth “It can’t happen here.”
- Could be eligible for DHS Federal or State funding



# Food Defense Activity

## **National School Lunch Program Food Defense Tabletop Exercise**



# Food Defense Activity

## Tabletop Exercise

### Module 1

#### Identification and Communication



# Food Defense Activity

## Module 1: Scenario

### Tuesday:

8:00 a.m. – 1:30 p.m.

- The district is conducting statewide school testing Tuesday, Wednesday, and Thursday
- A favorite school lunch is prepared consisting of chicken nuggets, tossed salad, apple slices, a whole grain roll, and milk

11:00 a.m. – 1:30 p.m.

- All schools in the district serve lunch





# Food Defense Activity

## Module 1: Events Summary

As of Wednesday 6:30 p.m. (T+34:30 hours)

- Several youth and adults have sought medical care after experiencing symptoms including nausea, headaches, blurred vision, and unexplained fatigue after a normal night's rest
- Many patients have reported to local hospitals, emergency care centers, and physician offices seeking medical assistance





# Food Defense Activity

## Module 1: Events Summary (cont'd)

Wednesday 6:30 p.m. (T+34:30 hours)

- Lack of insurance, access to transportation, or mild symptoms may be delaying medical treatment
- Number of *potential* exposures: 14,500
  - Number of students and staff in 27 schools who served lunch
- Number of *probable* exposures: 8,500
  - Number of students and staff who ate lunch on Tuesday



# Food Defense Activity

## Module 1: Sample Questions

- Based on the information presented, what are your top priorities at this time?
- Would you activate any formal plans and procedures at this point?
  - What triggers the activation or implementation of these plans and procedures?
- How will you recognize the potential outbreak within the school or district?
  - How will you track that information?
  - What are the current reporting mechanisms?



# Food Defense Activity

## Module 1: Sample Questions (cont'd)

- What are the staff notification procedures following identification and confirmation of disease outbreaks
  - Who is in charge of providing accurate and timely information to the internal staff?
  - Who will be notified?
- What are the key messages at this point?
- What specific information will be given to staff, students, and parents?
- Who will be the spokesperson(s) for this incident?
  - How will they be selected?
- Which agency(ies), department(s), or organization(s) will disseminate “official” information to the public and the media?



## **Tabletop Exercise Module 2**

**Internal/External Communication  
Coordinated Response/Public Information**



# Food Defense Activity

## Module 2: Scenario

### Thursday:

6:30 a.m. – 8:00 a.m.

- Hospitals see a dramatic increase in school-aged children with similar symptoms
- A 10-year-old girl is admitted to a Regional Medical Center and placed on a ventilator; she is not expected to live
- All youth at hospital emergency departments display similar symptoms that seem to be progressing
- A custodian from a local elementary school returns to the hospital displaying elevated symptoms, including difficulty breathing; he is placed on a ventilator





# Food Defense Activity

## Module 2: Scenario

### Thursday:

8:00 a.m. – 9:00 a.m.

- Schools report a 50% absentee rate and a 30% increase in staff absenteeism
- Schools unable to find substitutes
- Public health staff arrive at schools to begin investigation
- Area schools have decided to close until further notice





# Food Defense Activity

## Module 2: Scenario

### Thursday:

10:00 a.m.

- The local public health department suspects possible food-borne connection and has narrowed it down to the school lunch
- State Departments of Education, Agriculture, and Health are contacted to pursue epidemiological investigation





# Food Defense Activity

## Module 2: Scenario

### Thursday:

12:00 p.m. – 4:00 p.m.

- Mayor requests Governor declare a state of emergency; Governor's office complies
- Reports of illness increase, including the “worried-well”
- Emergency rooms have become overwhelmed





# Food Defense Activity

## Module 2: Scenario

### Thursday:

4:00 p.m. – 8:00 p.m.

- Lab tests conclusive for botulism
- Governor requests and is granted a Federal Disaster Declaration
- A Public Health Emergency is declared and federal resources are notified to deploy





# Food Defense Activity

## Module 2: Scenario

### Monday:

8:00 a.m.

- Schools remain closed until further notice

10:30 a.m.

- Three other similar outbreaks reported in the United States indicate national food contamination – FBI begins investigation for criminal activity
- USDA and CDC confirm chicken nuggets as the possible source of outbreak





# Food Defense Activity

## Module 2: Scenario

### Monday:

3:00 p.m.

- The newspaper's headline announces a special school board meeting to discuss next steps for the community
- Parents of a 10-year-old girl who was the first person to die are interviewed by the newspaper
- They want to know why the botulism was not found sooner and beg other parents to never let their children eat school lunch again





# Food Defense Activity

## Module 2: Events Summary (cont'd)

As of Monday 3:00 p.m. (T+151:00 hours)

- Estimated *potential* exposures: 14,500
- Estimated *probable* exposures: 8,500
- More than half of the student population and staff in the school district have sought medical care.
- Dozens are reporting additional symptoms, including paralysis and respiratory distress
- Many are hospitalized and on ventilators



# Food Defense Activity

## Module 2: Sample Questions

- Given the positive confirmation of botulism and possible bioterrorism, how does this change the priorities during this escalating situation?
- What are your response actions at this point in the event?
  - What triggers the activation or implementation of these plans and procedures?  
How is your operation coordinated?
- What essential elements of information do you need to collect in this situation?
  - How do you collect this information and from whom?
  - What reports will you generate from this information?



# Food Defense Activity

## Module 2: Sample Questions (cont'd)

- How has the role of law enforcement changed given the scenario developments in the last module?
  - What is the impact of law enforcement involvement on the communications and information sharing process?
- How would crime scene investigation requirements be managed and coordinated?
  - Which agencies are responsible for this?
  - How is this managed with the responding agencies?
- How will coordination of Federal, State, and local efforts and resources be handled?



# Food Defense Activity

## Tabletop Exercise

### Module 3

#### Long Term Response/Recovery



# Food Defense Activity

## Module 3: Events Summary

### Six weeks post event:

- 5% of the population who became ill (425 students and staff) died as a result of the exposure
- Several hundred suffered permanent damage to their respiratory and nervous system
- Dozens remain on respirators and in long-term care facilities



# Food Defense Activity

## Module 3: Sample Questions

- What are your priorities six weeks post-event?
- What was the impact of the event on your department?
  - What did this do to morale, staffing, budget, supplies, etc.?
- How will you help restore the public's confidence in the school food and nutrition program?
- How will you manage students' nutritional needs in the event large numbers of students enrolled in free or reduced meal programs are not consuming school provided meals?



# Food Defense Activity

## Module 3: Sample Questions (cont'd)

- What recommendations would you make to strengthen your agency or system response?
  - What immediate changes can be made?
  - What long-term changes can be made?
  - How will these recommendations be funded?
  - How will you determine the cost?



# Discussion



# Resources



# 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: DHHS, CDC, NCFSS

## **DHHS/CDC/National Coalition for Food Safe Schools**

- [www.foodsafeschools.org](http://www.foodsafeschools.org)
- Action guide (downloadable)
- Toolkit (hard copies)
- How-to guide and video
- Tips by role (e.g., administrators, team leaders, school nurses, teachers, families, students)



# Resources: USDA's and FDA's National Food Service Management Institute

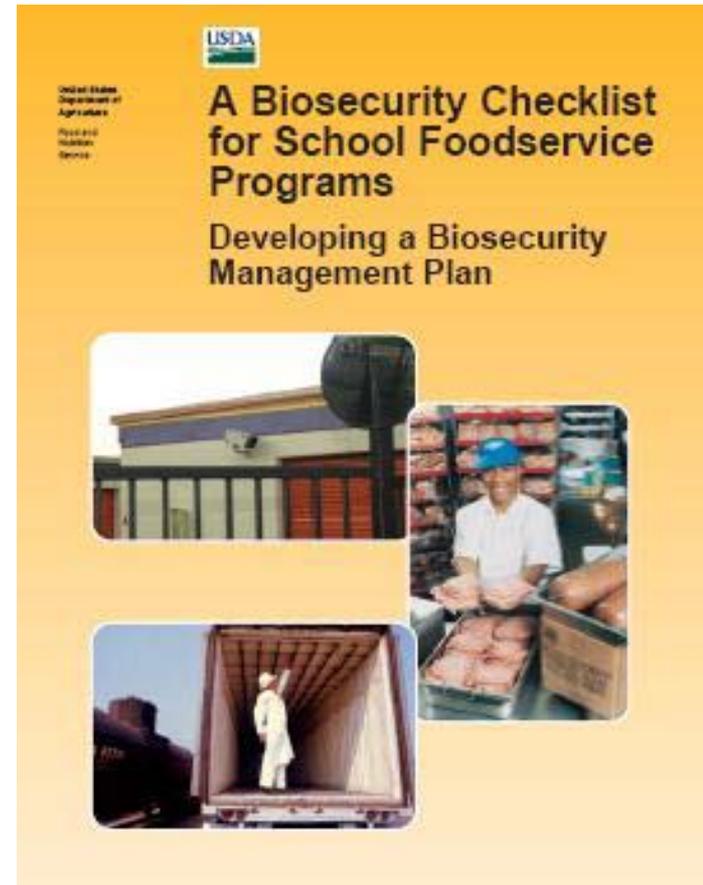
## HACCP

- Uses hazard analysis to address food safety
- NFSMI published standard operating procedures for schools: <http://sop.nfsmi.org/HACCPBasedSOPs.php>
  - Examples: handling a food recall, personal hygiene, receiving deliveries
- Record keeping procedures
- Food safety worksheets/checklists



# Resources: USDA 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: 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:
  - Assure - supplies and ingredients are from safe and secure sources
  - Look – keep an eye on the security of your ingredients and products
  - Employees – use strategies to monitor staff and visitors
  - Report – document the security of your products
  - Threat – know how and who you notify about threats or suspicious activities



# Resources: FDA's "FIRST" Initiative for Front Line Staff

- Follow company food defense plans and procedures
- Inspect your work area and surrounding areas
- Recognize anything out of the ordinary
- **Secure** all ingredients, supplies, and finished product
- **Tell** management if you notice anything unusual or suspicious
- Web link for ALERT and FIRST:
  - <http://www.fda.gov/Food/FoodDefense/default.htm>



# Presentation Credits

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The REMS TA Center was established in October 2007 by the U.S. Department of Education, Office of Safe and Healthy Students.

The center supports schools and school districts in developing and implementing comprehensive emergency management plans by providing technical assistance via trainings, publications and individualized responses to requests.

For additional information about school emergency management topics, visit the REMS TA Center at <http://rems.ed.gov> or call 1-866-540-REMS (7367). For information about the REMS grant program, contact Tara Hill ([tara.hill@ed.gov](mailto:tara.hill@ed.gov)).

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