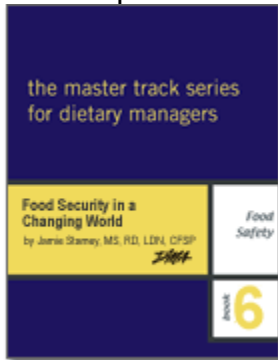


## Food Security in a Changing World 2006

Association of Nutrition and Foodservice Professionals (formerly Dietary Managers Association)

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The foodservice manager, while familiar with strategies to prevent an unintentional foodborne illness outbreak, may not be prepared to prevent and respond to deliberate contamination of the food supply. Foodservice operators need a proactive, risk-based management approach to assess and prevent food exposure to both accidental and intentional contamination. By establishing HACCP-based procedures and controls for food receiving, storage, preparation, holding, and service, operators can guard against intentional contamination.



## Master Track Booklet: Food Security in a Changing World

### Introduction

The Certified Food Protection Professional and Dietary Manager, while familiar with strategies to prevent an unintentional foodborne illness outbreak, may not be prepared to prevent and respond to deliberate contamination of the food supply. Foodservice operators need a proactive, risk-based management approach to assess and prevent food exposure to both unintentional *and* malicious contamination. By establishing and prioritizing food safety and protection guidelines for food receiving, storage, preparation, holding and service, operators can guard against intentional contamination of the food supply within the foodservice operation. This booklet will focus on the use of HACCP-based procedures and controls to reduce the likelihood of deliberate contamination of food within an institutional-type foodservice operation.

For facilities with an existing food protection and security plan, this document and provided resources may assist in reviewing, enhancing and supplementing the current plan. For operations in the initial stages of plan development, this may act as a guide and, in some cases, a short cut to plan development. Discussion points have been included throughout the booklet to encourage teams to discuss specific vulnerabilities and procedures related to food security. As references, many easy-to-access web-based resources have been provided.

*“The best way to deal with threats to the Nation’s food supply is to prevent and deter intentional or unintentional introduction of (disease)...Simply put, the best offense is a good defense.”* U.S. Secretary of Agriculture Ann M. Veneman, May 9, 2001

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## 1. Vulnerability: Overview of the U.S. Food Supply and Deliberate Contamination

In the town of The Dalles, a community of approximately 10,500 residents in north central Oregon, a sinister plot was unveiled in the fall of 1984. The members of a local religious commune were unhappy with the local government's land-use restrictions imposed on their ranch. In addition to running a campaign to unseat the incumbent, the commune members intended to incapacitate the voting population and sway the election outcome. In September 1984, prior to the November election, they set out to test their plan. Commune members, using *Salmonella Typhimurium* prepared in their own laboratory, deliberately contaminated salad bars in at least 10 local restaurants. It worked. A total of 751 individuals developed *Salmonella* gastroenteritis. The strain identified as causing the outbreak was indistinguishable from the strain isolated from the commune's laboratory.<sup>1</sup> In the terms of a detective, there was motive and there was opportunity.

The U.S. claims to have one of the safest food supplies in the world. Despite that claim the Centers for Disease Control and Prevention (CDC) estimate that each year 76 million people get sick, more than 300,000 are hospitalized, and 5,000 Americans die from unintentional foodborne illness. Preventing foodborne illness and death remains a major public health challenge.<sup>2</sup> Protecting food from unintentional contamination begins with preventing temperature abuse and cross-contamination that can stem from a variety of causes and by ensuring employees practice good personal hygiene. However, beyond current practices to keep food safe, operators must also develop, implement and evaluate preparedness procedures to prevent, detect and, if necessary, respond to bioterrorist threats to food. Recent terror-related events have rekindled and heightened concerns regarding the potential for deliberate contamination of the U.S. food supply. In a post-September 11, 2001 editorial, the risk for contamination of the food supply was analyzed in terms of vulnerability,

susceptibility, capability and intent.<sup>3</sup> The key components of that editorial will be reviewed in this document as a background to the potential for an intentional contamination of food.

### **Could Food be Used as a Means to Harm?**

Let's start with a key definition.

*Bioterrorism: The intentional or threatened use of biological or chemical agents to cause death or disease.*<sup>4</sup>

CDC's *Biological and Chemical Terrorism: Strategic Plan for Preparedness and Response*<sup>5</sup>

classifies biological agents capable of being used for bioterrorism into three categories:

Category A, Category B and Category C agents ([see Table A](#)). Category A agents, are

those indicated as being easily transmitted, causing high mortality and creating significant

public panic. These include smallpox, anthrax, plague, and a well known foodborne illness:

*Clostridium botulinum* or botulism. Botulism toxin is one of the most lethal substances

known to man. The infective dose for this neurotoxin is a very small amount; a few

nanograms (1/100<sup>th</sup> of a microgram) of toxin can cause illness.<sup>6</sup> A single gram of toxin,

evenly dispersed and inhaled, would kill more than 1 million people.<sup>7</sup> An amount equal to

the weight of a nickel would be the equivalent of 100 million lethal doses.<sup>8</sup> Symptoms of

botulism include double vision, blurred vision, drooping eyelids, slurred speech, difficulty

swallowing, dry mouth, and muscle weakness that descends through the body (first

shoulders are affected, then upper arms, lower arms, thighs, calves, etc). Paralysis of

breathing muscles can cause a person to stop breathing and die, unless assistance with

breathing (mechanical ventilation) is provided. A supply of antitoxin against botulism is

maintained by the CDC. The antitoxin is effective in reducing the severity of symptoms if

administered early in the course of the disease.<sup>6</sup> As a bioweapon, as few as 100 cases of botulism poisoning could quickly overwhelm a city's intensive care wards.

**Table A: Biological Agents Capable of Being Used for Bioterrorism<sup>5</sup>**

Category A	Category B	Category C
<p>High-priority agents include organisms that pose a risk to national security because they</p> <ul style="list-style-type: none"> <li>• can be easily disseminated or transmitted person-to-person;</li> <li>• cause high mortality, with potential for major public health impact;</li> <li>• might cause public panic and social disruption; and require special action for public health preparedness</li> </ul>	<p>Second highest priority agents include those that</p> <ul style="list-style-type: none"> <li>• are moderately easy to disseminate;</li> <li>• cause moderate morbidity and low mortality; and require specific enhancements of CDC's diagnostic capacity and enhanced disease surveillance.</li> </ul>	<p>Third highest priority agents include emerging pathogens that could be engineered for mass dissemination in the future because of</p> <ul style="list-style-type: none"> <li>• availability;</li> <li>• ease of production and dissemination; and</li> <li>• potential for high morbidity and mortality and major health impact.</li> </ul>

Category A agents include	Category B agents include	Category C agents include
<ul style="list-style-type: none"> <li>• variola major (smallpox)</li> <li>• <i>Bacillus anthracis</i> (anthrax)</li> <li>• <i>Yersinia pestis</i> (plague)</li> <li>• <b><i>Clostridium botulinum</i> toxin (botulism)</b></li> <li>• <i>Francisella tularensis</i> (tularemia)</li> <li>• filoviruses <ul style="list-style-type: none"> <li>○ Ebola hemorrhagic fever</li> <li>○ Marburg hemorrhagic fever</li> </ul> </li> <li>• arenaviruses <ul style="list-style-type: none"> <li>○ Lassa (Lassa fever)</li> <li>○ Junin (Argentine hemorrhagic fever) and related viruses</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <i>Coxiella burnetii</i> (Q fever)</li> <li>• <i>Brucella</i> species (brucellosis)</li> <li>• <i>Burkholderia mallei</i> (glanders)</li> <li>• alphaviruses <ul style="list-style-type: none"> <li>○ Venezuelan encephalomyelitis</li> <li>○ eastern and western equine encephalomyelitis</li> </ul> </li> <li>• ricin toxin from <i>Ricinus communis</i> (castor beans)</li> <li>• epsilon toxin of <i>Clostridium perfringens</i></li> <li>• <i>Staphylococcus</i> enterotoxin B</li> </ul> <p><b>A subset of List B agents includes pathogens that are food- or waterborne. These pathogens include but are not limited to</b></p> <ul style="list-style-type: none"> <li>• <i>Salmonella</i> species</li> <li>• <i>Shigella dysenteriae</i></li> <li>• <i>Escherichia coli</i> O157:H7</li> <li>• <i>Vibrio cholerae</i></li> <li>• <i>Cryptosporidium parvum</i></li> </ul>	<ul style="list-style-type: none"> <li>• Nipah virus</li> <li>• hantaviruses</li> <li>• tickborne hemorrhagic fever viruses</li> <li>• tickborne encephalitis viruses</li> <li>• yellow fever</li> <li>• multidrug-resistant tuberculosis</li> </ul>

Category B agents, while noted to cause low mortality, can cause moderate morbidity and also are easily spread. This list contains very common foodborne diseases including *Salmonella*, *Shigella*, *Vibrio* and *Escherichia coli* 0157:H7. In addition to the Oregon example, other documented incidents of intentional contamination of the food supply with known foodborne contaminants have included the following.<sup>9-13</sup>

- *Shigella* laced food provided by a laboratory worker to infect co-workers;
- Parasites deliberately added to food by a post-graduate student to infect roommates; and
- Nicotine-laced pesticide deliberately added to ground beef bought at a Michigan supermarket.<sup>14</sup>

As with the religious commune occurrence in Oregon, outbreaks from deliberate means will most likely be investigated as and look like an accidental outbreak. In fact, the Oregon outbreak was initially attributed to errors in food rotation and inadequate refrigeration on open salad bars. The cause was only determined to be a criminal act one year later after informants from the commune came forward and a subsequent search by law enforcement found the source of the *Salmonella*.<sup>1</sup>

### **1.1 Susceptibility: How Susceptible is the U.S. Food Supply?**

Food is essential for the survival of humans, livestock and domesticated animals. From an agricultural perspective, our food is difficult to protect. There are an estimated 2.13 million farms and 939 million acres of crops<sup>15</sup> cultivated across the nation. Livestock (including beef, poultry, and pork) grown for consumption exceeds 279 billion pounds annually<sup>15</sup>.

Produce and livestock are in vast, open and unprotected fields and pasture lands.

Opportunity exists to introduce contaminants by air (crop dusting), water (used for irrigation or drinking), feed, or after harvest (during washing, packaging, processing and transport to market).



Produce is of special concern because it is highly perishable, is rushed to market and consumed quickly. Foodborne pathogens and many other adulterants are undetectable—odorless, colorless, and flavorless. Produce is frequently eaten raw and few consumers wash produce adequately,<sup>16</sup> increasing the opportunity for invisible impurities to be consumed. Incubation times for many foodborne pathogens require several days for symptoms to develop. By the time symptoms appear, a large number of people could have been exposed to illness.

Mass food production, centralized processing and regional or national distribution of foods also pose an opportunity for wide spread outbreaks. In 1994, a national manufacturer of ice cream precipitated one of the nation's largest foodborne illness outbreaks. Pasteurized ice cream premix was being transported by tanker trailers to the plant for final flavoring and packaging. The tankers had carried unpasteurized eggs immediately before and had not been adequately cleaned and sanitized. *Salmonella enteritidis gastroenteritis* developed in 224,000 persons in the U.S. after they ate the particular brand of ice cream<sup>17</sup>. While this nationwide outbreak of salmonellosis was unintentional, it serves as a chilling example of the impact that could arise from a deliberate attack on mass produced and distributed product.

Finally, due to the limited growing season for produce in many areas of the U.S. and increased consumer demand for international and exotic foods, we must rely on imports of food from other countries. While border and port inspection programs have been enhanced, the majority of foods brought in from other countries are not inspected.

## **1.2 Capability: Just How Easy Would it Be?**

The deliberate use of biological weapons is not a new concept. In fact bioterrorism dates as far back as 400 BC when clay pots filled with snakes were hurled at enemies; animal and human cadavers were cast into an adversary's water supply; and arrows were dipped into manure or poison to deposit an especially lethal blow. During World War I and World War II, many nations conducted experimentation with anthrax, cholera, plague, botulism toxin and other agents as bioweapons. In 1972, the Biological Toxin Weapons Convention prohibited the development, production and stockpiling of biological weapons. This agreement was signed by 140 countries including the U.S. Regardless of this treaty, there is significant documentation of ongoing experimentation, production and deployment of bioweapons. The 1980s saw the contamination of Tylenol® and grapes with cyanide. In the 1990s, a Japanese cult released sarin gas in the Tokyo subway and aerosolized anthrax from atop buildings. In 1996, an Ohio man purchased bubonic plague through mail order. Biological contaminants can be found throughout our environment in the soil, raw foods, pests, and in human and animal waste. Basic resources available through the internet and other places could be used to culture and grow these pathogens.<sup>12, 18-19</sup>

## **1.3 Intent: Why Would Someone Do This?**

In a post September 11, 2001 editorial, several reasons were identified as a motive for contaminating our food supply.<sup>3</sup>

- Disrupt normal life: Think of the impact that September 11, 2001 had on the lives of Americans and the world. Businesses closed, air travel ceased, and the stock market stopped trading.
- Create fear and panic: Post September 11<sup>th</sup> moods were fearful. Was this the only attack? What strike would happen next? Rumors of nonspecific threats swept the nation with terror. Letters containing anthrax bacteria were mailed to several news

- media offices and two U.S. Senators, killing five people.<sup>20</sup> While only 22 people contracted anthrax, multitudes of Americans sought medical treatment and took prophylactic doses of Cipro<sup>®</sup>, a broad range antibiotic. This occurrence demonstrated how imaginary physical ailments based on an actual outbreak could overwhelm our healthcare system. One could suspect that every American had some level of anxiety when retrieving letters from the mail box during the fall of 2001.
- Impact the economy: Disruption of the \$1.3 trillion U.S. food chain<sup>21</sup> would have a devastating effect on the U.S. economy. Kansas State University professor James Marsden stated that an attack on the U.S. food supply “would be a depression of the first order.” At last reporting, agriculture accounts for 16.4% of the gross domestic product.<sup>22</sup> The jobs of 24 million individuals would be impacted<sup>15</sup>: farmers, farm workers, transporters, processors, distributors, and retailers. As well, with a presumed recall or hold on food during an investigation of adulteration, access to at least a portion of the food supply may be blocked.

Additional reasons that foreign or local groups may commit terrorism could be to

- Undermine confidence in the government or a specific organization;
- Promote their own ideals on religion or politics; or
- Act as a “copy-cat” to see if they can achieve the same notoriety or result.

Beyond the international or local extremist motives for terrorism, as foodservice operators key concerns could also be your own employees, clients or customers.

#### **1.4 Discussion Point**

- Lawrence was given an unsatisfactory performance review last week by his manager. As a result, he is not eligible for a long anticipated pay increase.

- Maria applied for an internal promotion when an assistant manager position became available. A co-worker, someone with whom she frequently disagreed, got the job instead. Her manager claimed Maria did not have the background or experience for the role.
- Ernie is an unusually quiet and shy employee. As a result, his co-workers tease him, sometimes too much. On a recent occasion he was embarrassed publicly as a result of a joke-gone-too-far.

Do any of these individuals have both a motive and an opportunity for deliberately contaminating food? Have you worked with or supervised an employee who could have easily contaminated food as a method of revenge?

## 2. Current Prevention in Place by the U.S. Government

The ***Federal Anti-Tampering Act***<sup>23</sup> makes it a federal crime to tamper with, taint or threaten to taint a consumer product (see box below and [Appendix A](#)).

The Federal Anti-Tampering Act (18 USC 1365) makes it a federal crime to tamper with or taint a consumer product; to attempt, threaten, or conspire to tamper with or taint a consumer product; or make a false statement about having tampered with or tainted a consumer product. Conviction can lead to penalties of up to \$100,000 in fines and up to life imprisonment.<sup>23</sup>

On a national level, the U.S. government has many systems in place to prevent, detect and respond to adulteration of food. Throughout the food chain, resources and surveillance systems have been added or enhanced by the USDA, FDA and Office of Homeland Security. The ***Bioterrorism Preparedness and Response Act of 2002***<sup>24</sup> implemented several systems to monitor and trace foreign imports and domestically produced foods.

- Domestic and foreign facilities that manufacture, process, pack or hold food for human or animal consumption in the U.S. are required to register the facility with the Food and Drug Administration (FDA). This includes any food, food additives, dietary supplements, infant formula, and beverages.
- Foods imported or offered for import into the U.S. must provide prior notice to the FDA. This advanced notice allows the FDA to target import inspections more effectively.
- Traceability requirements have been initiated and require record retention by manufacturers, processors, transporters and distributors to document the immediate previous source and subsequent recipients of food (one up and two down).
- The FDA has the authority to detain food if there is credible evidence or information indicating the presence of a threat of serious health consequences or death to humans or animals.

These steps are joined by surveillance systems implemented by the Centers for Disease Control and Prevention (CDC). PulseNet<sup>25</sup> links all public health laboratories in 50 states with an electronic database at the CDC. DNA “fingerprinting” of samples from identified foodborne illness cases are entered into the CDC’s database. If patterns submitted by different locations are found as matches, this will alert the CDC to a possible multi-state outbreak. Whether intentional or not, health authorities can implement systems to investigate, hold or even recall suspect food. FoodNet<sup>26</sup> provides a network for responding to new and emerging foodborne diseases and identifying the sources of specific foodborne diseases. These national networks of active and passive monitoring for foodborne illness can be used to detect an increase in foodborne illness cases; cases that may be the result of either intentional or deliberate means.

General food safety protocols also provide a means of preventing and monitoring security at all levels in the custody of food.

- **Good agricultural practices (GAPs)** target measures on the farm to minimize microbial hazards in fresh fruits and vegetables. Controls monitor the use of water and manure, and field sanitation conditions. Worker health and hygiene are an equally important focus. In addition, the sanitary conditions at packaging facilities and during transportation are regulated.
- **Good manufacturing practices (GMPs)** require that plant management take reasonable measures and precautions for producing safe and wholesome food. Manufacturing methods, equipment, facilities, and controls for producing processed food are inspected. GMPs are an important part of regulatory control over the safety of the nation's food supply.

- **Hazard analysis critical control point (HACCP)** is a system used to analyze potential hazards throughout the foodservice operation and proactively plan ways to prevent, eliminate or reduce the hazards to safe levels. HACCP is mandatory for meat, poultry, and seafood processing. As of July 2005, HACCP-based procedures are also mandatory for Child Nutrition Programs.
- **Inspections**, both mandatory and voluntary, are conducted by the U.S. Department of Agriculture (e.g. meat, poultry and eggs) and Food and Drug Administration (e.g. fruits, vegetables, other domestic and imported foods, packaged eggs) to ensure food is safe and wholesome.

Through the national surveillance systems in place throughout the custody of food in the U.S. food chain, foodborne contamination that is accidental or intentional is more likely to be prevented or rapidly detected and contained.

### 3. Preventive Steps for the Foodservice Operator

As a Certified Food Protection Professional (CFPP) or participant in a basic food protection manager certification course like ServSafe<sup>®</sup>, you should be familiar with food safety management systems using Hazard Analysis Critical Control Point (HCAAP)<sup>27</sup> to prevent, eliminate or reduce foodborne hazards to safety levels (*see Table B*). This same approach can be used to analyze your own operation's vulnerability to bioterrorism, identify and implement controls, and act quickly if the situation arises. The first HACCP principle is hazard analysis.

**Table B: What are the Seven HACCP Principles?**<sup>27</sup>

HACCP Principle	Description
1. Perform a Hazard Analysis.	The first principle is about understanding the operation and determining what food safety hazards are likely to occur. One must understand how the people, equipment, methods, and foods in any given area of the facility affect each other. This usually involves defining the operational steps (such as receiving, storage, preparation, cooking, etc.) that occur as food enters and moves through the operation. Additionally, this step involves determining the control measures that can be used to eliminate, prevent, or reduce hazards.
2. Decide on the Critical Control Points (CCPs).	Once the control measures in the first principle are determined, it is necessary to identify which control measures are absolutely essential to ensuring safe food. An operational step where control can be applied and is essential for ensuring that a food safety hazard is eliminated, prevented or reduced to an acceptable level is considered a critical control point (CCP).
3. Determine the Critical	Each CCP must have boundaries that define safety. Critical limits



Limits.	are the parameters that must be achieved to control a food safety hazard. Critical limits are measurable and observable.
4. Establish Procedures to Monitor CCPs.	Once CCPs and critical limits have been determined, someone needs to keep track of the CCPs as the food flows through the operation. Monitoring involves making direct observations or measurements to see that the CCPs are kept under control by adhering to the established critical limits.
5. Establish Corrective Actions.	While monitoring CCPs, occasionally the process or procedure will fail to meet the established critical limits. Problems will arise, but they must be found and corrected before they cause someone to become sick or injured. The operator decides what the actions will be, communicates those actions to the employees, and trains them in making the right decisions.
6. Establish Verification Procedures.	This principle is about making sure that the system is scientifically-sound to effectively control the hazards. In addition, this step ensures that the system is operating according to what is specified in the plan.
7. Establish a Record Keeping System.	There are certain written records or kinds of documentation that are needed in order to verify that the system is working. These records will normally involve the HACCP plan itself and any monitoring, corrective action, or calibration records produced in the operation of a HACCP system. Records maintained in a HACCP system serve to document that an ongoing, effective system is in place.

### 3.1 Analyzing Security Hazards for Internal and External Scenarios

As mentioned in the initial chapter, food bioterrorism, in the terms of a detective, is about motive and opportunity. We may never be able to understand or change an individual's or group's motive for implementing harm. But we can intervene to prevent, eliminate or reduce their opportunity. Many federal, state and accrediting agencies responsible for food safety and public protection have relevant guidelines for facilities to use in analyzing security hazards. Following September 11, 2001, Joint Commission on Accreditation of Healthcare Organizations (JCAHO) president Dennis O'Leary urged all health care facilities to perform a "Hazard Vulnerability Analysis."<sup>28</sup> Likewise the FDA's initial assessment using an analytical framework called "Operational Risk Management" (ORM)<sup>29</sup> considered both the severity of the public health impact and the likelihood of such an event taking place. Also, ORM was used to develop the framework to respond rapidly to and recover from a foodborne terrorist attack. In both models, facilities were asked to assess the likelihood of a strike, prioritize preventive measures and implement practical controls that will have the greatest impact for deterrence. In hazard analysis, one must review the operation and determine what food safety hazards are likely to occur. Where and when could one intentionally introduce a biological, chemical or physical hazard into the food? One must understand how the people, equipment, methods, and foods all affect each other. This usually involves analyzing the operational steps (such as receiving, storage, preparation, cooking, etc.) that occur as food enters and moves through the operation.<sup>27</sup>

### **3.2 Discussion Point**

- What are possible external targets for terrorism or bioterrorism that may directly impact your facility?
  - Nuclear power stations, hydroelectric dams, sports venues, airports, government or public structures, military bases, regional or national food processing plants, chemical manufacturers, etc.

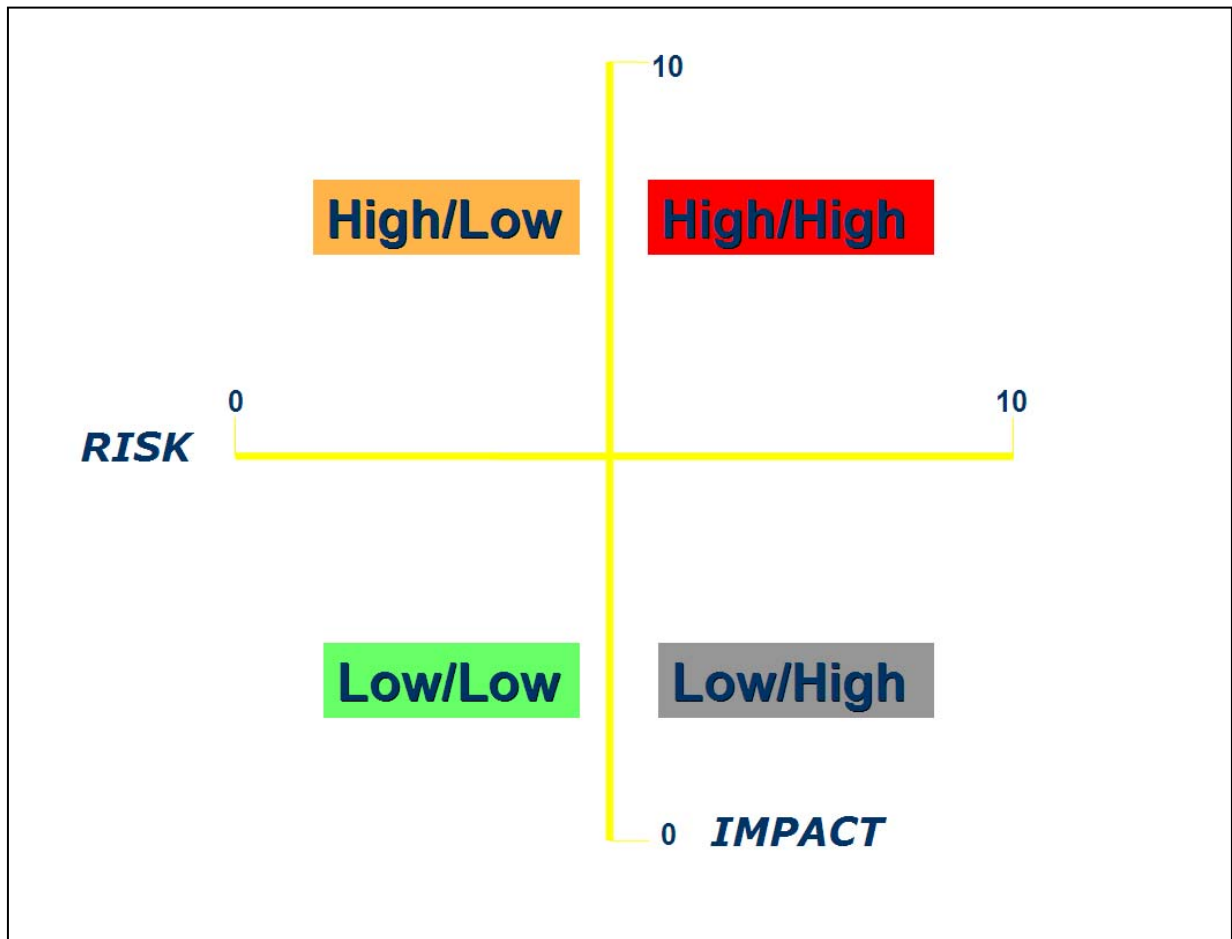
- What internal circumstances may affect your operation?
  - Employee climate, labor disputes, layoffs, media events involving the facility or notable employees, etc.
- Review your current food procurement, delivery, receiving, storage, production and service methods. Could an individual have access or opportunity to adulterate foods at one or more points in your operation?

### **3.3 Risk and Impact Assessment**

Author Steve Fink provides a simplified model for risk assessment (*Figure 1*).<sup>30</sup> Rate all possible external and internal scenarios based on their risk or likelihood of occurrence and the impact that each would have on your operation. Those scenarios with the highest risk and impact should have the highest priority.

*Example:* Food is left on the loading dock by your current foodservice distributor and is unattended until after lunch service. This food could easily be tampered with (moderate to high risk) in an undetected fashion. If contaminated, food served to clients at your 500 bed facility (high impact) would result in widespread illness.

Figure 1.



### 3.4 Standard Operating Procedures (SOPs)

Prior to beginning the HACCP steps it is recommend to review, revise, create and implement standard operating procedures (SOPs). Many SOPs relate, not only to food safety procedures ([Appendix B](#)) but food *security and protection* systems as well. Below is an abbreviated list of SOPs that should have a food security component added to the written document, process or procedure.

- |  |  |
|--|--|
| <input type="checkbox"/> Vendor certification requirements       | <input type="checkbox"/> Chemical use and storage              |
| <input type="checkbox"/> Food receiving and inspection           | <input type="checkbox"/> Supervision of staff                  |
| <input type="checkbox"/> Storage and access to food supplies     | <input type="checkbox"/> Supervision of contract service staff |
| <input type="checkbox"/> Pre-operational facility check list     | <input type="checkbox"/> Water supply                          |
| <input type="checkbox"/> Batch preparation of food               | <input type="checkbox"/> Employee training                     |
| <input type="checkbox"/> Employee attire                         | <input type="checkbox"/> Emergency readiness                   |
| <input type="checkbox"/> Storage of personal items               | <input type="checkbox"/> Crisis communication plan             |
| <input type="checkbox"/> Interior and exterior building security | <input type="checkbox"/> Food recall plan                      |

It is essential to develop and implement effective SOPs that prevent, eliminate or reduce access for the purposes of adulterating food. Also imperative is training staff to facility expectations on protecting the food supply.

### **3.5 Discussion Point**

In the event of a suspected contamination of the food supply a pre-determined plan of action (SOP) should be implemented that would clearly define the response required. Consider these questions and their answers as part of your response plan.

- Who has the authority in your operation to pull suspicious or recalled foods?
- When a suspicious item is identified who should be involved in the communication?
  - Managers, facility leaders, law enforcement, public health officials, facility media spokespersons, etc.
- Are all employees empowered to respond to suspicious activity or recall circumstances and implement a rapid response plan?

- How are critical decision makers and managers contacted after hours, on weekends, during holidays and on vacations by internal staff and external (e.g. a food service distributor) stake holders?
- What procedure will be followed to identify, account for, and quarantine suspicious or recalled food?

#### **4. Management of Food Security**

Prior to taking a step-by-step walk through your facility, it is important to review the role of managers in protecting food from deliberate contamination. The Joint Commission<sup>28</sup> identifies foodservice personnel as having a responsibility to provide safe and accurate preparation, storage, distribution, and administration of food and nutrition products.

Management of food safety and security starts with establishing a clear chain of command and communication; establishing, assigning and monitoring the assigned responsibilities; and training and holding employees accountable to their role in food protection.

As part of your food safety and protection program (HACCP plan) your HACCP team should establish a biosecurity management group to analyze your unique operational flow for opportunities where deliberate contamination of foods and food contact surfaces could occur. Based on the findings, strategies should be developed to prevent breaches in security. These plans will most certainly be in the form of standard operating procedures (SOPs), employee training programs and management-level monitoring. In the following pages, recommendations from the FDA<sup>31</sup>, the World Health Organization (WHO)<sup>32</sup> and USDA<sup>33</sup> have been summarized for comprehensive guidance in assessing your operation's risk and vulnerability. These recommendations may not apply to every facility. Based on the facility, some recommendations may not be practical and may even be over zealous, especially for smaller facilities. Additionally, restricted financial resources may make some recommendations cost-prohibitive. It is advised that each facility assess their overall risk and the impact that would result. Then implement measures to the best of your ability and resources to feasibly prevent, eliminate or reduce the risks to acceptable levels.

##### **4.1 Building Security**

Physical security of the facility should assess both the external and internal vulnerabilities. The goal is to keep the “bad elements out.” Therefore every operation should look at their building to consider the following.

### ***How Secure is the Perimeter?***

Fencing, ample external lighting, external locks on doors, windows and roof access will act as an initial deterrent. Some form of surveillance (guards, patrols, video cameras, and door or window alarms) will enhance these measures. Air intake vents and ventilation systems should also be secured and should be capable of being sealed from external air sources. Parking areas for visitors should be controlled, monitored and channel visitors to supervised entry points. Other external targets to secure and monitor could be water mains, wells or water storage tanks as well as fuel storage tanks, external storage buildings, chemical storage and compressed gas tanks. External structures should be patrolled and hazardous chemical stores inventoried both routinely and randomly.

### ***Who Has or Could Gain Access?***

Locked doors should be key, key-card, or code entry points with access limited only to essential personnel. Keys, key-cards and identification badges should consistently be collected when employees leave your hire. Who else enters your building and department? Visitors, volunteers, seasonal or temporary staff, clients, sales representatives, contract service companies (e.g. pest control operators, cleaning crews, and equipment maintenance or service), inspectors and regulators, computer support and staff from other departments may pass through your doors. Visitor check-in procedures are essential to control access and prevent unauthorized entry into staff areas. Visitors should be issued visitor badges that are reliably collected upon departure. When feasible, have visitors accompanied to the next “handoff” point (department, floor or unit for the intended visit). Individuals seeking



access to non-public areas should provide proof of identity (including authorized health inspectors or regulators) and should never be in food preparation, storage, service or food equipment and utensil areas unattended. Ensure that after-hour crews are licensed and bonded and, when feasible, schedule staff to supervise the contract service work.

#### **4.2 Foodservice Distributor Certification and Receiving Procedures**

In a recent review of the potential for terrorist attacks on the U.S. military food supply procurement was identified as an essential component of food protection<sup>13</sup>. HACCP-based SOPs require that foodservice distributors (primary and back-up) be licensed, inspected and compliant with local, state, and federal requirements. This would apply to all sources of foods including additional suppliers of bread, milk and a local purchasing co-op. During the receiving process, SOPs may already specify quality criteria for rejecting food that has been temperature abused or is of substandard quality. However, from a food protection standpoint, these additional areas should be addressed via purchasing contracts, SOPs and employee training programs.

- Specify, in writing, with all food suppliers your expectations for securing food while in their custody. Review their internal plans for food safety and security. Validate the steps suppliers take to purchase foods from domestic and foreign facilities that are registered with the FDA. Ensure compliance with traceability and import requirements. Source, safety and security of foreign produce should be of special consideration.
- Identify how delivery vehicles will be secured after leaving the distribution warehouse and at each stop along the route. Establish expectations for delivery procedures that include supervised off-loading and ample time for a thorough accounting and inspection of supplies.
- Determine your requirements for identity verification (identification badges) for delivery personnel during scheduled and unscheduled deliveries.

- In advance, establish with food suppliers a clear line of communication and pre-determined actions that will be taken in the event of a food recall. This would include routine updating of contact information and procedures for after hours notification.
- During delivery, receiving staff should be well trained to supervise off-loading of supplies on a secured loading dock. Inspect packages for alteration, counterfeiting, re-sealing, mislabeling and tampering. Deliveries should be reconciled between the purchase order and delivery invoice. Investigate missing or extra stocks. Establish lines of authority to reject suspicious deliveries. Packages that are open, torn or damaged should be rejected.
- Store food and chemicals separately and in secured areas with limited and locked access. Every staff member does not need access to all areas of the foodservice operation. By limiting and supervising access, food tampering opportunities will be decreased. Inventory food and chemical supplies on routine and random bases and investigate missing, extra or unfamiliar stock. Monitor supplies in storage for tampering, adulteration or re-sealing.

### **4.3 Employee Hiring, Training and Supervision**

Staff can be a security concern even if caution in hiring, training and supervision is employed. But a well trained, reliable and trusted employee can be an invaluable part of preventing, monitoring, detecting and responding to food adulteration. Co-workers may have the opportunity to overhear threatening conversations or observe suspicious acts that may be concealed from supervisors or managers. Establish a non-punitive, open-door policy for employees to confidentially share their observations and concerns regarding co-workers. In food security terms, there is no such thing as a “tattle tale”.

- As with other pre-hiring screening, you should work with your human resources specialist or the Employment Security Commission to ensure that screening practices

are legal and applied to all applicants in a non-discriminatory fashion. Ensure that immigration status and background checks are completed. Obtain and verify work references. Screening should be applied to all staff whether full-time, part-time, seasonal, temporary or volunteer. Contract service providers should provide proof that the background checks on workers are completed prior to hire.

- Establish work schedules so managers and supervisors are aware of who should *and should not* be on site. Monitor and question employees who loiter before or after their shift or show up on non-scheduled days. For large facilities or those with frequent staff turn-over consider facility-issued photo identification badges and issued uniforms.
- Determine levels of access to each area of the operation based on job responsibilities and position. Limit access to personnel on an as-needed-basis only. Be aware of employees requesting access to unauthorized areas or requesting restricted keys or codes. Maintain strict control over keys, key cards, and codes. Re-key or re-code locks when employees leave your hire and especially when keys are unaccounted for. Imprint all keys with “do not duplicate”.
- Provide lockers and storage areas for personal items and prohibit their storage in food preparation or storage areas. This would include backpacks, purses, lunch bags, coolers, and all other personal items. Ensure that prescription medications are restricted from food preparation and food storage areas. If local privacy laws allow, consider see-through, mesh lockers for easy inspection and limited opportunity to conceal items of concern.
- Train all staff in food security awareness. Use case studies, role playing, question and answer sessions, learning games, and group discussion to involve employees and increase alertness to potential contamination scenarios. Employees play a vital, front-line role in preventing, observing, detecting and reporting suspicious individuals or suspect food items. Training should include procedures for the vigilant monitoring of

foods offered for sale on display, observation of customer behavior and reporting of unusual co-worker conduct. Training should also include facility emergency procedures, how employees should protect themselves in an emergency, procedures for rapid notification of suspicious events and media communications policies.

- Managers and supervisors should play an additional role in surveillance and prevention of deliberate contamination of foods. A daily pre-operational check of the facility should include the assessment of the facility for unauthorized, overnight entry or tampering. Managers and supervisors should also be tasked with performing routine and random security inspections and investigating all employee concerns in a timely fashion. Finally, management should provide adequate supervision of employees at all times, focusing on suspicious behavior, and be held accountable for employee actions that could endanger foods and supplies.
- Be alert to staff health issues. If an unusual number of staff are experiencing similar symptoms or are absent due to illness it could be an early indicator of contamination that bears investigation and may call for the involvement of local public health officials.
- As employees leave your hire, either voluntary or by dismissal, follow SOPs to retrieve keys, key cards, identification badges and, as appropriate, change codes and passwords.

#### **4.4 Discussion Point**

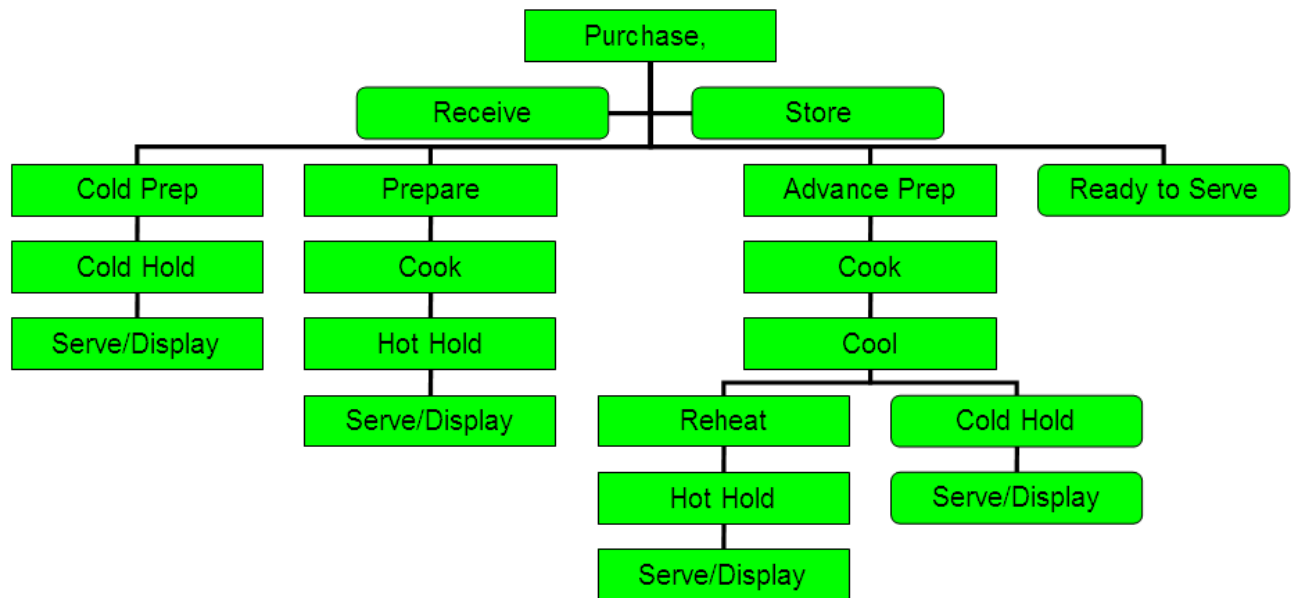
An employee responsible for cold salad prep walks into the public cafeteria to put the final items into the salad bar. She notices a recently dismissed co-worker suspiciously standing by the salad bar and using a utensil to toss the lettuce. When the salad employee spots the former co-worker, the former co-worker quickly leaves. The salad worker looks over the salad bar and does not see anything unusual. What should she do?

#### 4.5 HACCP-Based Processing Recommendations

Using a HACCP-based analysis of the flow of food in your facility your biosecurity team can identify vulnerabilities and establish SOPs and control measures for anticipated hazards.

Use the figure provided (**Figure 2**) to customize the steps in the flow of food through your unique operation. Make sure to include satellite kitchens, food transported to other facilities or locations, and special processing (e.g. cook chill procedures). At what points are foods most open to deliberate contamination? What SOPs can be used to prevent, eliminate or

Figure 2



The FDA's process approach to HACCP groups foods by processing steps. The FDA process tables<sup>27</sup> have been modified in this document for tracking foods within the scope of deliberate contamination and, therefore, grouping foods based on having similar operational vulnerabilities. Using the tables provided (*Tables C, D, and E*) group and list all menu items into the appropriate table, identify opportunities for contamination, and determine how these vulnerabilities will be prevented or lessened. What monitoring will be used, and what corrective procedures will be implemented if monitoring detects suspect items?

- ***Table C: Foods Served as Received.***

Examples may be pre-packaged macaroni salad, packaged yogurt, enteral (tube feeding) products and shakes. These foods are prepared outside the facility, without a preparation, cooking or cooling step by the facility itself. While not usually potentially hazardous from a food safety perspective, other foods to consider as easy to adulterate could be bakery products, fresh fruits and vegetables, and cold cereal.

- Potential hazards: Package, product or ingredient tampering during transport, receiving, storage or display
- Monitoring: Inspect on a routine and random basis for signs of tampering, counterfeiting, adulteration or contamination.

- ***Table D: Foods Prepared In-House (Cold Prep, Cooked or Prepared in Advance).***

Examples of these menu items include tuna salad prepared in-house, hamburgers and other hot and cold sandwiches, cooked or raw vegetables, eggs, grilled chicken, bulk meats, soups, and stews. These foods are prepared cold or cooked and may or may not have a cooling step.

- Potential hazards (in addition to those identified above): Contaminated equipment, work surfaces and utensils, contamination during preparation, holding or display,

- intentional undercooking or other temperature abuse. Contamination during cooling and storage, contamination during reheating or other intentional temperature abuse.
- Monitoring: Pre-operational inspection of equipment and surfaces, cleaning and sanitizing of all work surfaces; supervision of staff during production; small batch preparation with end-of-batch cleaning and sanitizing; documentation and verification of cooking, cooling and reheating temperatures; and monitoring of product during holding and display

- **Table E: Foods Offered for Self-Service**

While this table is not one of the FDA's three food preparation processes, it warrants special attention because foods at this point must be protected not only from employees but from patrons as well. As learned in the 1984 Oregon incident, it only takes a minor effort to find foods that are unattended and ready for service. Examples may include a self-service salad bar, catered buffets, grab-and-go sandwiches and salads, self-service bulk candy, and fresh fruits. Do not overlook self-service ice cream and beverage dispensers and ice bins.

- Potential hazards (in addition to those identified above): Post-production contamination during display by internal staff, visitors or clients.
- Monitoring: This is a point in service that, for food protection, requires stationing an employee at or near open food displays to ensure vigilant monitoring and observation of customers, staff and the food itself. Trained employees should monitor for unusual behavior, suspicious actions, and be trained in rapid intervention and reporting. Display food in small batches and rotate foods often.

With each of these production items the use of SOPs, HACCP-based hazard analysis and well trained employees is paramount to limiting opportunity for the would-be bioterrorist. As well,

keep in mind that basic food safety procedures can be employed to prevent, eliminate or reduce the likelihood that contaminated food will achieve the intended effects<sup>4</sup>. The message of FightBac.org can be used in food security.

- **CLEAN:** Starting out with thoroughly cleaned and sanitized work surfaces, equipment and utensils. Ensure appropriate employee hygiene and clothing. Thoroughly wash fruits and vegetables.
- **COOK:** Thorough cooking of food will destroy significant amounts of foodborne pathogens and denature some toxins (like botulism toxin).
- **SEPARATE:** Prevent intentional and accidental cross-contamination by separating raw and ready-to-eat foods in storage and during preparation. Protect foods from contamination at all points in the flow. Separating will also prevent contaminated food from adulterating other items.
- **CHILL:** Promptly cool and store foods and protect these items from contamination.

While FightBac.org does not list this:

- **INSPECT:** Foods should be inspected and monitored for deliberate tampering and adulteration.

Each of these steps can lessen the impact or severity of introduced contaminants. Review of guidelines established by the FDA<sup>31</sup> and USDA<sup>33</sup> can further refine your biosecurity plans and actions.



**Table C**

**Foods Served as Received**

<b>MENU ITEMS/PRODUCTS:</b>							
<b>PROCESS STEP</b>	<b>HAZARD(S)</b>	<b>CCP (Y/N)</b>	<b>CRITICAL LIMITS</b>	<b>MONITORING</b>	<b>CORRECTIVE ACTIONS</b>	<b>VERIFICATION</b>	<b>RECORDS</b>
<b>RECEIVE</b>							
<b>STORE</b>							
<b>HOLD</b>							
<b>SERVE</b>							
<b>Prerequisite (SOP) Programs</b>							

**Table D**

**Foods Prepared In-House (Cold Prep, Cooked or Prepared in Advance)**

MENU ITEMS/PRODUCTS:							
PROCESS STEP	HAZARD(S)	CCP (Y/N)	CRITICAL LIMITS	MONITORING	CORRECTIVE ACTIONS	VERIFICATION	RECORDS
RECEIVE							
STORE							
PREPARE							
<i>COOK*</i>							
<i>COOL*</i>							
<i>REHEAT*</i>							
HOLD							
SERVE							
PREREQUISITE (SOP) PROGRAMS							

\*Potential steps

**Table E**

**Foods Offered for Self-Service**

<b>MENU ITEMS/PRODUCTS:</b>							
<b>PROCESS STEP</b>	<b>HAZARD(S)</b>	<b>CCP (Y/N)</b>	<b>CRITICAL LIMITS</b>	<b>MONITORING</b>	<b>CORRECTIVE ACTIONS</b>	<b>VERIFICATION</b>	<b>RECORDS</b>
<b>RECEIVE</b>							
<b>STORE</b>							
<b>PREPARE</b>							
<b>COOK*</b>							
<b>COOL*</b>							
<b>REHEAT*</b>							
<b>HOLD</b>							
<b>SERVE</b>							
<b>PREREQUISITE (SOP) PROGRAMS</b>							

\*Potential steps

## 5. Crisis Management Considerations

While previous sections are aimed at preventing, eliminating or reducing the likelihood of bioterrorism, crisis management also ensures adequate preparation in the face of such an event. If there is a local or national attack on the food supply, pre-planned actions will help to minimize response time, assist in keeping staff, guests and food safe, and minimize loss of revenue through quick recovery. Two main considerations for bioterrorism in the food chain would be (1) how to respond appropriately to the recall of contaminated food and (2) to provide adequate food and nutrition to clients and staff during such a disaster. These situations will require pre-planned SOPs with step-by-step instructions, identification of specific tasks and assignment of responsibilities by job description. Training in crisis procedures will also assist staff and management in responding in a calm and efficient manner.

### 5.1 Recall Response

A food recall is usually a voluntary action by a manufacturer in response to products that may cause health problems or death. The Food Safety Inspection Service (FSIS) in conjunction with the FDA and USDA can request a voluntary recall by a manufacturer. As well, FSIS has the authority to detain or seize products believed to be hazardous to public health. A recall can be initiated as a result of an unintentional or deliberate adulteration.

There are three classifications of recalls<sup>34</sup>.

- Class I: There is a reasonable probability that eating the food will cause health problems or death. This could be from a harmful pathogen (like *E. coli* 0157:H7) or an undeclared allergen (like peanuts).
- Class II: There is a remote possibility of adverse health consequences from eating the food. An example may be a less harmful allergen or ingredient that is undeclared.

- Class III: Eating the food will not cause adverse health consequences. This could be mislabeling of a weight or harmless ingredient, like water.

Standard operating procedures should outline procedures and prior training for employees to respond quickly in the event of a recall notice<sup>35</sup>. Several steps to outline include:

- Procedures for notification by food suppliers during and after hours and procedures for internal communication.
- Collection of relevant information including:
  - Location of the recalled product: Was it purchased, and if so has it been served or is it in storage?
  - Finding the product by recall notice: product name, manufacturer, lot number, product code and run dates.
  - If served, when and to whom was it served and was there any related reports of health problems?
  - Who will be responsible for informing the public regarding potential exposure?
- Procedures for isolating, securing, and labeling the recalled product and following through on hold procedures before returning or destroying the items.
- Procedures for receiving credit, refund or replacement for the recalled product.

## **5.2 Crisis Planning**

In the event of an attack on the local or national food supply, it may still be essential to provide food, water and nutritional supplements to patrons, residents, patients or other customers. Previously purchased and stored, sealed foods may be less likely to be involved in a current foodborne outbreak of deliberate or unintended means. Therefore you may be able to rely on unaffected foods in dry and cold storage and specifically on your emergency menu supplies. In traditional uses of emergency menus, you may be limited to preparing

and serving foods when no public utilities are available. In a bioterrorism event, you could still have electricity and gas to cook foods and therefore may be able to use your routine menu and foods in refrigerated or freezer storage if determined to be uncontaminated. But if there is a question of cross-contamination or widespread adulteration, hermetically sealed, pre-packaged foods will have to be used. An assessment of the situation will be essential to determine which foods are safe and can be used for meal preparation. Some general guidelines for developing emergency menus include:

- Determining the number of days and nutrient composition of menus that are required by local, state or federal guidelines. This document will provide an example of a 3-day emergency menu ([Appendix C](#)) that could be repeated or expanded. It is essential to be familiar with federal, state or local regulations pertaining to emergency menus.
- Adequate quantities of disaster supplies, including non-perishable foods, water and paper goods, should be on hand at all times and stored separately from routine food supplies. Make sure to plan disaster supply quantities for employees and other facility staff as well as for clients.
- Rotate stored foods every 6 months. Review your current menu and determine how rotated supplies can be used throughout the standard menu. For example canned tuna can be used in tuna salads; peanut butter and dry milk can be used to make bakery products; and canned vegetables and meats may be incorporated into soups and stews.
- If serving therapeutic diets, consider a liberalized diet policy to be implemented with disaster menus. Ensure that diets of varying textures and consistencies can be offered. Determine if diets for vegetarian, cultural or religious compliance will be offered.

In reviewing the overall emergency plans of your facility, this document lists several resources that may act as a reference to modify or enhance existing readiness procedures.

## **6. Conclusion**

As stated earlier, “the best offense is a good defense.” An attack on the U.S. food supply could present as an unintentional or undetermined foodborne illness outbreak that could be either localized or widespread. Foodservice directors, managers and supervisors should:

- assess, plan and implement tightly coordinated and controlled food security systems that address removing opportunities for deliberate attack;
- train employees and heighten their awareness of product vulnerability and their responsibility to food protection;
- implement vigilant monitoring and surveillance at pre-determined control points based on HACCP-based principles; and
- continue to follow current food safety guidelines for receiving, storage, preparation, holding and service of food.

## 7. Competency assessment quiz

Select the best answer

- 1) Food safety and protection guidelines should be established for which of the following areas?
  - a) Food receiving
  - b) Food storage
  - c) Food preparation
  - d) Food service
  - e) All of the above
- 2) What is not a component of a food security plan?
  - a) Written standard operating procedures
  - b) Issuing master keys to all department employees
  - c) Employee training and awareness programs
  - d) Daily monitoring by management
  - e) HACCP-based procedures for food preparation
- 3) There has never been a deliberate or intentional attack on the food supply in the United States.
  - a) False
  - b) True
- 4) Botulism is an example of a
  - a) Foodborne infection
  - b) Foodborne intoxication
  - c) Category A biological weapon
  - d) Both b and c
  - e) All of the above
- 5) The food that is most susceptible to a wide-spread national attack by a bioterrorist is



- a) Produce
  - b) Livestock
  - c) Mass produced foods
  - d) All of the above
  - e) Only b and c
- 6) Since the signing of the 1972 Biological Toxin Weapons Convention, there has been no production or use of biological weapons.
- a) False
  - b) True
- 7) A deliberate contamination of the national food supply would have all the following effects except
- a) Create fear and panic
  - b) Negatively impact the U.S. economy
  - c) Increase confidence in government organizations with food protection authority
  - d) Impact jobs throughout the food chain
  - e) Result in wide-spread illness if not quickly detected
- 8) In accordance with the Federal Anti-Tampering Act, which would be considered a crime?
- a) Deliberately adding a substance to food that will cause harm
  - b) Calling a foodservice distributor, as a hoax, to report adulterated food
  - c) Planning and purchasing products to tamper with food, but never carrying out the act
  - d) Threatening to contaminate food unless you get a pay raise
  - e) All of the above
- 9) Which of the government agencies is not responsible for monitoring the safety and security of the food chain?
- a) U.S. Department of Agriculture (USDA)
  - b) Occupational Safety and Health Administration (OSHA)

- c) Food and Drug Administration (FDA)
  - d) Food Safety and Inspection Service (FSIS)
  - e) Centers for Disease Control and Prevention (CDC)
- 10) Good Agricultural Practices (GAPs) target measures for food safety and security at
- a) The farm
  - b) The manufacturing plant
  - c) The foodservice distributor
  - d) The foodservice operation
  - e) All of the above
- 11) HACCP procedures are mandatory for
- a) Hospitals
  - b) Long-term care facilities
  - c) Child nutrition programs
  - d) Full service dining operations
  - e) Prisons
- 12) The first step or principle of HACCP is
- a) Establish critical control points
  - b) Perform a hazard analysis
  - c) Establish monitoring procedures
  - d) Implement employee training procedures
  - e) Establish a vendor certification program
- 13) When assessing food security hazards it is important to prioritize based on
- a) Motive and opportunity
  - b) Monitoring and record keeping
  - c) Risk and impact
  - d) Verification and record keeping

- e) Proximity to local law enforcement
- 14) Written standard operating procedures (SOPs) can provide procedures for food safety as well as for food security.
- a) False
  - b) True
- 15) With respect to external security, which of the following items is a concern?
- a) A well lit building exterior
  - b) Self-locking doors with security alarms
  - c) Frequently patrolled parking lots
  - d) Toxic chemicals stored in an unlocked, remote building
  - e) Secured water storage tanks
- 16) Who is the greatest internal security concern?
- a) A visitor who checks in and is issued a visitor badge
  - b) A new health inspector who refuses to show identification
  - c) Your long-time food sales representative
  - d) A licensed and reputable pest control operator with identification
  - e) A new employee who is regularly supervised
- 17) When receiving foods from your food supplier, you notice a box that is open. You should:
- a) Ask the delivery person how the package became open
  - b) Open the package to look for signs of contamination
  - c) Re-seal the package and store it immediately
  - d) Reject the open box
  - e) None of the above
- 18) An employee who has concerns about a menacing co-worker should be taken seriously.

- a) False
  - b) True
- 19) Limiting access to areas of your operation to personnel on an as-needed-basis will
- a) Require approval by your human resources department
  - b) Require expensive key-card badges for access
  - c) Eliminate managers need for routine surveillance
  - d) Inhibit your open-door policy
  - e) Help limit opportunity to tamper with food supplies
- 20) Which food is least likely to be deliberately contaminated while in storage at your facility?
- a) Prepared bakery products
  - b) Tuna salad prepared in-house
  - c) Hermetically sealed, canned green beans
  - d) Lettuce greens
  - e) Meatloaf prepared in-house
- 21) Food offered in self-service salad bars is especially risky because
- a) It could have been contaminated during transit to your facility
  - b) It could have been contaminated by an employee while in storage
  - c) It could have been contaminated by a customer during display
  - d) It is served raw without a cooking step to lower contaminant amounts
  - e) All of the above
- 22) Basic food safety practices will not lower the risk of intentional foodborne illness.
- a) False
  - b) True
- 23) A pre-written crisis management plan will help to
- a) Respond rapidly to an emergency event
  - b) Provide step-by-step instructions for response actions

- c) Eliminate the need for a HACCP plan
  - d) Both a and b
  - e) None of the above
- 24) If botulism toxin was found to be a contaminant in a nationally distributed product what type of recall would result?
- a) Class I
  - b) Class II
  - c) Class III
  - d) Category A
  - e) Category B
- 25) Employee training in biosecurity should include
- a) Case studies to heighten their awareness to the potential for food adulteration
  - b) Role-playing to allow employees to practice their response to an unusual circumstance
  - c) Skill building in observing behaviors of co-workers and patrons that may require investigation or action
  - d) Emergency procedures to protect themselves, co-workers and patrons
  - e) All of the above

## Appendix A



**U.S. Food and Drug Administration**



Department of  
Health and  
Human Services

### **FEDERAL ANTI-TAMPERING ACT <sup>23</sup>**

#### **U.S.C. TITLE 18 - CRIMES AND CRIMINAL PROCEDURE**

#### **PART I - CRIMES**

#### **CHAPTER 65 - MALICIOUS MISCHIEF**

#### **§ 1365. Tampering with consumer products**

- (a) Whoever, with reckless disregard for the risk that another person will be placed in danger of death or bodily injury and under circumstances manifesting extreme indifference to such risk, tampers with any consumer product that affects interstate or foreign commerce, or the labeling of, or container for, any such product, or attempts to do so, shall -
  - (1) in the case of an attempt, be fined under this title or imprisoned not more than ten years, or both;
  - (2) if death of an individual results, be fined under this title or imprisoned for any term of years or for life, or both;
  - (3) if serious bodily injury to any individual results, be fined under this title or imprisoned not more than twenty years, or both; and
  - (4) in any other case, be fined under this title or imprisoned not more than ten years, or both.
  
- (b) Whoever, with intent to cause serious injury to the business of any person, taints any consumer product or renders materially false or misleading the labeling of, or container

for, a consumer product, if such consumer product affects interstate or foreign commerce, shall be fined under this title or imprisoned not more than three years, or both.

- (c)
  - (1) Whoever knowingly communicates false information that a consumer product has been tainted, if such product or the results of such communication affect interstate or foreign commerce, and if such tainting, had it occurred, would create a risk of death or bodily injury to another person, shall be fined under this title or imprisoned not more than five years, or both.
  - (2) As used in paragraph (1) of this subsection, the term "communicates false information" means communicates information that is false and that the communicator knows is false, under circumstances in which the information may reasonably be expected to be believed.
- (d) Whoever knowingly threatens, under circumstances in which the threat may reasonably be expected to be believed, that conduct that, if it occurred, would violate subsection (a) of this section will occur, shall be fined under this title or imprisoned not more than five years, or both.
- (e) Whoever is a party to a conspiracy of two or more persons to commit an offense under subsection (a) of this section, if any of the parties intentionally engages in any conduct in furtherance of such offense, shall be fined under this title or imprisoned not more than ten years, or both.
- (f) In addition to any other agency which has authority to investigate violations of this section, the Food and Drug Administration and the Department of Agriculture, respectively, have authority to investigate violations of this section involving a consumer product that is

regulated by a provision of law such Administration or Department, as the case may be, administers.

- (g) As used in this section -
  - (1) the term "consumer product" means -
    - (A) any "food", "drug", "device", or "cosmetic", as those terms are respectively defined in section 201 of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 321); or
    - (B) any article, product, or commodity which is customarily produced or distributed for consumption by individuals, or use by individuals for purposes of personal care or in the performance of services ordinarily rendered within the household, and which is designed to be consumed or expended in the course of such consumption or use;
  - (2) the term "labeling" has the meaning given such term in section 201(m) of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 321(m));
  - (3) the term "serious bodily injury" means bodily injury which involves -
    - (A) a substantial risk of death;
    - (B) extreme physical pain;
    - (C) protracted and obvious disfigurement; or
    - (D) protracted loss or impairment of the function of a bodily member, organ, or mental faculty; and
  - (4) the term "bodily injury" means -
    - (A) a cut, abrasion, bruise, burn, or disfigurement;
    - (B) physical pain;
    - (C) illness;



- (D) impairment of the function of a bodily member, organ, or mental faculty; or
- (E) any other injury to the body, no matter how temporary.

## Appendix B

### Foundation/Prerequisite Checklist

If you want to build a sturdy home, you start with a strong, well thought out foundation. The same is true of a food safety management system. In order for your system/program to be effective, you and your team should first develop and implement a strong foundation of procedures. You should also address the basic operational and sanitation conditions in your operation. Collectively, these are referred to as the foundation or pre-requisite programs.

Use the following numbering system:

- 1= have not begun this
- 2 = have been working on this area, but needs refinement
- 3 = this task is complete and in use
- N/A= not applicable

<b>Prerequisites Checklist for Implementing HACCP</b>
<p><b>1. Vendor Certification Program (VCP)*</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Formal program that establishes requirements for food and enteral supplies. The system is to ensure compliance with the program on a continual basis.</li> <li><input type="checkbox"/> Written quality and safety specifications for food (to be verified at receiving).</li> <li><input type="checkbox"/> Written enteral feeding specifications.</li> <li><input type="checkbox"/> Business review (e.g., notify vendors of distribution expectations).</li> </ul> <p>* Since <i>CANNED</i> enteral formulas are sterile from the manufacturer, a facility may opt to bypass the VCP; however, manufacturers are good resources in HACCP plan development.</p>
<p><b>2. Training</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Training plan on all food safety tasks and behaviors for employees.</li> <li><input type="checkbox"/> HACCP training for all supervisors.</li> <li><input type="checkbox"/> Facility-wide training plan, with a focus on food safety for pharmacists, nurses, dietitians, and any other personnel involved with enteral feedings.</li> <li><input type="checkbox"/> Training competency assessment, documentation and employee recognition.</li> </ul>
<p><b>3. Standard Operating Procedures (SOPs)*</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Review receiving procedures.</li> <li><input type="checkbox"/> Written procedures related to protect food through out the flow of the operation.*</li> <li><input type="checkbox"/> Written procedures related to preparation, handling, and administration of enteral formulas.</li> <li><input type="checkbox"/> Establish quality improvement procedures.</li> <li><input type="checkbox"/> Review hospital policies and procedures related to feeding hang times, administration sets, changing, and storage of open enteral products.</li> </ul>
<p><b>4. Sanitation Standard Operating Procedures (SSOPs)*</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Written procedures for cleaning and sanitizing equipment &amp; other food contact surfaces to protect products from biological, chemical, and physical contamination</li> <li><input type="checkbox"/> Written procedures for cleaning and sanitizing feeding preparation equipment.</li> <li><input type="checkbox"/> Preoperational checklist and master-cleaning schedules.</li> </ul>
<p><b>5. Crisis Management Plan</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Plan to address a suspected or confirmed foodborne illness outbreak.</li> <li><input type="checkbox"/> Contact information of local health official; Internal communication plan and training</li> <li><input type="checkbox"/> Notification of crisis management plan to pharmacists, nurses, and dietitians.</li> <li><input type="checkbox"/> Recall practice when product is recalled from a national manufacturer.</li> </ul>
<p><b>6. Allergen Review and Program Development</b></p>
<p><b>7. HACCP Team Organization</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Identify team members and schedule regular meetings.</li> <li><input type="checkbox"/> Add food safety to job descriptions and mission statement.</li> <li><input type="checkbox"/> Prepare a 12-month strategic plan for HACCP implementation</li> <li><input type="checkbox"/> Write statement that describes product and process of enteral feedings.</li> </ul>

## Appendix C

### 3-Day Emergency Menus

Day 1	Day 2	Day 3
<b>Breakfast</b>	<b>Breakfast</b>	<b>Breakfast</b>
6 oz canned orange juice	6 oz canned, fortified cranberry juice	6 oz canned, fortified apple juice
8 oz milk (reconstituted or UHT)	8 oz milk (reconstituted or UHT)	8 oz milk (reconstituted or UHT)
1 cup dry cereal	1 cup dry cereal	1 cup dry cereal
1 slide bread	1 slide bread	1 slide bread
1 packet sugar or sugar sub	1 packet sugar or sugar sub	1 packet sugar or sugar sub
1 packet jelly or diet jelly	1 packet jelly or diet jelly	1 packet jelly or diet jelly
1 tsp. margarine	1 tsp. margarine	1 tsp. margarine
8 oz water	8 oz water	8 oz water
<b>Lunch</b>	<b>Lunch</b>	<b>Lunch</b>
½ cup Tuna	½ cup canned chicken	4 tbsp peanut butter
12 saltine crackers	2 slides bread	2 slices bread
1 packet mayonnaise	1 packet mayonnaise	1 packet jelly or diet jelly
½ cup 3-bean salad	½ cup tomato soup or juice	½ cup vegetable soup or juice
½ cup canned applesauce	½ cup canned pears	½ cup canned pineapple
8 oz reconstituted drink mix, juice or tea	8 oz reconstituted drink mix, juice or tea	8 oz reconstituted drink mix, juice or tea
8 oz water	8 oz water	8 oz water
<b>Supper</b>	<b>Supper</b>	<b>Supper</b>
1 cup canned ravioli	3 oz canned, sliced ham	1 cup canned beef stew
½ cup canned green peas	½ cup canned green beans	½ cup canned carrots
	½ cup canned corn	
½ cup canned fruit cocktail	½ cup canned apple slices	½ cup canned peaches
1 slice bread or roll	1 slice bread or roll	1 slice bread or roll
1 tsp margarine	1 tsp margarine	1 tsp margarine
8 oz reconstituted drink mix, juice or tea	8 oz reconstituted drink mix, juice or tea	8 oz reconstituted drink mix, juice or tea
8 oz water	8 oz water	8 oz water
<b>pm &amp; hs snacks</b>	<b>pm &amp; hs snacks</b>	<b>pm &amp; hs snacks</b>
3 graham crackers	5 vanilla wafers	6 saltines
2 tbsp peanut butter	2 tbsp peanut butter	2 tbsp peanut butter
pm: ½ cup canned, fortified juice	pm: ½ cup canned, fortified juice	pm: ½ cup canned, fortified juice
hs: 8 oz milk (reconstituted or UHT)	hs: 8 oz milk (reconstituted or UHT)	hs: 8 oz milk (reconstituted or UHT)

The menus above may be appropriate for liberalized diets including regular, mechanical soft, carbohydrate controlled and cholesterol controlled. Due to the sodium content of canned meats and vegetables the above menu should be used cautiously with sodium controlled diets. Comparable pureed foods (like baby food) should be available for infant and pureed diets. The number of days and nutrient composition of menus that are required vary by local, state or federal guidelines.

*Nutrient analysis via Food Processor averaged over 3 days estimates the above menu to provide:  
2050 calories, 74 grams protein, 273 grams carbohydrate and 34 grams fat.*

**Appendix D**  
**Competency Assessment Quiz Answer Key**

- 1) (e) All of the above
- 2) (b) Issuing master keys to all department employees
- 3) (a) False
- 4) (d) Both b and c
- 5) (d) All of the above
- 6) (a) False
- 7) (c) Increase confidence in government organizations with food protection authority
- 8) (e) All of the above
- 9) (b) Occupational Safety and Health Administration (OSHA)
- 10) (a) The farm
- 11) (c) Child nutrition programs
- 12) (b) Perform a hazard analysis
- 13) (c) Risk and impact
- 14) (b) True
- 15) (d) Toxic chemicals stored in an unlocked, remote building
- 16) (b) A new health inspector who refuses to show identification
- 17) (d) Reject the open box
- 18) (b) True
- 19) (e) Help limit opportunity to tamper with food supplies
- 20) (c) Hermetically sealed, canned green beans
- 21) (e) All of the above
- 22) (a) False
- 23) (d) Both a and b
- 24) (a) Class I

25) (e) All of the above.

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