FOOD SAFETY AND SANITATION

Food Defense

Learning Objectives

- Follow food defense regulatory guidelines imposed by federal, state, and local governments
- Develop a recall program that includes recalls due to intentionally introduced contaminants
- Submit prior notice for any shipments of food imported into the United States
- Put together a well-rounded food defense team
- Complete a vulnerability assessment to identify strengths and weaknesses of the food defense program
- Use results from the vulnerability assessment to improve physical security measures and procedural security measures
- Implement a food defense plan to help manage the program and protect critical assets
- Test the food defense program periodically to evaluate its effectiveness

Table of Contents

What is Food Defense?

Food safety programs and food defense programs are in place to protect the food supply. However, they are designed to prevent different types of contamination.

- Food safety programs reduce the risk of unintentional (accidental) contamination
- Food defense programs reduce the risk of intentional contamination by someone who means to cause harm

There have been several documented instances of intentional attacks against food products in many countries. Intentional contamination could be caused by anyone wanting to harm the company or make a statement. It is important to also understand who may attempt to intentionally contaminate a food product. Some of the most common threats to the food supply are:

- Someone with a grudge against the company (e.g., an animal rights activist group could be a possible threat to a meat packing plant)
- An unhappy employee seeking revenge
- A dishonest competitor trying to steal private information or make the company look bad
- Economic adulteration or fraud attempts

In March 2013, a Utah couple claimed they swallowed razor blades hidden inside store-bought doughnuts, but upon investigation it was discovered that the couple planted the blades in an attempt to win a legal settlement. The grocery store initially pulled that brand of doughnut, which was manufactured out-of-state and shipped in tamper-proof packaging, off its shelves.

The list of aggressors should be evaluated by your company to determine if they are credible threats that would have the ability to carry out acts of contamination or violence.

The agents used to intentionally contaminate a food product are often the same as those which may be accidental contaminants. The main difference is that a person has intentionally introduced one or more of these within the food supply chain.

While prevention of food contamination is the core mission of food defense, a company should also focus on protection of assets, people, products, consumers, and the brand. Each of these targets should be considered during future steps of developing and implementing a food defense program.

Food Defense Regulations

In order to minimize the risk of intentional contamination or adulteration, food defense is being evaluated in many supply chain assessments by customers, audits, and regulatory agencies.

After the terrorist attacks on September 11, 2001, the United States government took action to protect the food supply from intentional contamination in the event that food was targeted in a terrorist attack. In May 2002, the United Sates Congress passed the Public Health Security and Bioterrorism Preparedness and Response Act by a nearly unanimous vote. The act was signed by President George W. Bush on June 12, 2002, and is commonly known as the Bioterrorism Act. The provisions of the Bioterrorism Act either added to or amended the Federal Food, Drug, and Cosmetic (FD&C) Act.

After the Bioterrorism Act, the Food Safety Modernization Act (FMSA) was passed by Congress and signed into law by President Barack Obama on January 4, 2011. The provisions of FSMA also added to or amended the Federal Food, Drug, and Cosmetic Act. The Act requires that the owner, operator, or agent in charge of the facility identify and evaluate hazards that may be intentionally introduced, including acts of terrorism.

Throughout the Bioterrorism Act, the phrase "presents a threat of serious adverse health consequences or death to humans or animals (SAHCODHA)" and "credible evidence" is used several times. FSMA lowered this threshold by using the phrase "reasonable belief" in order for the FDA to enforce some sections.

At the time of this writing, some sections of FSMA have yet to be finalized and some of the rules for various sections have not yet been released. The intentional adulteration proposed rule was released in December 2013 and published in the Federal Register on December 24, 2013. Compliance dates are expected to be between one to three years once a final rule is published.

Registration of Food Facilities

Registration of FDA-regulated food products was started under Section 305 of the Bioterrorism Act and required that all "domestic and foreign facilities that manufacture, process, pack, or hold food, as defined in the regulation, for human or animal consumption in the US must register with the FDA". The intent of this section was to enable the FDA to quickly identify and contact a facility in the event of an intentional contamination or food safety threat.

FSMA has amended the registration requirement, in relevant parts, to require that facilities engaged in manufacturing, processing, packing, or holding food for human consumption in the United States submit additional registration information to the FDA, including an assurance that FDA will be permitted to inspect the facility at the times and in the manner permitted by the FD&C Act.

It also requires food facilities required to register with the FDA to renew registrations every other year and provides FDA with the

authority to suspend the registration of a food facility in certain circumstances. Specifically, if the FDA determines that food manufactured, processed, packed, received, or held by a registered food facility has a reasonable probability of causing serious adverse health consequences or death to humans or animals, FDA may suspend the registration of a facility that:

1. Created, caused, or was otherwise responsible for such reasonable probability; or
2. Knew of, or had reason to know of, such reasonable probability; and
3. Packed, received, or held such food

Foods included in the regulation:

1. Dietary supplements and dietary ingredients
2. Infant formula
3. Beverages (including alcoholic beverages and bottled water)
4. Fruits and vegetables
5. Fish and seafood
6. Dairy products and shell eggs
7. Raw agricultural commodities for use as food or components of food
8. Canned and frozen foods
9. Bakery goods, snack food, and candy (including chewing gum)
10. Live food animals
11. Food for animals (e.g., pet food, pet treats and chews, animal feed)

A facility that manufactures/processes, packs, or holds only a food-contact substance (such as packaging materials) or pesticide is NOT required to register with the FDA.

A food facility is required to submit an initial registration to FDA only once. FSMA requires facilities to renew their registration with FDA every even-numbered year during the period beginning October 1 and ending December 31.

The owner, operator, or agent in charge of a facility, or an individual authorized by one of them, may register the facility. Foreign facilities must designate a US agent who lives in or maintains a place of business in the US and is physically present in the US for the purposes of registration. The US agent may be authorized to register the facility.

FDA requires the following information for facility registration:

- Facility name, address, phone number, and emergency contact phone number
- Parent company name, address, and phone number (if applicable)
- Name, address, and phone number of the owner, operator, or agent in charge
- Email address for the contact person at the facility or, in case of a foreign facility, the US agent for the facility
- All trade names the facility uses
- Applicable food product categories, as listed on the registration form
- Name, address, phone number, and emergency contact phone number of a foreign facility's US agent
- Assurance that FDA will be permitted to inspect the facility at the times and in the manner permitted by the FD&C Act
- Certification that the information submitted is true and accurate and that the person submitting it is authorized to do so

After registering, FDA will confirm the registration and assign a registration number. It is recommended the assigned registration number be kept confidential and only shared with trusted persons or partners.

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If any of the required registration information changes, the owner, operator, or agent in charge, or an individual authorized by one of them, must notify FDA within 60 days. If a facility goes out of business or comes under new ownership, registration must be cancelled within 60 days and the new owner must register the facility before beginning operations.

Maintenance and Inspection of Records for Foods

There are two provisions in the FD&C Act related to maintenance of records. First, the FDA has been granted the authority to inspect certain records held within the facility. This authority was effective immediately after President Bush signed the Bioterrorism Act

into law. The second provision authorizes the FDA to require maintenance or upkeep of certain records.

Records that "identify the immediate previous sources and immediate subsequent recipients of food, including packaging" must be maintained. Simply stated, you must maintain records one step forward and one step back for traceability purposes. They must be created at the time of activity and retained between six months to two years, depending on the type of food product. This record retention applies to both human and animal foods, including pet foods.

The other part of this section deals with inspection of records. When the FDA has a "reasonable belief that an article of food is adulterated and presents a threat of serious adverse health consequences or death to humans or animals (SAHCODHA)" they have the right to inspect and copy all records relating to the suspect food that are needed to help determine the threat. Under the guidance, once FDA makes the necessary determination following the procedures specified in its guidance, an investigator or other FDA personnel – upon presentation of credentials – will submit a written notice (FDA 482 – Notice of Inspection) to the owner, operator, or agent in charge. The FDA investigator or FDA personnel will inform that person of the records requested and FDA's legal authority to obtain these records. FDA may request additional records related to the implicated food article at a later time under the same authority.

Paper or electronic records that relate to manufacturing, processing, distributing, receiving, holding, or importing food, excluding farms and restaurants, can be inspected. Any records and other information accessible to the FDA under section 414 or 704(a) of the act must be made readily available for inspection and photocopying or other means of reproduction as soon as possible, not to exceed 24 hours from the time of receipt of the official request. The act excludes food recipes, financial data, pricing data, personnel data, research data, and sales data (other than shipment data regarding sales).

The FDA inspector must present credentials and a written notice before being allowed to inspect records. All inspections must be at reasonable times (during normal business hours), within reasonable limits (only inspect records that help determine whether food is a threat), and in a reasonable manner.

Each facility should evaluate the record keeping system used to ensure that necessary information will be maintained for regulatory review when the above-described conditions exist. The maintenance and inspection of records section should be included in every facility's procedures for handling regulatory inspections so that the person accompanying the inspector is familiar with the requirements.

A critical record keeping issue is the traceability of food materials, processing aids, and direct-contact packaging substances used to manufacture food. All packaging materials handled by the food manufacturer should be included in the facility's traceability program. Also, any additives or other processing aids should be included in the traceability system. A recall program should be tested at least every six months to determine the facility's ability to trace various materials used to manufacture the food product. A well-designed traceability system is helpful in the event that an FDA inspection would require review of tracking documents.

Prior Notification

The FDA must be notified in advance of any shipments of food for humans and other animals (excluding packaging materials and pesticides) that are imported into the United States. However, any foods under exclusive jurisdiction of the USDA are excluded. Prior notice of food arrival allows the FDA time to inspect food at port of entry and to stop contaminated product from entering the US.

According to the FDA, food imports requiring prior notice (unless exclusions apply) are:

- Food imported for use, storage, or distribution in the US (including gifts, trade, quality assurance/quality control, and market research samples)
- Food transshipped through the US to another country
- Food imported for future export, or food for use in a Foreign Trade Zone, unless included on the list of exclusions

Prior notice must be submitted electronically through the ACS of the Customs and Border Protection Service (CBP) or through the FDA Prior Notice System Interface, which is online. Any individual with knowledge of the required information may submit the prior notice. This includes, but is not limited to: brokers, importers, and US agents.

Prior notice must identify:

- Article of food
- Importer, owner, and consignee
- Manufacturer, shipper, and carrier
- Country of origin and country from which it is shipped
- Anticipated port of entry and arrival date and time
- Grower (if known)
- Customs information

A separate prior notice must be submitted for each article of food. In other words, multiple prior notices must be submitted for each type of food on the same vessel entering the US. Amendments can be made to prior notice on a limited basis.

The following guidelines have been provided for time of notification prior to arrival:

- 2 hours before arrival by land via road
- 4 hours before arrival by air or by land via rail
- 8 hours before arrival by water
- Before food is sent via international mail

Food that is imported or offered for import with inadequate prior notice is subject to refusal and holding at the port or in secure storage. If this is a perishable product, it may mean holding the product beyond its shelf life and a significant financial loss for the importing and/or exporting company.

FSMA added the requirement to identify any country to which the food has been refused entry before being shipped to the US.

Developing a Food Defense Program

Food defense programs are designed to reduce the risk of an attack and to comply with government requirements related to security. An effective program will identify the sources of threats and vulnerabilities that exist at a facility, take measures to reduce the likelihood or severity of an attack, and include provisions to

respond to an incident. While all threats cannot be eliminated, measures certainly can be taken to reduce their likelihood and severity.

Food defense programs are complex and comprehensive and can be better understood by breaking down the programs into types and functions. There are two types of basic food defense implementation.

- Personnel security procedures
- Physical security measures

Personnel Security Procedures

Some of the personnel security procedures relevant to food defense may already be developed and included in the employee handbook or company rules. The food defense team should determine what food defense procedures and policies are necessary for their organization. It is important that human resources be actively involved during this food defense planning activity.

Personnel security procedures should include:

- Appropriate pre-employment screening or background checks
- Employee drug testing
- Employee response training for various security events
- Evacuation procedures for man-made events or natural disasters
- Handling of investigations and corrective action
- Management of guard services
- Workplace violence prevention
- Zero tolerance policy for violence
- No weapons policy
- Locker inspections
- Entry control for employees and visitors
- Key card/password inactivation upon termination
- Visible employee identification
- Reporting of verbal or written threats
- Reporting of suspicious behavior

Not all facilities will have all of these policies. It is up to the decision makers to determine which

of them are necessary and effective. Then, formal, written programs must be implemented and enforced to create a plant culture that accepts these rules. Testing these programs periodically will help evaluate their effectiveness.

Physical Security Measures

Physical security measures are a critical component to building an effective food defense program. The vulnerability assessment will help determine which physical security measures are necessary. The areas that should be addressed in physical security planning are:

- Fencing and gates
- Monitoring and securing the area outside the facility, including: doors, windows, roofs, vents, trailers, railcars, bulk product storage areas, bulk receiving lines, air handling systems, and the water supply
- Employee and visitor parking, as well as incoming and outgoing delivery vehicles
- Signage that relates to the food defense program
- Lighting inside and outside the building
- Surveillance (security guards and closed circuit cameras) to monitor areas within and outside the facility
- Visitor and contractor identification
- Access control systems

It is important that physical security measures be designed using integrated, layered, and graduated concepts.

Integrated physical security measures work together to achieve the desired result. For example, setting up a security camera to begin recording when an access control device leading into a critical area is activated to observe who is entering that area.

A **layered** system establishes various security measures an individual would have to pass through in order to gain access to a location. For example, a company might use a perimeter fence and gate, a security guard at the main entrance, and access control systems at facility entrances.

In a **graduated** security system, the level of physical security systems are commensurate with the threat level at the time. The higher the threat level, the more stringent the security measures would be.

There are many options and solutions to control and monitor access to specific areas of the facility and property.

Food Defense Team

The most successful food defense programs are managed by a team of individuals. Working with a multi-disciplinary team brings varied perspectives and endorsements for the program and increases the chances for success. The food defense team should be a well-rounded group of individuals which represents each of the main departments or functions of the food company. It is important for each of the members to understand their specific roles and responsibilities in supporting the food defense program.

The food defense team will vary depending on plant-size, location, and management structure.

Each team should have a food defense coordinator (FDC) who has overall responsibility for the program and specific experience or training to understand security and defense strategies. It may be necessary to have multiple food defense coordinators to ensure there is a point person available at all times.

The remaining team members should come from all departments including:

- Production
- Engineering
- Human resources
- Sanitation
- Shipping and receiving
- Security
- Upper-level management
- Quality assurance

The team is responsible for minimizing risks identified in the vulnerability assessment. They will also manage and enforce the program steps and tools.

Other duties include:

- Ensuring that an effective food defense plan is developed and followed
- Determining a level of physical security based on the facility's threat level
- Ensuring that company standards are followed
- Ensuring that responsibilities for the food defense program are carried out

At a minimum, the food defense team should cover:

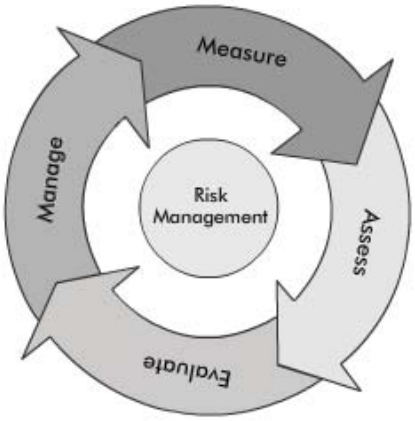
- Policies and procedures for employee background checks
- Supervision of security guard operations
- Fencing and landscape inspections
- Scheduled lighting surveys and lighting maintenance
- Policies and procedures for transport control and parking
- Policies and procedures for visitor entry and control
- Design, maintenance, and procedures for closed-circuit television (CCTV) systems
- Employee uniforms and identification
- Employee plant entry and access
- Employee security training and awareness
- Determining the effectiveness of exterior doors for security
- Management of electronic access control systems
- Design, maintenance, and procedures for alarm systems
- Key management and control
- Physical and procedural security for sensitive areas
- Security issues associated with subcontractors and delivery persons
- Liaison with local law enforcement

All of these issues are obviously impossible for one person to handle alone. It is necessary to delegate or assign tasks to team members who are appropriately trained to complete them.

Vulnerability Assessment

Vulnerability assessments identify the strengths and weaknesses of the food defense program by examining the property, facility, and production processes and pinpointing at risk areas. From

there, the food defense team will determine the probability of a loss from exposure to a hazard and determine the severity of how great the loss could be. There are many methods used to conduct a vulnerability assessment. The core purpose is to evaluate the food facility and determine if there are reasonable risks that should be mitigated or reduced to acceptable levels to prevent possible intentional contamination or harm against the company's assets, people, products, consumers, and brand.



Before the assessment begins, the food defense team should be aware of any threats against the organization. Evaluating historical activity at the facility, similar products, and local, national, and global threats against the company or similar products is critical. The assessment will then evaluate the physical and procedural security elements in place at the facility and use the findings to evaluate the severity and probability of the vulnerabilities identified. Once the assessment is completed, the team should develop and implement specific counter-measures to mitigate or reduce the vulnerabilities identified.

Issues to consider in the vulnerability assessment include:

- Unauthorized entrance to the premises and facility
- Unauthorized access to processing areas and computer systems
- Unauthorized access to harmful materials (allergens, chemicals, lab cultures)
- Visitor policy (identification, escorts, restricted access for visitors, contractors and truck drivers)
- Vehicle control
- Truck seals
- Employee background checks
- Employee termination policies
- Use of cameras
- Locker inspections
- Computer and information technology security

A vulnerability assessment should be conducted when the program is first developed, anytime there is a significant change at the facility, if there has been a security incident, and on a routine

A vulnerability assessment should be conducted when the program is first developed, anytime there is a significant change at the facility, if there has been a security incident, and on a routine basis to continually measure the effectiveness of the program. All assessments must be documented.

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Part of the assessment must include an evaluation of how prepared the facility is to respond to an incident. Contact information for local and federal authorities, such as police, fire, FDA, and FBI, should be on file and readily available to key personnel on all shifts. Many food defense teams establish a relationship with their local first responder agencies prior to an incident to familiarize the agencies with the plant layout, contact personnel, and issues that may be unique to the site.

Just as a facility would conduct routine inspections to determine if there is compliance to GMPs, routine, documented inspections must also be conducted to evaluate compliance to the food defense program. Corrective actions must be taken and documented for all findings. The team is responsible for evaluating the effectiveness of the corrective actions.

Food Defense Plan

A food defense plan (FDP) is the formal document that contains the food defense policies and procedures. The FDP should be maintained in a secured area and only authorized persons allowed to review it.

It may be beneficial to maintain a shortened version of the FDP which only contains a summary of the policies and procedures, but excludes any confidential and sensitive information, such as persons allowed access into controlled areas of the facility. The shortened version may be used during inspections to show proof of an existing food defense program and for training new employees about their food defense responsibilities.

Food Defense Plan Components

There are several components that should be included in the food defense plan to help manage the program and protect critical assets. Some of these may be existing programs at the facility and should simply be reviewed to ensure they are being managed as intended.

Facility Overview and Schematics

One of the first documents the food defense team should review is the facility overview and schematics section to give them a view

of potential critical assets, emergency evacuation routes, shelter-in-place locations, etc. These schematics should be shared with emergency responders so they will be prepared in the event that a response to a fire, occupational safety accident, environmental release, bomb threat, active shooter incident, etc. is necessary. These schematics may also be used by a security system integrator to determine locations of alarms, cameras, access control devices, etc.

Emergency Contacts

Emergency contacts that may be necessary in the event of food contamination or another security-related event should be identified in the plan. Agencies that should be listed for food defense events may include local authorities, nearby fire department, state police, department of homeland security, state food and agriculture agencies, FBI threat assessment center, FDA and USDA offices of criminal investigation, etc. It is also beneficial to list a private investigator that has a background or experience in the food industry. This list should be reviewed on a regular basis and kept current.

Transportation Security

Most food ingredients and products are transported by truck, rail, or container (ship). The potential for intentional product contamination during transportation is a legitimate issue. Establishing standards for transportation security is essential to limit the ability to steal, damage, or contaminate food materials. Each company must set security standards and involve transportation service providers, suppliers, and customers in developing expectations.

There are many methods of food product transportation. Each must be evaluated and best practices established to secure the food materials. At a minimum, driver identification should be required in order to verify the person designated to haul the materials is in fact the person picking up or delivering the load.

Securing the vehicle is important to reduce the concern for intentional contamination, theft, or damage of materials. Many companies require that trucks, rail cars, and containers be kept sealed. To be effective, seal numbers must be recorded on shipping documentation and the actual seal numbers must be compared against those on the documentation.

Some common pitfalls in relying on seals:

- The presence of seals is checked, but the actual seal numbers and quantity of seals are not
- Seals are not being required for trucks that are making multiple stops
- Empty trailers, such as bulk hopper cars, are not being sealed after a delivery when no wash is scheduled prior to the next delivery

Another way to reduce the transportation security risk is to develop a scheduled delivery system to account for specific deliveries and shipments.

Just as ingredient suppliers' food defense programs would be evaluated as part of a vendor approval program, the transportation company's food defense program should also be evaluated. Specific requirements may be included in the contract. As food defense regulations are further established, a formal security transportation system may be necessary to comply with established standards and regulations.

Information Technology Security

While information technology (IT) security may be outside the area of expertise of the food defense coordinator, it is important for the IT manager to be actively involved with the food defense team.

The IT manager should provide direction for the company's IT policies and mitigate the risk of attack against the databases, intranet systems, equipment and processes, etc. There are countless ways to harm a company from within or outside of the organization if the aggressor is able to access IT systems.

IT policies should also restrict the ability for visitors and contractors to access networks and computer systems. Company-issued computers and other electronic devices should be protected to ensure limited damage could be done to the organization if the devices are lost or stolen.

Security Procedures and Policies

In addition to the personnel security procedures and physical security measures already discussed in this chapter, the food defense plan should include crisis management procedures for natural or man-made disasters that may have an adverse impact on the organization (e.g., handling suspicious mail or packages, bomb threats, active shooters, natural disasters, etc.). While some of these may be covered in other sections of the plan, it is important to review them to ensure appropriate countermeasures and response plans are in place.

Templates and guides for many general security procedures and policies can be found on government websites. These templates and guides offer best practices for a private organization to respond to threats. Once procedures are established and appropriate individuals are trained, it is important that the food defense team conduct regular drills and tests to determine how the company would respond in an event. It may also be beneficial to invite local authorities to the facility to be part of these drills to offer the opportunity to become familiar with your facility and your established policies and procedures. They may also be able to offer advice on how to make improvements and better respond to various events.

Some food companies have employees with a background in investigations. If your company does not have staff members with this experience, it is beneficial to identify individuals or an organization that can assist during events. It is also important to identify various government agencies that could assist during these investigations. In the United States, the FDA and USDA have criminal investigation departments which specialize in assisting or leading in these investigations.

Food Defense Reference Card

Use the Food Defense Reference Card on the next page as you contribute to your company's food defense program. When you are ready, proceed to the food defense workshops to apply what you have learned to real-life situations.

Food Defense
Reference Card

Food Defense
- Prevention of intentional contamination
- Would be caused by an individual(s)

Registration of Facilities
- Domestic and foreign facilities for foods consumed in the US
- Renew registrations every other year
- Does not include food-contact substances or pesticides
- Must update within 60 days if any changes are made to registration information

Maintenance and Inspection of Records
- FDA can inspect certain records at any time
- Required to keep traceability records
- FDA can inspect other records under a SAHCODHA event

Prior Notice
- Advance notice of food shipments coming to US
- Submitted electronically
- Separate notice for each article of food

Food Defense Program
- Personnel security
- Physical security

Food Defense Team
- Multi-disciplinary team
- Food defense coordinator

Vulnerability Assessment
- Identify food defense hazards
- Assign a level of risk
- Develop countermeasures

Food Defense Plan
- Contains policies and procedures
- Confidential document
- Test and evaluate the plan

Use this Food Defense Reference Card as you contribute to your company's food defense program. When you are ready, proceed to the workshops to apply what you have learned to real-life situations.

Categorize the following items as a food safety (unintentional contamination) or food defense (intentional contamination or harm) event. Remember, food defense is designed to protect assets, people, products, consumers, and the brand from intentional contamination or harm.

Event	Food Safety	Food Defense
Rodent activity in a warehouse		
Employee adding pesticide to a product		
Consumer making a false claim of rodent in the product		
Insects in a bulk flour silo		
Flaking paint on a ceiling		
Individual stealing tools from the maintenance shop		
Unprotected light bulb in a production area		
Group threatening to contaminate a flour silo		
Consumer biting into piece of metal in a product		
A phoned in bomb threat		
Employee attacking another employee with a knife		
Employee not wearing a hairnet		
Visitor not wearing a hairnet		
A stolen trailer full of products		
Employee not washing hands after a lunch break		

Identify companies that would need to register with the FDA.

	Manufacturer of folding cartons in the US
	Pesticide manufacturer in the US
	Baby food manufacturer in the US
	Slaughter facility under USDA jurisdiction
	Company in the US packing candy in boxes
	Bakery in Chile shipping product to the US
	Bakery in Mexico selling product only in Mexico
	Flour mill in Canada selling flour only in Mexico
	Bottled milk facility in Alaska
	Warehouse in the US storing empty corrugated boxes
	Warehouse in the US storing canned vegetables
	Warehouse in Argentina storing fish that is to be shipped to the US

Disgruntled Employee Workshop

Food defense uses the concepts of integrated, layered, and graduated security systems. In the choices below, determine how you would **best** graduate the following security items if a terminated employee threatened to come back and cause harm to employees during his exit meeting.

A perimeter fence and gates surround the property. Gates are generally left open and unattended from 8-5.

A. Install security cameras at the gates
B. Install no trespassing signs on gates and fences
C. Encourage employees to watch more closely
D. Secure the gates and use the access control system to grant entry through the gates

Security guard services are used at the facility to conduct routine security checks of the exterior grounds and interior areas.

A. Increase the number of checks conducted each day
B. Provide a description of the individual to the security guards and have them alert the food defense team if he is seen at the property
C. Post a security guard at the main entrance and employee entrance
D. All of the above

The main entrance used by visitors is open and unsecured daily from 8-5.

A. Secure the main entrance doors and require all visitors to use the intercom to identify themselves before the door is opened
B. Alert the receptionist to watch for the ex-employee and hide if he enters the lobby
C. Install a security camera at the main entrance doors so any events could be recorded and used later for investigation
D. Assume the employee will not carry out his threat

During the vulnerability assessment, the following issues were identified as the top six vulnerabilities. Describe a simple countermeasure that could be effective in mitigating these vulnerabilities.

1.	No security perimeter established on the outside grounds.
2.	Drivers remove security seals from inbound trailers and bring them to the office.
3.	Gates on exterior ladders on ingredient silos are unsecured.
4.	The storage cabinet for sanitation chemicals is left open during production hours.
5.	Weapons are known to be stored in employee lockers.
6.	There are many contractors present in the facility and employees do not know who they are.