

Food Defense and Biosecurity: Elements and Guidelines for a Defense Plan

In recent years, biosecurity and bioterrorism awareness in the industry has become more critical. Since the attacks of September 11, 2001, terrorists have become more creative in their attack methods and targets.

Due to the complacency of businesses, especially in the food industry, many believe such attacks could occur if companies do not reevaluate their biosecurity defense. Threats to the system can be biological, physical, radiological/chemical, or nuclear. Food defense plans are essential to protect the food supply from intentional threats, which may lead to serious outcomes.

The agriculture and food industries operate in a global market, so a successful terrorist act would be felt around the world. Food and water sources are a concern because they are a means by which a very small amount of a causative agent can affect large numbers of people.

International terrorism is not the only concern; one disgruntled employee could harm or even kill consumers and result in a company's bankruptcy.

The goal of governmental agencies, such as the Food and Drug Administration (FDA), the Centers for Disease Control and Prevention (CDC), and the U.S. Department of Agriculture (USDA), is to ensure the food industry is prepared for such attacks by outlining potential risk areas. In particular, the USDA Food Safety and Inspection Service (FSIS) and FDA have developed surveys, strategies, and guidelines that outline potential vulnerabilities within a food company's infrastructure.

A food defense plan needs to be efficient and functional. Most companies have implemented a Hazard Analysis and Critical Control Points (HACCP) plan to ensure the production of safe food. But a food defense plan is one that evaluates all of a plant's security points: personnel, procedures for incoming ingredients and supplies, transportation, processing, and product tracking. Most of a plant's security measures are common sense but often overlooked.

Areas to Evaluate

Following are some areas to evaluate when making a food defense plan. Some examples of how to ensure security in each area also are provided.

Personnel (Internal and/or External)

- Background checks (employees, contractors, temporary workers)
- Security training
- Controlled access
- Identification
- Restrictions to access areas

Outside Security

- Secured grounds (perimeter fencing)
- Enough lighting for proper monitoring
- Emergency exits that are self-locking and/or set with alarms
- Working locks on outside doors, windows, gates, roof openings, storage tanks, vents, trucks, rail cars, etc.
- Guard entrance
- Employee identification for access to the grounds

Inside Security

- Emergency lighting
- Security cameras
- Restricted access areas (cleared employee accompaniment of all non-approved personnel)
- Updated facility layout to local law enforcement agencies
- Regular inventory of employee-issued keys
- Procedures for checking suspicious packages, lockers, closets, storage areas, maintenance areas
- Visitor policy (access, identification, accompaniment by a responsible employee, exit accountability)

Restricted Access Areas

- HVAC systems
- Ventilation ducts
- Water systems
- Electricity
- Disinfection systems (tanks, supplies, hoses, etc.)
- CIP systems
- Other closed systems
- Lab areas (chemicals, reagents, disposal procedures)
- Chemical storage areas (cleaning compounds, refrigerant, etc.)
- Restricted ingredients storage areas (secured/limited access)

Slaughter and Processing Areas

- Holding pens
- Flow line integrity
- Incoming ingredient and packaging integrity
- Trace back records (COOL, lot numbers, affidavits, animal ID)
- Trace forward records (recalls and procedures)

Computer System

- Firewalls
- Backup system
- Password-protected computer entry
- Activity monitoring

Storage Security

- Restricted access to product and material storage areas
- Inventory of ingredients
- Inventory of restricted ingredients (checked and monitored frequently and compared to production volume)
- Inventory of hazardous chemicals (periodic and systematic)
- Procedures for storage and disposal of chemicals

Shipping and Receiving

- Inspection of trailers
- Check trailer seals and locks (inbound and outbound)
- Monitoring and testing of incoming ingredients
- Records of inspections
- Usage of tamper-evident seals on trucks and products
- Check deliveries of all materials
- Notification of deliveries
- Proper authority notification when abnormalities exist
- Returned goods policies and procedures

Water and Ice Supply

- Restricted access to the water supply (especially wells)
- Restricted access to ice machines
- Restricted access to storage tanks
- Monitor water line integrity
- Prompt communication with local health officials if there is any suspected compromise of public water potability

Mail Handling

- Separate facility and/or room away from food areas
- Training for handlers of mail (suspicious packages)
- If handled by an outside agency, knowledge of that agency's security procedures

Security Throughout the Line

- Knowledge of suppliers' defense plans
- Reliability of suppliers
- Certificates of analysis on incoming raw materials
- Adequate tracking system of products

Emergency Preparedness

- Contacts in the event of an emergency
- Evacuation routes
- Recall plan

Elements of a Functional Food Defense Plan

- Develop a functional food defense plan based on the vulnerabilities revealed during the evaluation.
- Implement the food defense plan by using the defense measures identified.
- Test the written plan by periodically monitoring the effectiveness of the defense measures. For example:
 - Make unannounced entrances at random perimeter checkpoints.
 - Check plant employee ID badges.
 - Check locks on doors, storage areas, bulk tanks, water/ice supplies, windows, offices, one-way exit doors, etc.
 - Perform a mock recall.
 - Test lab or storeroom inventory procedures.
 - Test security cameras in strategic locations.
- Assess the food defense plan periodically, especially if new risk areas are discovered, to ensure the security of the establishment. Do this at least yearly or when changes occur in the plant, similar to HACCP plan reviews.
- Maintain the plans to ensure that defense measures are being implemented and are effective.

More Information

[USDA FSIS Food Safety](#)

[USDA FSIS Food Defense and Emergency Response](#)

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