

FOOD DEFENSE PLANNING AND IMPLEMENTATION IN A FOOD INGREDIENTS
MANUFACTURING FACILITY

by

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Abstract

The Food Safety Modernization Act (FSMA) of 2011 explicitly and implicitly charges the food industry with the responsibility of protecting food supply chains against intentional contamination. This field experience was conducted at a global food ingredients manufacturing facility located in the Midwestern United States. The field experience aimed at increasing the food defense readiness of the facility to a level more consistent with the mandates promulgated by FSMA. A food defense audit was conducted to assess the food defense vulnerabilities present at the facility. Vulnerabilities were assessed relating to (1) food defense plan management, (2) outside security, (3) inside security, and (4) personnel security relating to the facility. The food defense audit provided recommendations to mitigate any identified vulnerabilities; additionally, strategies were proposed to implement those recommendations. A brief overview is given of the recommendations that were either approved for immediate implementation or were placed under review for possible, future implementation. Finally, a working document was written that will serve as the official food defense plan of the facility. The food defense plan is a confidential document that contains information about the pertinent physical and geographical characteristics of the facility, contact information for local law enforcement, fire departments, Federal Bureau of Investigation (FBI), state and national homeland security departments, and other important contact information. The plan briefly discusses the food defense audit results, and gives an overview of the security procedures for the management of the food defense plan, outside security, inside security, and personnel security. At the request of the company, this document was created as a working document, so some sections were left incomplete and will be completed at a later date by the company as decisions about procedures and personnel are made. Due to the confidential nature of the food defense plan, this field experience report contains a summary of the plan.

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Dedication

Dedicated to my son, Steel, you provide me with the strength and inspiration to strive for my goals each and every day.

Chapter 1 - The Food Defense Audit

The purpose of the food defense audit is to assess the existing vulnerabilities to *intentional contamination* at the company's food ingredients production facility. Vulnerabilities are assessed in regard to the following areas: (1) plan management, (2) outside security, (3) inside security, and (4) personnel security. The audit provides recommendations that aim to mitigate the identified vulnerabilities. These recommendations also attempt to mitigate the *intended* and *unintended* consequences of intentional contamination. The recommendations seek to create an "unattractive target" for intentional contamination attempts and to provide the company definitive "rule-in/rule-out" procedures in the event of a security breach. The audit does not represent a comprehensive list of vulnerabilities that are present or will become present in the future. This highlights the need to repeat the audit process, review the efficacy of past recommendations, and implement new or revised recommendations on at least an annual basis.

Plan Management

Promote active management of the food defense plan. *Recommendation:* Appoint an individual to actively manage the food defense plan. This person should conduct daily security checks of outside, inside, and personnel security measures that are in place. The daily security check is included in Figure 1.1. *Recommendation:* Conduct regular training exercises for employees regarding the following: **Bomb Threat:** Distribute standardized forms in the event an employee receives a bomb threat by phone or otherwise. (The Food Defense Plan contains this form.) **Mock Evacuation:** Conduct mock evacuations, once every quarter, that simulate the events of a weather emergency, fire, bomb threat, disgruntled employee, intruder, or any other event requiring evacuation or other special actions by employees.

Promote an environment of employee participation in food defense.

Recommendation: Provide education and training regarding the role employees have in the food defense initiatives of the plant. Especially within the plant, the employees offer the most

efficient and effective line of food defense in protecting the products and intellectual property of the facility.

Supplier and customer food defense plans and vulnerability assessments.

Recommendation: Bulk suppliers and customers should provide vulnerability assessments and/or food defense plans so vulnerabilities at these facilities can be reviewed and addressed if deemed necessary. If vulnerability assessments and food defense plans have not been completed at any of these facilities, request that they be completed immediately.

Establish a relationship with the local Federal Bureau of Investigation (FBI) field office, local law enforcement, and local fire department. *Recommendation:* Forward copies of the current facility blueprints and layouts to these agencies; additionally, invite a representative from each agency to tour the facility and meet with management to facilitate these relationships.

Outside Security

Entrance gates. Entrance gates to the facility are closed from 6:00 pm – 6:00 am, but left open from 6:00 am – 6:00 pm. The gates can be opened with an employee badge.

Recommendation: In order to increase the awareness of what vehicles are inside the facility gates at any given time, consideration should be given to keeping the gates closed at all times.

*Note: At the time of this audit, the facility is currently undergoing an expansion project that includes plans to have the gates closed at all times, with non-employee entry to be remotely controlled by a member of the administrative staff.

Parking areas are not monitored for the validity of the vehicles being parked there at any given time. *Recommendation:* Require all employee vehicles to have a parking permit adhesively attached to the upper, passenger-side corner of the windshield. Require visitors *and* contractors to obtain a temporary “visitor” or “contractor” placard, respectively, from the food defense coordinator. These placards should be visible in the vehicles at all times while on the premises, and must be turned in at the completion of the visit or at the completion of contract work. (Consider taking collateral from visitors and contractors that will ensure the placards are returned.)

Signage around the perimeter of the facility denoting “No Trespassing” and “24-Hour Video Surveillance may be in use” is lacking. Signage directing visitors and contractors to their designated parking areas as well as instructions to check in with administration are also lacking. *Recommendation:* Install “No Trespassing/24-hour video surveillance may be in use” signs every 100 linear feet on the perimeter fence. Install similar signs under exterior lighting on building surfaces or doors so they are clearly visible at night. Install signage on the entrance gates directing visitors to their designated parking area and directions to check in with administration.

The bulk receiving area gates are too high off the ground. The bulk receiving area fences and gates are too low. *Recommendation:* Investigate the feasibility of increasing the height of the bulk receiving area fencing and gates an additional 4-6 feet, and extending the bottom level of the gates to within 4-6 inches of the ground. Bulk product is stored in this area, as well as introduced into the facility here, so special care should be given to limiting unwarranted access to this area of the facility. *Note: The expansion project that is planned for the facility includes modifications to the entrance gates of the facility. These recommendations, regarding gates and fencing, should be considered in the planning and execution of the expansion.

Doors, gates, and exterior lights do not have identifying numbers. *Recommendation:* Assign and apply numbers to all exterior doors, gates, and lights. This will facilitate the daily security check by allowing clear distinction of any doors, gates, or lights that are in need of repair or showing signs of tampering. Consideration should be given to numbering the doors on the inside surface of the doors as well as the outside, so if an individual is on the inside of the facility in an emergency situation they can easily identify their general location within the facility and relay that information to the outside. This will also help to orient individuals inside the facility in the event of an evacuation.

Exterior lighting is lacking. *Recommendation:* Explore the feasibility of adding exterior lighting to the facility that illuminates the perimeter fencing as well as the roof. In an effort to make the facility an unattractive target for potential wrongdoers, additional exterior lighting on the perimeter fencing and the roof will discourage intrusion into the facility.

The roof doors do not have locks installed. *Recommendation:* Install locks on all roof doors, even if they do not have “ground-floor” access. These doors should remain locked at all times, have numbers assigned to them, and be included in the daily security check.

Two of the gates leading into the boiler building and ammonia storage were unlocked and are not particularly secure even when locked. *Recommendation:* Replace the gates with a more heavy-duty option. Include these gates in the daily security check to ensure they remain locked at all times.

The water treatment building is left unlocked. *Recommendation:* Since the treatment building (skimmer) is toward the rear of the facility with very little employee foot traffic or surveillance, this room should be locked at all times. After water is treated here it is released back to the county, so effort should be given toward securing this area against possible contamination, intentional or otherwise.

The entrance door by the newly installed sidewalk on the southeast corner of the facility was not closed completely, and therefore not locked. Normally this door can only be opened with an employee badge. *Recommendation:* Involve building maintenance personnel to assess any repairs needed to doors, lights, or gates that are identified as not working properly during the daily security check. Logging the issue and the completion of repairs are important in identifying any doors or lights that are consistently in need of repair and thereby identifying potential tampering.

Inside Security

Establish an inventory system with check-in/check-out procedures for hard keys of the facility. *Recommendation:* Assign one person to log the keys in/out and notify the food defense coordinator of any discrepancies in the inventory. This allows the food defense coordinator to know, at any given time, which person(s) in the facility has or had access to hard keys.

Establish mail handling procedures that are to be followed by all employees. *Recommendation:* Ensure that all mail is delivered to a designated area outside of the plant with limited HVAC circulation if possible. Establish a policy that all mail should be opened in the

designated area. Refer to the U.S. Postal Service for guidance regarding handling of suspicious packages.

Information Technology (IT) security. *Recommendation:* Limit access to the “server” room and to critical I.T. infrastructure passwords to as few people as possible. Any potential IT security breaches that are recognized should be reported to the food defense coordinator immediately for further investigation. Establish a policy prohibiting the use of personal flash drives on company computers.

Evacuation Maps. *Recommendation:* Ensure evacuation maps are reviewed with new employees as soon as they are hired. Coordinate with the human resources department to make this a part of the information that new employees receive before beginning employment. Ensure evacuation maps are positioned in relation to emergency lighting so they are visible during a power outage or other low-visibility situation. Consider adding locators to the evacuation maps that denote their location within the plant (“You Are Here”).

Congealer. On the first floor there is a port-hole opening on the side of the congealer that can be opened to view the inside of the large bin. Someone with intent could easily contaminate the finished product in the bin without anyone’s knowledge. *Recommendation:* Place a lock and/or an alarm on the port door. Require the port to be locked or alarmed at all times, and include verification of this on the daily security check.

Personnel Security

Contractor Vendors. *Recommendation:* Verify contractor vendors are conducting background checks on their employees that will be working at the facility. (Refer to “Outside Security” section for parking restrictions/requirements).

Visitors. *Recommendation:* Establish a written policy that requires visitors to submit to a possible bag search and/or vehicle search upon their arrival at the facility. Prohibit visitors from taking cameras, cell phones, video equipment, and other personal items into the plant including but not limited to: purses, backpacks, other bags, and any food or drinks. These personal items should be collected at the time of check-in in exchange for the visitor parking

placard, kept secure, and returned when the visitor(s) return their parking placard at the end of their visit.

Labs should have access restricted to essential personnel only. *Recommendation:* Limit access to the lab(s) to essential personnel only. It is critically important to protect lab data against tampering or confiscation.

Engineering control rooms should have access restricted to essential personnel only. *Recommendation:* Similar to the labs, engineering rooms should have limited access in order to protect the products being produced, as well as intellectual property.

Uniforms. *Recommendation:* Access to uniforms and the ability to order uniforms should be restricted to as few people as possible. Ensure that the company providing uniforms is allowing only designated personnel to order and receive uniforms.

Figures and Tables

Figure 1.1 Daily Security Checklist

Security Checklist

The Food Defense Coordinator (or designee) should conduct this security check no less than 5 days per week. All food defense concerns noted during the daily check should be included in the food defense log. The food defense log should be used to monitor the progress of repairs or operational adjustments that are intended to mitigate food defense concerns.

1. Check the integrity of perimeter fencing for damage or tampering.
2. Check exterior lights for damage, tampering, and that they are working properly.
3. Check the integrity and operability of all gates.
4. Check that all doors are locking and closing properly (including doors with roof-only access).
5. Verify that hard key inventory is current.
6. Check that the information technology (IT) server room is secured.
7. Check that all vehicles in the parking lots have current/valid parking permits.
8. Test for proper functioning of emergency lighting.
9. Check security cameras for proper functioning and review footage as needed.
10. Check bulk storage tanks for secured seals.
11. Verify incoming bulk supply tank seals are being verified for their integrity upon their arrival and that any deviations are logged along with the actions taken on such shipments.
12. Check with supervisors and employees in each sub-area of the plant for any food defense concerns they have witnessed, and any operational or systematic adjustments that they have made, or are considering making, so food defense adjustments can be considered accordingly.
 - Bulk
 - Warehouse
 - Labs
 - Information Technology (IT)
 - Engineering/Control Rooms
 - Maintenance
 - Packaging
 - Product Areas

Chapter 2 - Food Defense Initiatives Approved for Implementation or Review

This chapter briefly outlines the food defense recommendations that the company approved for immediate implementation, or agreed to review for possible implementation, as of the conclusion of the field experience. Each initiative is listed under the same sub-section heading as seen in the food defense audit from Chapter 1 (plan management, outside security, inside security, personnel security).

Plan Management

Daily security check. The company is planning to add a security check to the daily operations of the facility. The daily security checklist will be used to facilitate this activity (Fig. 1.1).

Mock evacuations. Regular mock evacuations will be held once per quarter as opposed to once per year. Bomb threat evacuations and intruder/security breach emergency action procedures will be added in addition to the already existing weather/fire emergency action plans. Additionally, bomb threat report forms will be made readily available to all employees, in hard copy form, throughout the facility in the event an employee receives a threat call.

Outside Security

Entrance gates. Once the renovations to the facility are complete, the gates guarding the entrances to the facility will be locked 24 hours/day.

Perimeter signage. The company is placing a high priority on installing substantial, highly visible “24-hour video surveillance may be in use/No Trespassing” signage around the entire perimeter fence as suggested.

Assignment of numbers to doors and lights. High priority is being given to numbering all doors and lights in order to facilitate the daily security check, as well as provide visual cues to general location throughout the facility for employees, contractors, visitors, or emergency responders.

Parking permits. Requiring respective employee, visitor, and contractor parking permits were placed as a priority for implementation.

Roof door locks. The idea of placing locks on the roof doors is being placed under review. Concerning to the company is the opportunity for an employee to get locked out of the building after having exited onto the roof to perform job functions.

Water treatment building lock. The company will place a lock on the water treatment building.

Inside Security

Congealer. Locking the port-hole door on the congealer is being reviewed.

Personnel Security

Uniform policy. The uniform policy was placed under review. Limiting access to ordering and receiving uniforms to critical personnel was reviewed with the company that provides uniforms.

Visitors. The company will review promulgating that visitors will check-in cell phones, bags, computers, and submit to a possible vehicle search in exchange for visitor parking permits.

Access to labs and engineer control rooms. The company will review how to increase monitoring and control of personnel that have access to labs and control rooms.

Personal flash drive usage. The company will review the possibility of disallowing personal flash drive use on company computers or personal computers that have company file access.

Chapter 3 - The Food Defense Plan

At the request of the company, a template provided to the company by an outside consulting firm was used to format and structure the food defense plan. At the request of the company, some sections, or parts of sections, were left incomplete so as to allow the company the opportunity to review those sections of the plan requiring decisions to be made regarding policies and/or personnel. As these decisions are made, the company will complete the appropriate sections of the food defense plan accordingly. Due to the highly confidential nature of the plan, only an outline of the plan will be included here.

Food Defense/Facility Plan Management

- Facility Overview

- Crisis/Defense Team Members

- Governmental Emergency Contact Information

- Supplier Emergency Contact Information

- Customer Emergency Contact Information

Area Emergency Assistance and Places of Refuge

- Hospitals

- Fire Departments

- Police Departments

- Schools or Places of Worship

- Large Open Venues

Facility Schematics

Vulnerability Assessment Report (Summary Version)

- Risk Assessment

Product Recall Procedures

- Recall Team

- Recall Exercise Form

Trace and Recall Checklist
Model Recall Press Release
Example Recall Press Release

Personnel Security Procedures

Visitor Sign-In Log
Bomb Threat Report Form

Information Technology (I.T.) Security Procedures

Outside/External Facility Security

Inside/Internal Facility Security

Processing Areas Security

Product/Chemical Storage Areas Security

Chemical Control Log

Shipping/Receiving Areas Security

Incoming Tanker (loaded) Inspection Report Form
Incoming Tanker (empty) Inspection Report Form
Food Grade Tanker Wash Facility Audit Form
Incoming Materials Examination Record

Evacuation Plan/Shelter-in-Place Plan

Evacuation Plan Form
Shelter-in-Place Plan Form

Medical Emergency Plan

Water/Ice Security

Mail Handling Security

Guard Services Security and Training

Business Continuity and Recovery Plans

Additional Programs and Resources

Change Log

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