



Food Defense

A matter of common sense ?

Atanasios MOSCHOS – 20/06/2019

Introduction

Key Points

Tools

Evaluation

Cultural Aspects

Mitigation



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1. INTRODUCTION

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“Food defense is the protection of food products from intentional contamination or adulteration by biological, chemical, physical, or radiological agents introduced for the purpose of causing harm.” (Wikipedia
https://en.wikipedia.org/wiki/Food_defense#cite_note-40)

FDA > “Food Defense is the effort to protect food from acts of intentional adulteration.” (www.fda.gov)

FSSC 22000 > “The process to ensure the security of food and drink from all forms of intentional malicious attack including ideologically motivated attack leading to contamination.” (GFSI 2017)

BRC, IFS ...

2. KEY POINTS

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PROTECT

Intentional Malicious Attack

Human origin

You have to think like

a **bad** guy

Do not be paranoid

but do not underestimate the risks

Find the right balance

Right balance

Food Defense Team

*Knowledge of product, process, people,
logistic flow, interactions, ...*

Creativity

Trustworthy

Trust

Do not over-communicate

*Neutral & smart security rules
(report anomalies)*

Stay under radar detection

Threat

external or **internal**

Fences are not enough

Food Safety > Risk Assessment

Food Defense > Vulnerability Assessment *(ease of accomplishing attack)*

3. TOOLS



FDA website: <https://www.fda.gov/Food/FoodDefense/default.htm>

Food Defense Plan Builder

FREE-B

Mitigatin Strategies Database

Food Defense Vulnerability

CARVER+Shock (no longer supported)

Criticality - measure of public health and economic impacts of an attack

Accessibility – ability to physically access and egress from target

Recuperability – ability of system to recover from an attack

Vulnerability – ease of accomplishing attack

Effect – amount of direct loss from an attack as measured by loss in production

Recognizability – ease of identifying target

Shock – the combined health, economic, and psychological impacts of an attack

<https://www.afnor.org/wp-content/uploads/2016/.../Guide-food-defense-AFNOR.pdf>

FOOD DEFENSE GUIDE (in French)

Among others

Food Defense Complete Self-Assessment Guide By G. Blokdyk

1 Recognize

"In my belief, the answer to the following question is clearly defined:"

1 Have there been any media calls on this (or a related) issue?

2 What problems are you facing and how do you consistently address them?

3 Measures in place (e.g. fencing, other barriers) to protect the facility?

4 How do we identify specific Food defense investment opportunities?

5 A system in place for identification of visitors and other personnel?

6 Restricted food service areas identified by signage?

7 How much are sponsors, customers, and other personnel aware of the facility's security?

8 Does the facility have a security plan that does not deliver success?

9 Has this plan been reviewed and updated regularly?

2 Define

"In my belief, the answer to the following question is clearly defined:"

1 How will the Food defense team be organized?

2 Has a team of individuals been assigned to the Food defense team?

3 How did the Food defense team develop its strategy?

4 How often are the Food defense team members updated on the status of the facility's security?

5 Is the team focused on the most critical areas of the facility's security?

6 Have specific roles and responsibilities been assigned to each team member?

Analyze

"In my belief, the answer to the following question is clearly defined:"

1 Did any value-added analysis or 'lean thinking' take place to identify some of the gaps shown on the 'as is' process map?

2 Can we add value to the current Food defense decision-making process (largely qualitative) by incorporating uncertainty modeling (e.g. quantitative)?

3 Think about some of the processes you undertake within your facility. What are the key risks associated with these processes?

4 What will drive Food defense decision-making in the future?

3 Measure

"In my belief, the answer to the following question is clearly defined:"

1 Are the units of measurement consistent across all areas of the facility?

2 What are the key metrics used to measure the facility's security performance?

3 Does Food defense performance data provide a clear picture of the facility's security status?

4 How do you ensure that the data is accurate and reliable?

5 Are key metrics tracked and reported regularly?

6 How do we link measurement to the facility's overall business objectives?

7 What potential risks are associated with the current measurement system?

8 How will you address these risks?

9 Is data collection and analysis automated where possible?

10 What measures are in place to ensure the integrity of the data?

11 When is the data reviewed and analyzed?

12 What is the process for identifying and addressing trends or anomalies in the data?

13 Do we have a clear process for communicating the results of the data analysis to the relevant stakeholders?

4 Improve

"In my belief, the answer to the following question is clearly defined:"

1 How does the team improve its performance over time?

2 Do the target audiences consistently receive the necessary information?

3 In the past few months, what is the change that produced the largest improvement in the facility's security performance?

4 How Do We Link Measurement to the Facility's Overall Business Objectives?

5 Why is food safety risk communication important to the facility's overall business objectives?

6 How significant is the improvement in the facility's security performance?

7 Explorations of the frontiers of the facility's security performance?

8 How can we improve performance in the most critical areas of the facility's security?

9 How do you improve your likelihood of success in the most critical areas of the facility's security?

10 At what point will vulnerability analysis be implemented (and how)?

11 Are we Assessing Food defense performance against the facility's overall business objectives?

12 Is a solution implementation plan in place for the most critical areas of the facility's security?

13 How do we measure improved performance in the most critical areas of the facility's security?

Control

"In my belief, the answer to the following question is clearly defined:"

1 Outside lighting adequate to monitor the facility at night?

2 How will input, process, and output variables be checked to detect for sub-optimal conditions?

Sustain

"In my belief, the answer to the following question is clearly defined:"

1 How do we foster innovation?

2 What is the nature of the hazard?

3 Who will manage the integration of tools?

4 What happens at this company when people fail?

5 Can we maintain our growth without detracting from the factors that have contributed to our success?

6 In what time frame (i.e. immediate or delayed effects) will incidents occur?

7 Who might want to attack us?

8 Do we have enough freaky customers in our portfolio pushing us to the limit day in and day out?

9 What are the rules and assumptions my industry operates under? What if the opposite were true?

10 How do I stay inspired?

11 If there were zero limitations, what would we do differently?

12 Who are the opinion leaders that are likely to influence the target audiences?

13 Are your hot foods hot?

14 How to deal with Food defense Changes?

15 Is a daily inventory of hazardous chemicals maintained?

...es/rewards,
...knowledge transfer and
...perform actually originate?

4. EVALUATION

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INTERNAL THREAT

Dissatisfied employees

Activists

Ext. Cleaning team

Working atmosphere

Trigger elements: evaluations, promotions

Strikes

....

EXTERNAL THREAT

Activists

Former employees


Competitors

Suppliers, Service providers

Dissatisfied customers

Visitors, auditors

Terrorists,



Rating scale
imprecise threat
possible threat
certain threat

RISK ELEMENTS

Rating scale

Low
to
High

Controversy (product, raw materials)

Institutional clients (ex. MoD)

Shareholder visibility

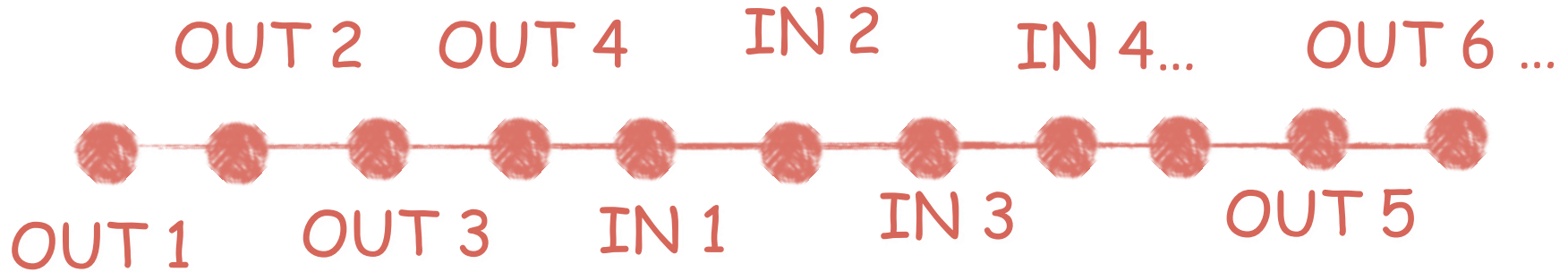
Company visibility

Political, social, economical situation

Take into account all nodes, steps of your business

External upstream and downstream (ex. franchisees),

Process, Packaging, Logistics (storage, transport),



DO NOT FORGET

SUPPORT PROCESSES (PURCHASE, ICT, MAINTENANCE, etc.)

IMAGINE SABOTAGE



**Think small
&
Think bigger**

Ex. Needle in product

Ex. Chemical contamination with high toxicity pesticide

Ex. Hacking of your ICT - Change in recipes (ERP-automated process)(% of additives)



**Think IN
&
Think OUT**

IMAGINE SABOTAGE

*Ex. Worker after bad evaluation >>
Undeclared allergen in on tank*

*Ex. Angry franchisee >> caustic soda in your
product*

For more ideas



FOOD DEFENCE INCIDENTS
1950–2008:

A CHRONOLOGY AND ANALYSIS OF INCIDENTS
INVOLVING THE MALICIOUS CONTAMINATION
OF THE FOOD SUPPLY CHAIN

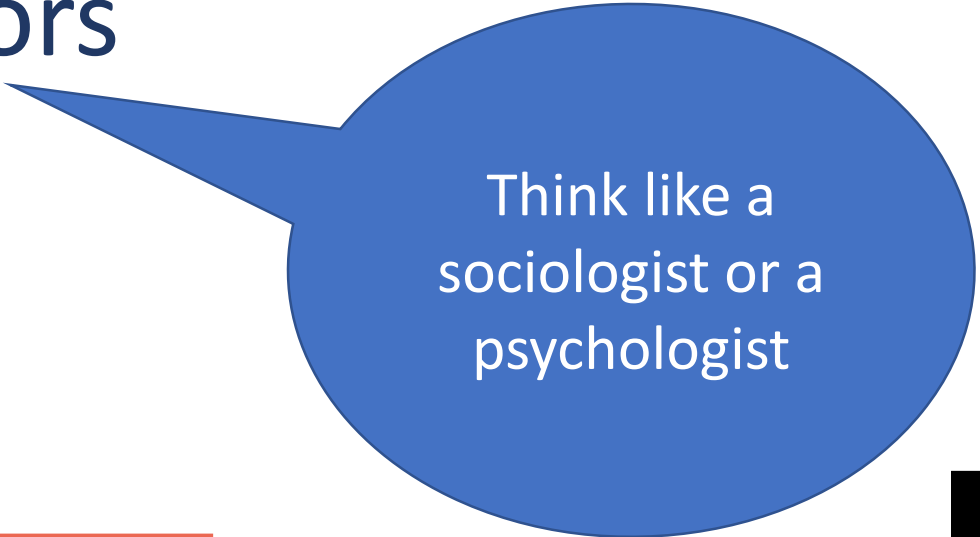
G. R. DALZIEL

<http://www.cold.org.gr/library/downloads/Docs/Food%20Defence%20Incidents.pdf>

3. CULTURAL ASPECTS



Human behaviors



Think like a
sociologist or a
psychologist

Your best allies

The Human Resources Department

The communication manager

3. MITIGATION

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Access control, barriers/fences (IN & OUT) cameras
System of formal clearances for some areas

Traceability
Inventories of raw materials at different stages

Adapted Packaging

Color codes (visitors, areas, ...)

Existing analysis for QC or for HACCP may be insufficient



Recruitment process (control of criminal record in countries where it is allowed), ...) / Evaluations / “deviant” behaviors

Training > awareness of anomalies ("**under the radar**")

Control of your commercial network

Computers control, anti-hacking measures

Control of company information published on the web

BE AWARE



Leonidas
