

Food Defense Perspectives in a Food Protection Landscape

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Ground rules for the session...

- You need an OPEN MIND for this session... some of the content is abstract, yet, grounded in reality.
- Your questions are encouraged.... Actually, they're NEEDED!
- Participation is required (to some extent)
- We'd like you to share your story, talk about an UNKNOWN... let's start the conversation related to the Food Defense Perspectives within a Food Protection Landscape.
- When the session end, the conversation won't end. There is contact info / direction for how YOU can continue (or begin!) to get engaged in the food defense conversation.

Tampering threat 12/19/17

20/12/2016

ANNOUNCEMENT

Following the announcement from the Greek Police regarding content posted on December 19 on an Internet page regarding a product tampering threat for specific products, the companies Coca-Cola, Nestlé and Unilever inform that, in collaboration with the relevant authorities:

- We are proceeding immediately with a **precautionary removal** of the following products in all retail outlets in Attica:
 - Hellmann's Caesar Salad Dressing (235 ml)
 - Pummato Passata «more concentrated» and «classic» (tetrapak 520g and 500g respectively)
 - Nestea Ice Tea Peach (500ml plastic bottle, 4X500 plastic bottle)
 - Nestea Ice Tea Lemon (500ml plastic bottle, 4X500 plastic bottle)
 - Coca-Cola Light (500ml plastic bottle, 4X500 plastic bottle)

From the first moment, we are in close collaboration with the relevant authorities as the safety of our consumers is our foremost and non-negotiable priority and we will do whatever is necessary to protect it.

We remain in open communication with our consumers, who can contact us at the following call centers at no charge:

- Tampering threat December 19
- Greek anti-terrorism forces coordinated with affected companies
- Companies withdrew products and no tampering occurred
- Greek authorities are aware of the group that initiated the threat but no arrests to date
- Pepsi became aware of the threat through US media and alerted Nestlé

Food Defense / Intentional Adulteration Communication



How do we identify
/ communicate
threats

- Food safety is non-competitive
- Intentional adulteration is difficult to predict and the more “antennae” we have available the greater potential we have of addressing issues.
- How do we know what issues should be escalated?
- How do we know who to communicate to?
- What are the pathways of communication to law enforcement, regulatory authorities and peer companies?

Restaurants May Only Use Approved Suppliers' Ingredients/Products Called: **Approved Brands**



Use Gates (arrows) to Reinforce Compliance:
Testing Product Specifications



Restaurants Must Verify Use of Approved Brands



Products Delivered to Restaurants must be verified

- ❑ Bulk product labeling (e.g., Corporate selected and tested peanut oil) with validation of approved supplier at restaurant level

Receiving and Storing Products

General Procedures



- 1. Receive and store all products in timely manner**, minimizing exposure of frozen and refrigerated products to the Temperature Danger Zone (40°-140°F).
- 2. Examine all products upon receipt.**
 - Verify that products have come from Chick-fil-A approved suppliers. In particular, only approved brands of peanut oil (Cargill and ADM), which are ordered through MBM, can be used.

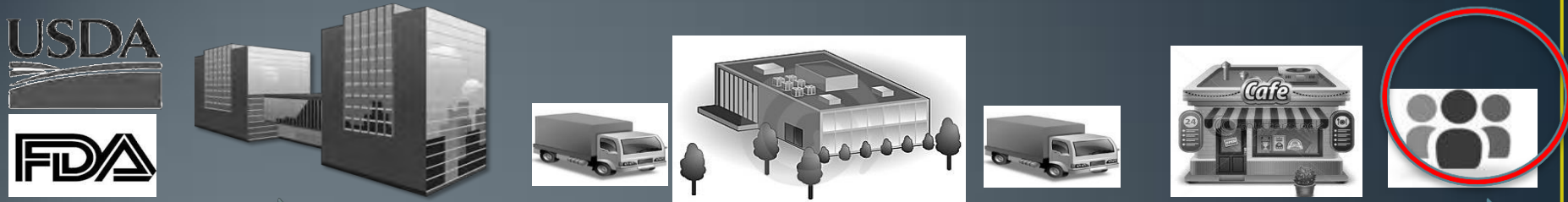


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Surveillance System as a Tool to Measure Compliance in the Supply Chain

Identify Defective Ingredients/Products Before they Reach Customers



E-alerts (FDA warnings, Recalls)

Staff visits

Product sampling

Retail audits

Product Defect Reports

Customer Complaint system



Investigate and resolve all

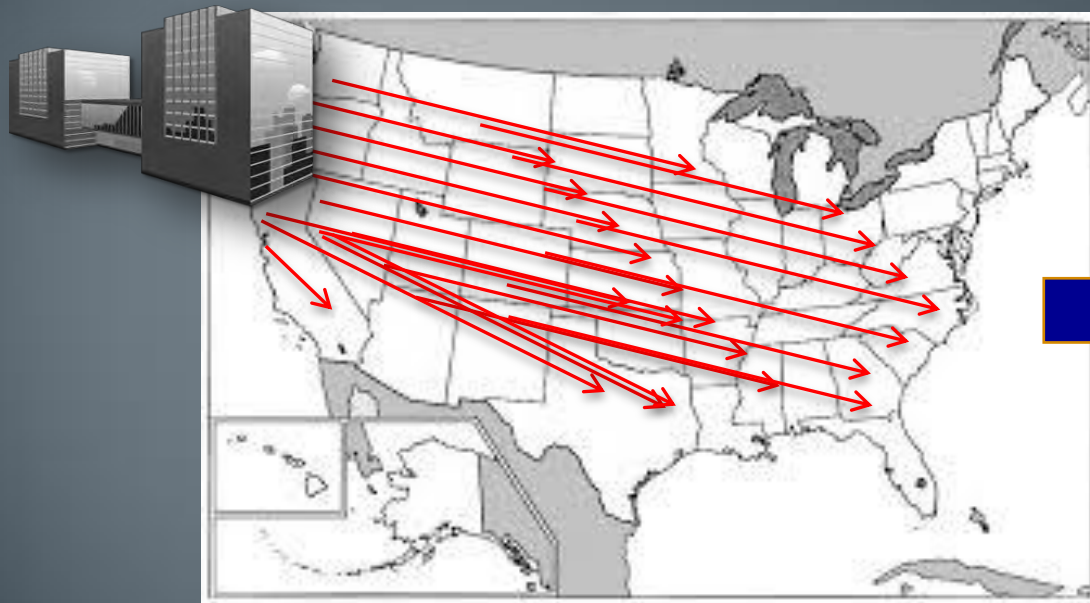


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Use a Recall System as a Tool to Remove Ingredients/Products from the Supply Chain

If Product Defect Discovered:
Product Withdrawal or Recall May be Initiated



Remove from Prep/Service

For Example: Outbound Interactive Voice Response (IVR) phone call to all Restaurant locations + E-mail /TXT



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PepsiCo Mega Brands

22 Billion-Dollar Brands



More Than 40 \$250 Million–\$1 Billion Brands



PepsiCo offers the world's largest portfolio of billion-dollar food and beverage brands, including 22 different product lines that each generate more than \$1 billion in estimated annual retail sales.



The views expressed in this presentation are those of the author and do not necessarily reflect the position or policy of PepsiCo Inc.

VUCA

- Scott Sheafe, PepsiCo Office of Global Security
- In a recent “Pep” talk on the nature of the threats we face every day, as a global enterprise... and these are no different to you as they are to us – but it depends on WHO is looking at them, and HOW they are perceived.
- Scott stated that the Harvard business review is using a military acronym, describing the current global environment in which multi-national companies, like PepsiCo, operate ... describes leadership conditions found in the field of military conflict... same conditions we face in field of global commerce.

Volatility Uncertainty Complexity Ambiguity

VUCA 2.0 = Vision, Understanding, Courage & Adaptability

<https://www.forbes.com/sites/hbsworkingknowledge/2017/02/17/vuca-2-0-a-strategy-for-steady-leadership-in-an-unsteady-world/#2614dc6113d8>

FD perspectives in a FP landscape

- I am a visual learner. I like to “see” things in my mind.

- Show of hands – what aspect do you represent?

- I also use a lot of metaphors, similes and analogies...

- “Momma said, Life is like a box of chocolates...” Forest Gump
- “Food Defense is like homeland security meets food safety.” - JPB

- Let’s think about something we all know (some of us too well).

Potholes.

I thought about the ‘landscape’ being a forest... seeing the forest through the trees.... Or talking about the layers of the onion that get peeled back.... The flaky layers of a pie crust... and even, rolls of toilet paper, but, I figured I’d stick with potholes...

Let's talk about the pothole as the threat...

(In the food safety lexicon, the 'hazard')

- Here are some 'good' pics of potholes....
- As you know too well, all potholes are not created the same...
- Some never go away; Some we just 'deal' with.
-
- Some go away and come back
- Some get so bad so quick they HAVE to be fixed (traffic and weather on the 8s: "roving pothole repair on 95 in NY") during rush hour...



Risk vs. Threat vs. Vulnerability

- The Pothole: **Threat**
 - Various degrees of threat: depth and width of pothole: 8" wide vs. 8" deep; is it in the travel portion of the lane where your tires meet the surface of the road, or, is it in the center of the lane where you don't normally drive
- The Tire: **Vulnerability**
 - Various degrees of vulnerability: all tires are VULNERABLE, but, a high performance tire vs. a Jeep built to endure the Moab Desert with knobby 27" all terrain tires vs. a motorcycle vs. a bicycle
- The Flat Tire: **Risk**
- Mitigations (controls):
 - Type/size of tire: (Mack truck vs. Maserati vs. bicycle)
 - WAZE app to avoid potholes
 - Road signage
 - Road hazard warranty (doesn't prevent the consequence from occurring, but helps 'mitigate' the impact)
 - Well inflated tires
 - Pothole repair

What are the potholes we need to 'address' within our operations, and include within our Food Defense plans? Is it the vulnerability or is it the threat?

How do we share information - in a non-attributable, non-competitive environment - to help protect harm to the consumer / protecting public health?

These are some of the 'questions' that drive me everyday, on the food defense journey that I am on...

What do these 'items' have in common?

IFPTI

FPP

FPGI

FP-RRT

You

AFDO
FP&D

All of Us

IFT

WE are in this together...
whether WE like it or not.

JFP

FPWG

PFP

CFP

IAFP

WHO DID I MISS – I'm sure I forgot/missed a few...

What does Food Protection mean, anyway?

pro·tec·tion (prə'tekSH(ə)n/) is defined as:

- the action of protecting someone or something, or the state of being protected.

Food protection can be defined as... stay with me here....

is the action of protecting food

From what?

What are the threats (hazards)?

Food Protection Landscape

FS - regulatory

FD - regulatory

FQ – brand reputation

FF / EMA – regulatory (to a degree)

Physical Security

IT/Cyber Security

HR/Personnel

Each of these contribute differently to enterprise risk

Food Defense Perspectives...

- Best practices & information sharing
- Risk Assessments to evaluate where limited resources are most impactful
- Drawing in personnel that are 'non-traditional' food defense team members – sanitation, engineering, tenured associates...
 - These perspectives/different sets of eyes might 'see' some potholes others miss
- Education & training of personnel
- Audits/self-assessments/continuous improvement
 - *Food Defense culture development*
- Customer & consumer expectations
- The FD Contribution to the FP landscape – obviously, to minimize risk of intentional adulteration of the product ... but

Food Defense Perspectives...

- Effective FD cannot be done in a vacuum
- It requires open minds, asking questions, sharing ideas:
 - yesterdays solutions & tomorrows challenges
 - Preparing for the unknown unknowns
- “...solutions for today, planning for tomorrow...”
- An as yet evolving arena informed by many of us
 - Including YOU in the room today!

- What can YOU do?

- Become part of the conversation.... get involved:

Food & Agriculture Sector
Food Defense consortium

ASIS Food Defense & Ag Security Council
Contact your trade association / send me an email

Do something, do anything...

I will leave YOU with this.....

- Where is Food Defense in your organization, and, how does it fit in the food PROTECTION landscape?
- Are you a Food SAFETY professional, with a variety of other responsibilities, tasks and roles... or... are you a food PROTECTION professional

Think about it.

Thank you!

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Questions, thoughts, ideas?

Food Defense Considerations

Clint Fairow, M.S.

May 10, 2017

Opinions expressed are those of the speaker, not necessarily of his employer.



Food Defense Considerations

Who is Clint?

What is Food Defense?

Perspectives

Disgruntled Employee

EMA/Food Fraud

ETE...



The Japan Times
National Jan 27, 2014



Food Defense Considerations

What does Clint think Food Defense is?

Response to regulation?

Protecting consumers?

Food Counterterrorism?



**Name: Midhat Mursi Al Sayid Umar
(Abu Khabab)**

Organization: Al Qaeda

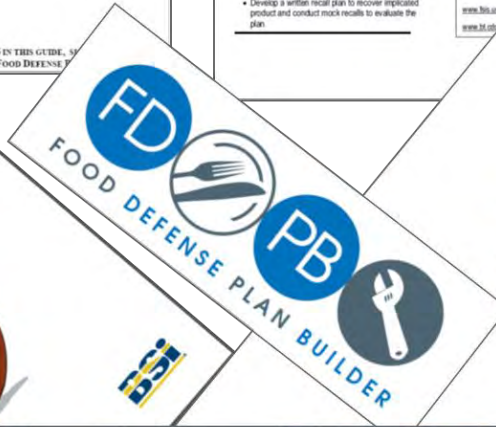
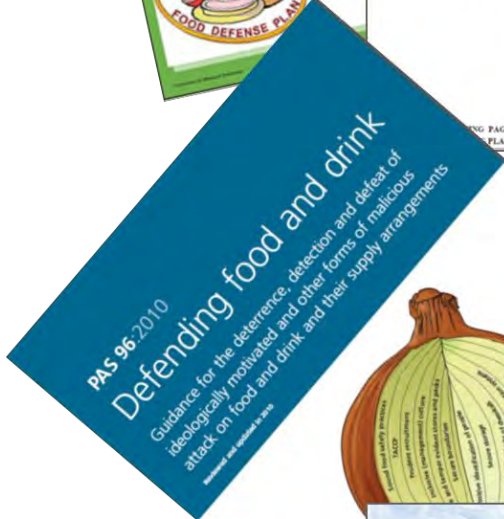
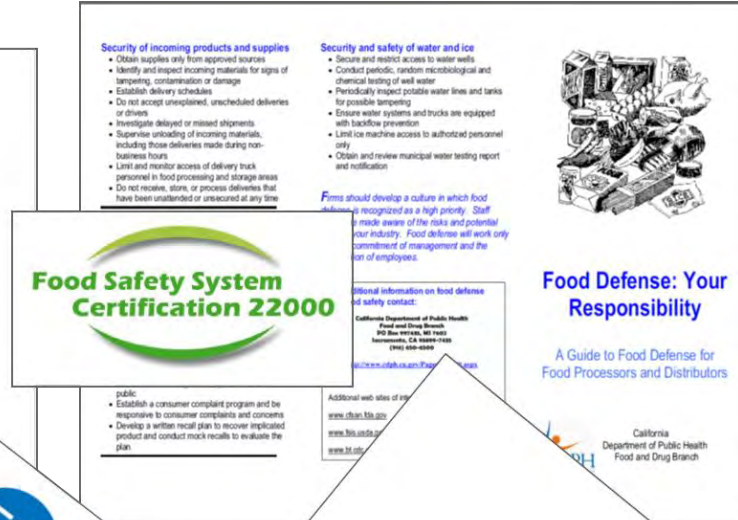
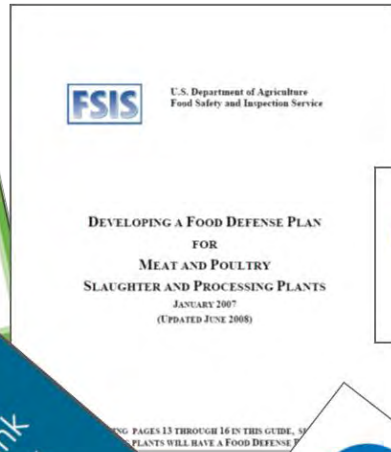
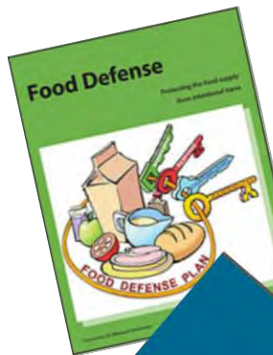
Education: B.S. Chemical Engineering

Skills: Chem/Bio Weapons; Derunta Trainer

CWA: killed again, 2008 in Pakistan

Food Defense Considerations

Approaches to Food Defense



Food Defense Considerations

Approaches to Food Defense



Probabilistic Risk
Assessment

Art is never
finished,
only
abandoned.

— Leonardo da Vinci
- Clint



Food Defense Considerations

Approaches to Food Defense

Main Model Parameters

pAq - Probability of Acquisition

pAc - Probability of Access

Physical Access Control

Personnel Surety

pElim - (1- Probability of Elimination)

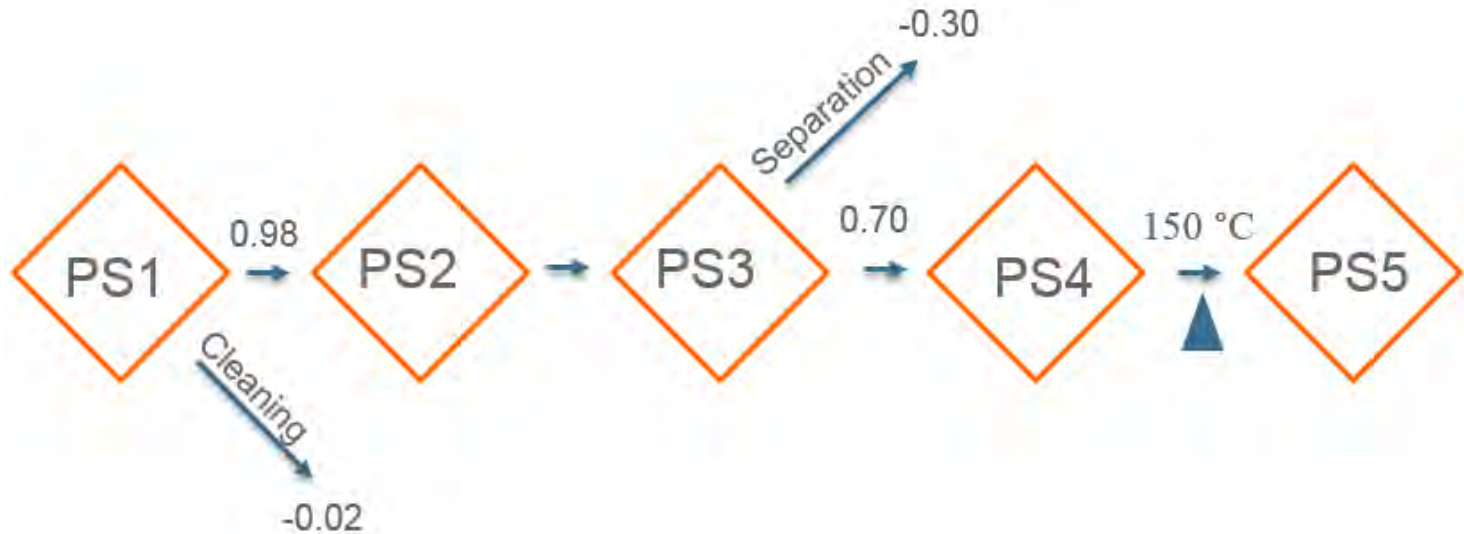
$$RE = pAq \times pAc \times (1-pElim)...$$

$$VE = pAq \times pAc \times (1-pElim)...$$



Food Defense Considerations

Benefits of Modeling



Food Defense Considerations

Benefits of Modeling

10 gallon batch; 100,000 Servings

ATC	LD1 (mg/kg)	Qty required for 70 kg body weight	kg required @ 100,000 servings
Brodifacoum	0.0025	0.175	17.5
Nicotine	0.01	0.7	70
Aldicarb	0.01	0.7	70
Tetraethyl pyrophosphate	0.01	0.7	70
Sodium fluoroacetate	0.02	1.4	140
Parathion	0.03	2.1	210
Demeton	0.03	2.1	210
Cyanide	0.03	2.1	210
Arsenic trioxide	0.05	3.5	350
Carbofuran	0.1	7	700
Thallium compounds	0.16	11.2	1120
Sodium azide	0.27	18.9	1890
Paraquat	0.35	24.5	2450

Food Defense Considerations

Benefits of Modeling

10 gallon batch; 100,000 Servings

Toxin	LD1 (mg/kg)	Qty required for 70 kg body weight	kg required @ 100,000 servings
Botulinum toxin	0.00001	0.0007	0.07
Trichothecene mycotoxins	0.00004	0.0028	0.28
Abrin	0.00005	0.0035	0.35
Anatoxin-a	0.0002	0.014	1.4
Amanitin	0.001	0.07	7
Anatoxin-a(S)	0.002	0.14	14
Saxitoxin	0.0024	0.168	16.8
Cobrotoxin	0.0029	0.203	20.3
Aconitine	0.01	0.7	70
Aflatoxin	0.015	1.05	105
Colchicine	0.06	4.2	420
Strychnine	0.06	4.2	420
Patulin	0.15	10.5	1050
Ricin	0.2	14	1400

Food Defense Considerations

Benefits of Modeling

10 gallon batch; 100,000 Servings

Microbe	ID(infectious dose)	Orgs required for 100 k servings	ml of concentrated* suspension
Coxiella burnetii	132	13,200,000	13.20
Yersinia spp	10	1,000,000	1.00
Shigella dysenteriae	10	1,000,000	1.00
Escherichia coli O157H7	10	1,000,000	1.00
Cryptosporidium parvum	10	1,000,000	1.00
Salmonella spp	15	1,500,000	1.50
Hepatitis A virus	100	10,000,000	10.00
Calicivirdae norovirus	100	10,000,000	10.00
Franciscella tularensis	100	10,000,000	10.00
Brucella spp	500	50,000,000	50.00
Campylobacter jejuni	500	50,000,000	50.00
Listeria monocytogenes	1000	100,000,000	100.00
Bacillus anthracis spores	20000	2,000,000,000	2000.00
Vibrio cholerae	1000000	100,000,000,000	100000.00
Vibrio parahaemolyticus	1000000	100,000,000,000	100000.00
Burkholderia mallei	3000000	300,000,000,000	300000.00
* concentrated suspension is 10 ⁸ orgs/ml			

Food Defense Considerations

Real Life Perspectives

EPA/FDA/EFSA – Risk Assessments

Food Defense Vulnerability/Risk Assessments

Why no ~~GREAT~~ example of FDE?

Not saying it can't happen!

Entrenched food safety culture

Employee buy-in

Very few terrorist wannabes

Food Defense Considerations

Why no **GREAT** example of FDE?

Because food industry employees are not motivated to cause or allow it to happen.



Thank you

Questions?

Email: clint.fairow@adm.com

