

The Role of Packaging in Food Fraud Prevention

Process Expo – Chicago
 Wednesday, September 16, 2015 – 11:30 to 12:30pm

John Spink, PhD

Director & Assistant Professor, Food Fraud Initiative

WWW.FoodFraud.MSU.edu -- Twitter @FoodFraud and #FoodFraud



Food Fraud Curriculum

Massive Open Online Course (MOOC – free, open, online)

- November 2 & 6 *Bi-Lingual English-Mandarin*, May 2016
 - Free, open, online, open to everyone, includes a 'certificate of completion'
- www.FoodFraud.msu.edu

Executive Education (Short-Course)

- Food Fraud, Quantifying Food Risk
- September 21-22/ 23-24; Feb 1-2/ 3-4, 2016

Graduate Courses (Online, Three Credits)

- Anti-Counterfeit & Product Protection (Food Fraud)
- Quantifying Food Risk (including Food Fraud)
- Food Protection and Defense (Packaging Module)
- Packaging for Food Safety

Graduate Certificate (Online, Four Courses Each)

- Certificate in Food Fraud Prevention (Food Safety)

Master of Science in Food Safety (Online)

- www.online.FoodSafety.msu.edu



© 2015 Michigan State University

MSU Engagement 2015-2016

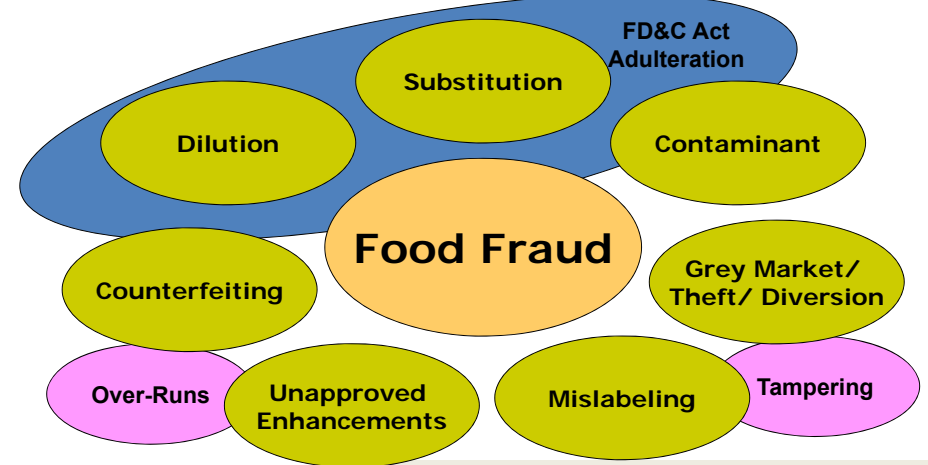
	Outcome	Benefit	Commitment
Graduate Course	Share your knowledge and set direction of research	Develop the internal talent to support initiatives in the AC space	14 Weeks, online, May to August, ~\$2200
Executive Education	Share your knowledge and set direction of research	Develop the internal talent to support initiatives in the AC space, meet other thought leaders ("invitation only" sessions for brand owners)	2 Days on-campus (\$1950) Sept 21-22 Sept 23-24 QFR Feb 1-2, 2016 Feb 3-4, 2016 QFR Sept 19-20, 21-22, 2016
Multi-Client Studies	Research the why's of AC/D, understand underlying drivers	Uncovering the drivers may lead to new strategies to combat Counterfeiting	Teleconference Meetings with option for on-campus e.g. Veterinary and Animal Product Fraud
MOOC	Engage global network of Food Fraud thinkers..	Two, 2-hour on-line webinar format with assessment. Students earn an MSU "credential".	Nov 2 & 6 (Bi-lingual/ Mandarin) May TBD, 2016

Contact: John Spink, SpinkJ@Msu.edu – 517.381.4491 – <http://FoodFraud.msu.edu/>

WARNING
Counterfeiters Attend
Anti-Counterfeiting
Conferences

FOOD FRAUD OVERVIEW

What is Food Fraud?



Source: Food Fraud Think Tank Presentation, GFSI, 10/2012

Defining Food Fraud

- **Action: Deception Using Food for Economic Gain**
 - Including the sub-category of “Economically Motivated Adulteration” or EMA
 - Note: FDA currently defines EMA as a “substance” for “economic gain”
 - Consistent with GFSI, EC/EU, UK, ISO, and others...
- Motivation: Economic Gain
 - “Food Defense” motivation is traditionally harm or terror
- Effect:
 - Economic **Threat** – **Consumers and Governments expect Food Agency Controls**
 - Public Health **Vulnerability or Threat**

Examples

- Horsemeat in ground beef
- Peanut Corporation selling known contaminated product
- Diluted or extra virgin olive oil
- Melamine in pet food and infant formula
- Over-icing with unsanitary water
- Unauthorized unsanitary repackaging (up-labeling or origin-laundering)
- Cargo Theft reintroduced into commerce/ Stolen products
- Expired product date code tampering or “refreshing”

Reference: Spink & Moyer (2011). Defining the Public Health Threat of Food Fraud, Journal of Food Science

The Food Risk Matrix

Food Protection Umbrella

The **Cause** leading to the **Effect** of Adulteration

Food Quality	Food Fraud ⁽¹⁾	Motivation
		Gain: Economic
Food Safety	Food Defense	Harm: Public Health, Economic, or Terror
Unintentional	Intentional	
Action		

(1) Includes Subset components of Economically Motivated Adulteration and Food Counterfeiting
 Source: Adapted from: Spink (2006), The Counterfeit Food and Beverage Threat, Association of Food and Drug Officials (AFDO), Annual Meeting 2006

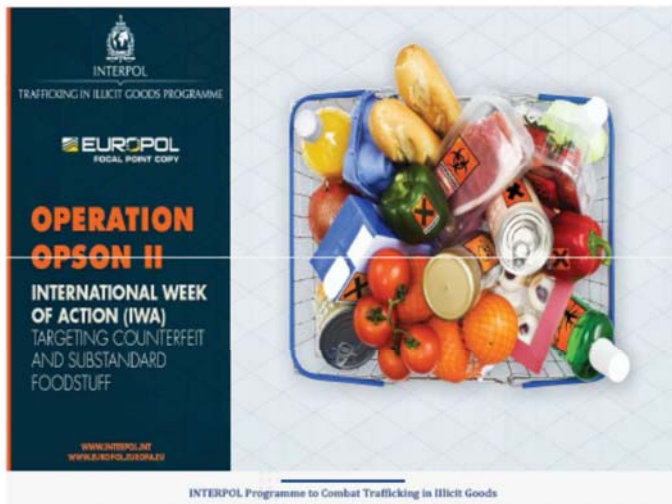
COUNTERMEASURES AND REGULATIONS

The Chemistry of the Crime

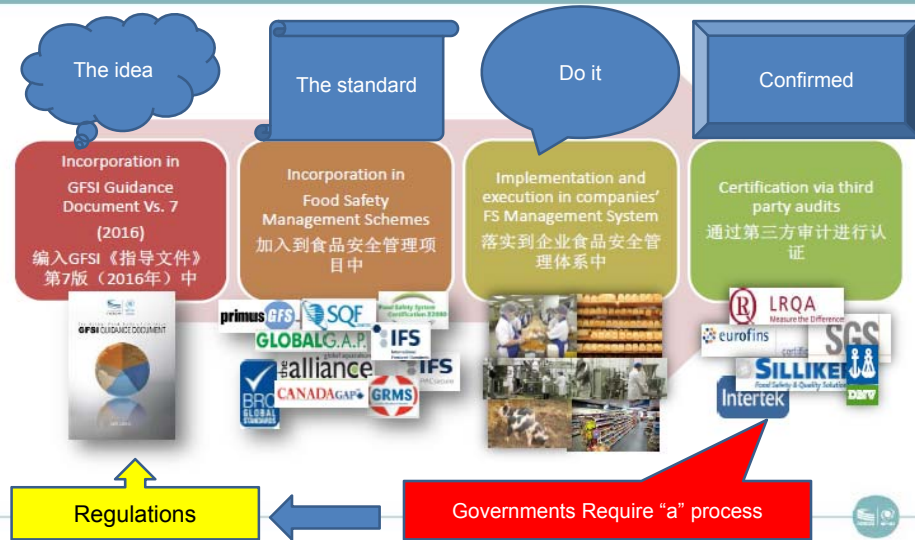
Detect
Deter
Prevent



Are we disrupting the Chemistry of the Crime?



Implementation of Food Fraud Mitigation 落实食品造假缓解措施



© 2015 Michigan State University

Copyright use approved

13

SEC. 418. HAZARD ANALYSIS AND RISK-BASED PREVENTIVE CONTROLS

- (a) In General- The **owner, operator, or agent in charge** of a facility shall, in... accordance with this section, evaluate the hazards that could affect food manufactured, processed, packed, or held by such facility, **identify and implement preventive controls** to significantly minimize or prevent the occurrence of such hazards and provide assurances that such food is not adulterated under section 402 or misbranded under section 403(w), monitor the performance of those controls, and maintain records of this monitoring as a matter of routine practice.
- (b) Hazard Analysis- The owner, operator, or agent in charge of a facility shall--
 - (1) **identify and evaluate known or reasonably foreseeable hazards** that may be associated with the facility, including--
 - (A) biological, chemical, physical, and radiological hazards, natural toxins, pesticides, drug residues, decomposition, parasites, allergens, and unapproved food and color additives; and
 - (B) hazards that occur naturally, or may be **unintentionally introduced**; and
 - (2) **identify and evaluate hazards that may be intentionally introduced, including by acts of terrorism**; and
 - (3) **develop a written analysis of the hazards.**

© 2015 Michigan State University

14

FSMA Preventative Controls EMA/ Food Fraud Final Rule

(To Publish September 17, 2015)

- “A facility subject to the rule must conduct a hazard analysis to identify and evaluate known or reasonably foreseeable hazards for each type of food manufactured, processed, packed, or held at the facility to determine whether there are any hazards requiring preventive controls. The first step of a hazard analysis is hazard identification, which must consider known or reasonably foreseeable hazards, including biological, chemical, and physical hazards. The hazard analysis must consider hazards that may be present in the food because they occur naturally, are unintentionally introduced, or are intentionally introduced for purposes of economic gain.” (Page: H-015.1)
- = **Identify and prevent health hazards from Food Fraud incidents**

© 2015 Michigan State University

15

FSMA Preventative Controls EMA/ Food Fraud Final Rule (2)

- “We continue to believe that hazards that may be intentionally introduced for economic gain will need preventive controls in rare circumstances, usually in cases where there has been a pattern of economically motivated adulteration in the past.” (Page: H-015.3)
- “(Response 402) We agree with the comments stating that the requirement to consider hazards intentionally introduced for purposes of economic gain is narrow. Such hazards will be identified in rare circumstances, usually in cases where there has been a pattern of economically motivated adulteration in the past.” Page H-422.6
- = **Many questions: What is “a pattern... in the past”? What is a “reasonably foreseeable hazard”? And of far down do you dare to go?**
- = **FSMA-PC regulatory compliance vs. all US regulatory compliance?**
- = **Are you already doing a full FF VA for GFSI compliance?**

© 2015 Michigan State University

16

THE ROLE OF PACKAGING

Overall Anti-Counterfeit Goal

Stop knocking us off

- Product
- Brand
- Company
- Industry
- Country

To do what

- Where is the product being compromised
- Where will the product be verified
- Who will verify it, using what methods
- How will you use the results of the investigation
- ...other consumer touches

Actions

- Overt/Covert/Forensic
- Traceability/ Pedigree
- Authentication
- Investigate/Prosecute

Define the Countermeasure Objective

- Authentication
 - Prove Genuine
 - Prove Fake
 - **Build Consumer Confidence**
- Traceability
 - Where it has been
 - Where it is going
 - Find product
- Transparency...
- Supply Chain Optimization
- **Integrate Systems Across all Food/Drug/Consumer**



Acknowledgements

- **MSU Veterinary Medicine:** Dean Christopher Brown, Chair Dan Grooms, Chair Ray Geor, Dr. Wilson Rumbleha, Cindy Wilson, Dean John Baker
- **MSU Global:** Associate Provost/ Executive Director Christine Geith, Jerry Rhead, Gwyn Shelle, Lauren Zavala, Associate Provost/ EVP Dr. Karen Klomparens, Rashad Muhammad
- **Queens's University Belfast (UK):** Professor & Director Christopher Elliott, Dr. Moira Dean, Dr. Michael Hollis
- **MSU Online Master's of Science in Food Safety:** Director Melinda Wilkins, Ex-Director Julie Funk, Kristi Denbrock, Heather Ricks, Peggy Trommater, Heidi Chen, Dr. Gary Ades, Chair Ray Goer
- **MSU Food Science:** Chair Fred Derksen, Les Bourquin, Bradley Marks, Felicia Wu, VP of Research Ian Gray, David Ortega, Gale Strasburg
- **MSU Program in Public Health:** Director Michael Rip and Douglas C Moyer
- **MSU NFSTC:** Dr. Scott Winterstein, Trent Wakenight, Dr. Kevin Walker, Sandy Enness, Jen Sysak, Dr. Rick Foster, to name a few critical contributors and supporters.
- **MSU Food Safety Policy Center:** Dr. Ewen Todd
- **MSU School of Packaging:** Dr. Bruce Harte, Dr. Robb Clarke, Dr. Laura Bix, Dr. Paul Singh, Dr. Diana Twede, Dr. Gary Burgess, Dr. Harold Hughes, Dr. Mark Uebersax, Dennis Young, and Director Joseph Hotchkiss
- **MSU Communication Arts/ Consumer Behavior:** Dr. Maria Lapinski and Dr. Nora Rifon
- **MSU Criminal Justice:** Dr. Jeremy Wilson, Director Ed McCarrell, Dr. Justin Heinonen, Roy Fenoff, Zoltan Fejas, Barbara Sayre, and Sara Heeg
- **MSU Supply Chain Management:** Dr. Cheryl Speier, Dr. Ken Boyer, Dr. John MacDonald, Chair David Closs, Dr. Stan Griffith, Dr. Judy Whipple
- **MSU College Social Science:** Dean Marietta Baba and Assoc Dean Chris Maxwell
- **MSU College of Law:** Dr. Neil Fortin and Dr. Peter Yu
- **MSU Libraries:** Anita Ezzo, Nancy Lucas, Kara Gust
- **MSU International Programs:** Dr. Mary Anne Walker, Dr. John Whimms
- **State of Michigan's Ag & Food Protection Strategy Steering Committee:** Dr. John Tilden, Brad Deacon, Gerald Wojtala, Byron Beerbower

Discussion

John Spink, PhD

SpinkJ@msu.edu

Twitter: [@FoodFraud](https://twitter.com/FoodFraud) and [#FoodFraud](https://twitter.com/hashtag/FoodFraud)

www.FoodFraud.msu.edu

517.381.4491