Economically Motivated Adulteration: Are You at Risk?

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Economically motivated adulteration (EMA) is estimated to cost the global food and consumer products industry $10 to $15 billion a year, with the cost of one adulteration incident averaging between 2 to 15 percent of yearly revenues (1). Clearly, with such a significant economic impact, EMA deserves attention.

Economically Motivated Adulteration Defined

The Food and Drug Administration (FDA) defines EMA as the “fraudulent, intentional substitution or addition of a substance in a product for the purpose of increasing the apparent value of the product or reducing the cost of its production.” EMA is a food defense issue because, by definition, it is an intentional act. It is perpetrated by individuals who defraud the public for economic gain, making it a criminal act.

Since there is a distinct possibility of harm from ingesting adulterated food, EMA, or more specifically, food fraud, has been identified as a public health threat through research undertaken at Michigan State University’s Anti-Counterfeiting and Product Protection Program (2).

John Spink and Douglas Moyer, authors of the study, define food fraud as “a collective term used to encompass the deliberate and intentional substitution,

addition, tampering or misrepresentation of food, food ingredients or food packaging; or false or misleading statements made about a product, for economic gain."

In the study, the authors also identify seven distinct kinds of food fraud that include:

1. Adulteration, which means a component of the finished product is fraudulent.
2. Tampering, which signifies that legitimate product and packaging are used in a fraudulent way.
3. Over-running, which conveys that legitimate product is made in excess of production agreements.
4. Theft, which connotes that legitimate product is stolen and passed off as legitimately procured.
5. Diversion, which expresses that the sale or distribution of legitimate products are outside of intended markets.
6. Simulation, which means that illegitimate product is designed to look like, but not exactly copy, the legitimate product.
7. Counterfeiting, which signifies that all aspects of the fraudulent product and packaging are fully replicated.

While not all incidents of EMA result in a public health risk, all incidents have potential to negatively impact brand reputation. Unfortunately, EMA is not an isolated, nor infrequent incident, but an ongoing problem. Since 1980, the National Center for Food Protection and Defense, a Homeland Security Center of Excellence, has developed a database of EMA incidents and identified more than 100 unique events. These events range from adulteration — such as the melamine-contaminated infant formula in China that affected almost 300,000 infants, causing more than 50,000 to be hospitalized (3) — to EMA incidents that may not cause a public health risk, but are still fraudulent, such as substituting a lower cost species for a higher cost species in seafood.

In addition to food adulteration incidents, cargo theft has become increasingly problematic in the U.S., with the number one category being food and beverage in the last two years, surpassing high-value products, such as electronics (4).

EMA Mitigation Strategies

The number of people who can perpetrate an EMA incident is virtually limitless, and the type of adulterant used may be unconventional and difficult to detect, presenting an enormous challenge. However, because it is known that EMA is an illicit activity, applying criminology principles can be an effective strategy to move from a reactive to a proactive prevention posture.

What can companies do to protect themselves against EMA? Criminals tend to look for softer targets, such as the processes, products and companies in which monitoring and security systems are more lax or have more gaps. The higher the hurdles they have to overcome, the less attractive the target for EMA.

The increasingly global nature of the food supply chain, and the sheer size and scope of the food and beverage industry present an especially daunting task to close vulnerabilities in that chain. It requires a cross-functional team approach to view and assess the potential gaps in a holistic manner. Risks need to be assessed, not only within the plants and distribution centers, but across the whole supply chain and into the supplier base as well.

Questions companies should ask to determine if specific vulnerabilities may exist include:

1. Is access to legitimate product sufficiently protected and monitored within all of our facilities, from both visitors and unauthorized employees, to prevent diversion of product for illegitimate means?
2. Are we monitoring the shipment of legitimate products from end to end to prevent cargo theft, and possible diversion or addition of adulterants for illegitimate gain?
3. Are we consistently auditing our processes to systematically look for possible divergence from standard operating procedures that may detect fraudulent activity?

Solutions to address these vulnerabilities exist today through technologies such as radio frequency identification (RFID) tags, global positioning system (GPS) tracking and remote video auditing. By implementing these solutions, companies can raise the hurdles for criminals to overcome, and thus dissuade them from attacking their brand.

Economically motivated adulteration is a real and ongoing threat, both to public health and to brand value. The challenge is great, but by focusing on preventive controls, companies can gather actionable intelligence to counteract this threat.

(1) Consumer Product Fraud: Deterrence and Detection: Grocery Manufacturers Association (GMA) and A.T. Kearney, 2010.

(2) Defining the Public Health Threat of Food Fraud: John Spink and Douglas C. Moyer, Journal of Food Science, Vol. 76, Nr. 9, 2011.

(3) Toxicological and Health Aspects of Melamine and Cyanuric Acid, World Health Organization, 2009.

(4) Freightwatch International, 2011 U.S. Cargo Theft Report.

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[1] http://www.tycois.com/