

**Title: Economically Motivated Adulteration (EMA) Phase 4**

**Principal Investigator:** Karen Everstine, FPDI - Food Protection and Defense Institute, University of Minnesota

**Center of Excellence:** Food Protection and Defense Institute (FPDI) (Emeritus)

**COE Lead/Co-Lead Institution:** University of Minnesota

**Project Start Date:** 03/2014

**Project Completion Date:** 06/2015

**Project Status:** Complete

**Research Theme:** Risk Analysis

**Participating State(s):** Minnesota

**Amount Awarded to Date:** \$75,000

**Award Number:** 2010-ST-061-FD0001

**Abstract:** This project built on previous work to mitigate EMA risk. The first aim was to improve the EMA Incidents Database, one of the primary sources for information on historical EMA incidents. The second aim was to construct supply chain network models by advancing our investigation of food import data through an automated online surveillance and analysis portal. These network models allow an examination of attributes such as the most common trade routes for commodities, high-volume supply chain nodes, and how the routes have changed over time. We developed an operational prototype for identifying EMA risk that can be further developed and put into ongoing use through collaboration and data sharing with U.S. Customs and Border Protection (CBP), FDA, and USDA, and other appropriate DHS entities. The EMA Incidents Database is currently operational and available at [www.FoodSHIELD.org](http://www.FoodSHIELD.org). The EMA Import Explorer web portal is available on a protected platform hosted at the University of Minnesota. It enables ongoing surveillance of data and supply chains for imported food products with user-friendly analytical capabilities. A protected version has been transitioned to the NCFPD FIDES platform for beta-testing and use by the U.S. Food and Drug Administration. Transition to "real-time" operational use is currently pending a finalized data sharing agreement. Both government and industry need EMA and food fraud resources and mitigation tools, particularly in light of forthcoming Food Safety Modernization Act requirements related to EMA mitigation. This project supports efforts to identify food products at highest risk for EMA.

**End User Engagement:**

- DHS U.S. Customs and Border Protection
- Food and Drug Administration

**Executive Summary (2015):** Various supply chain attributes can affect the incentive and risk of economically motivated adulteration (EMA) in a particular food product, such as geographical source, the number of suppliers and/or intermediate points, the amount imported each year, the length and complexity of supply chains, and other market factors. Based on previous NCFPD EMA projects, we have identified risk factors for EMA, which include long, complex supply chains and unanticipated market shifts. This project built on previous work to mitigate EMA risk. The first aim was to improve the EMA Incidents Database, one of the primary sources for information on historical EMA incidents. The second aim was to construct food supply chain network models by advancing our investigation of food import data through an automated online surveillance and analysis portal. These network models allow an examination of attributes such as the most common trade routes for commodities, high-volume supply chain nodes, and how the routes have changed over time. We developed an operational prototype for identifying EMA risk that can be further developed and put into use through collaboration and data

sharing with U.S. Customs and Border Protection (CBP), FDA, and USDA, and other appropriate DHS entities. The EMA Incidents Database is currently operational and available at [www.FoodSHIELD.org](http://www.FoodSHIELD.org). It contains detailed information on more than 400 EMA incidents and is used by food companies around the world to inform their internal EMA and food fraud vulnerability assessments. The EMA Import Explorer web portal is available on a protected platform hosted at the University of Minnesota. It enables ongoing surveillance of data and supply chains for imported food products with user-friendly analytical capabilities. A protected version has been transitioned to the NCFPD FIDES platform for beta-testing and use by the U.S. Food and Drug Administration. Transition to "real-time" operational use is currently pending a finalized data sharing agreement. Both government and industry need EMA and food fraud resources and mitigation tools, particularly in light of forthcoming Food Safety Modernization Act requirements related to EMA mitigation. This project supports efforts to identify food products at highest risk for EMA.

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