



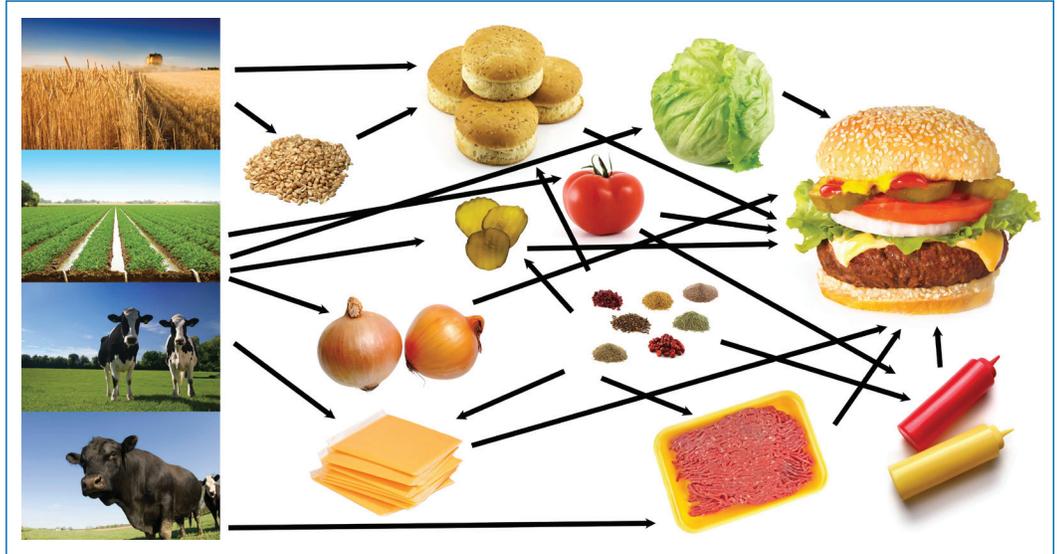
Mission: *To defend the safety and security of the food system through research and education.*

Goals

- Reduce the vulnerability of the nation's food system to terrorist attack by contamination with biological, chemical, or radiological agents at any point along the food supply chain, from primary production through transportation and food processing to retail and food service.
- Strengthen the food system's preparedness and resiliency to threats, disruption, and attacks.
- Mitigate the potentially catastrophic public health and economic effects of food system attacks with effective response and recovery.

Consortium Participants

- Led by the University of Minnesota, the National Center for Food Protection and Defense's (NCFPD's) consortium includes individual investigators from many universities and private-sector research organizations, and food and agriculture agencies.
- NCFPD-funded research and education projects are selected through approval of peer-reviewed research proposals submitted by teams of researchers. These projects currently involve over 140 experts from education, industry, and government.
- A large number of graduate students and postdoctoral research trainees are successfully working in nearly all NCFPD research and education projects, demonstrating the capability of the academic research community to respond flexibly and rapidly to the need for professional expertise in all aspects of food protection and defense.



Partnerships to Solutions Strategy

- To leverage expertise and resources programmatically, NCFPD works in close partnership with federal and state regulatory agencies, state and local health and agriculture departments, first responder communities, professional organizations, other DHS Centers of Excellence, the national laboratories, and private-sector stakeholders.
- Over 30 food industry experts serve as advisors, providing technical advice, critical end-user feedback, and strategic oversight.

Background

- The University of Minnesota-led consortium was selected on the basis of a national, competitive, merit-based review process, and follows the specific mandate for a university-based food protection and defense center in Homeland Security Presidential Directive 9, Defense of United States Agriculture and Food (January 2004).
- Developed as a multidisciplinary and mission-focused research consortium, NCFPD incorporates cutting-edge research aimed at food defense from a variety of disciplines, including supply-chain management, logistics, epidemiology, public health, risk assessment, economics,

Primary Production ~ Harvest ~ Transportation ~ Storage ~ Processing ~ Retail/Food Service ~ Consumer

molecular biology, food microbiology, biomedical engineering, toxicology, and risk communication.

- Following initiatives outlined in DHS's Broad Agency Announcement, 67 research projects have been initiated in the first five years, with 48 ongoing projects in the sixth

year. These projects focus on five research themes: event modeling, biological agent behavior, chemical agent behavior, risk communication, and systems strategies, with an overarching emphasis on educating and training scholars and professionals.

NCFPD's Highlights to Date

FAS-CAT

(Food and Agriculture Sector Criticality Assessment Tool) was developed in collaboration with FAZD and CREATE, as a novel approach to identify critical food and agriculture sector assets and provide reporting mechanisms to DHS. The tool helps states determine the most critical elements, nodes, and subsystems in the food and agriculture infrastructure. FAS-CAT 1) improves the overall process of identifying critical systems/subsystems; 2) provides greater equity in cross-sector critical system identification for DHS; 3) enables states to identify critical food and agriculture system components; and 4) improves critical asset reporting to DHS. FAS-CAT enabled the identification of key infrastructure assets so that, for the first time, 120 food and agriculture systems are level 1 or 2. FAS-CAT is the system that states were required to use for the 2010 DHS data call, and it will be the tool for 2011 submissions. The tool can be downloaded at www.ncfpd.umn.edu.

Risk Communication

In collaboration with the food industry, the International Food Information Council, Dairy Management Inc., and others, NCFPD's Risk Communication project team has identified best practices, key messages, and delivery methods to address the communication needs of the many audiences and stakeholders before, during, and after a catastrophic foodborne outbreak. Targeted training modules and instructional resources have been developed to enhance organizational risk and crisis communications capabilities. These strategies and key messages are being validated for use with under-represented and minority populations. Kathleen Vidoloff, an NCFPD doctoral student who worked in the Risk Communication theme, was recently hired by the CDC as a Health Communication Specialist.

FoodSHIELD (<http://www.foodshield.org>)

FoodSHIELD addresses a major need for communication, coordination, and just-in-time training across a wide range of federal, state, and local food and agriculture laboratories, as a one-stop location for sharing information and educational resources.

Surface Enhanced Raman Spectroscopy (SERS) in Detection of Chemical and Biological Terror Agents in Food Matrices

The objectives of this project by Ted Labuza, University of Minnesota, are to apply, improve, and validate the utility of SERS (Surface Enhanced Raman Spectroscopy) immunoassays to detect ricin in milk. It is expected that the SERS immunoassays based on a portable Raman instrument will be rapid, cost-effective, and fieldable for detection of a wide range of threat agents in complex food matrices.

Risk Mitigation and Food Supply-Chain Design and Control

Led by Alan Erera of the Georgia Institute of Technology, this project will develop improved risk analysis approaches for U.S. food products with an initial focus on imported ingredients. This includes creating new supply-chain design and sequential control strategies that seek to ensure a high level of system productivity while mitigating the risk posed by intentional attacks by adversaries.

The project's overall objectives and specific goals are:

- The development of a capability to compare food supply chain designs on the basis of productivity and risk, in part by developing new appropriate risk measures.
- The development of optimization-based methodologies to predict the probabilities of terrorist attacks in specific points in international food supply chains, importantly including the analysis of risks arising from intelligent, adaptive adversaries.
- The development of design methodologies for international food supply chains having the U.S. market as its destination, where food product processing occurs somewhere in the chain and where productivity and risk mitigation of threats from intelligent, adaptive adversaries are the two primary objectives.
- The case study application of the methodologies to specific vulnerable international food supply chains as a proof-of-concept.