BUILDING GLOBAL SYSTEMS

Logistics center rallies global community to create food-safety systems

In 2008, more than 60,000 Chinese children developed kidney stones from melamine-contaminated milk products. Some died. Tainted jalapeno peppers from Mexico and salmonella in California spinach alarmed American consumers and caused hardship for growers and distributors nationwide. In recent weeks, tainted peanut butter from a Georgia processing facility killed seven people nationwide. More than 500 became ill.

As food travels farther and faster than ever before, the scope and magnitude of such “food-safety events” is magnified, making their prevention ever more critical. Better management of the food chain could reduce these global threats as well as reduce waste, helping ensure that safe and sufficient food supplies are available to the world’s population.

The Kenan Institute’s Center for Logistics and Digital Strategy hopes to help the global community improve food safety and increase food supplies by convening key public- and private-sector partners to focus on the issue and supporting improvement efforts with expertise, research and technology.

Raising intelligence and awareness

“Regulatory environments vary widely among countries of the world, a fact that becomes glaringly apparent when a food-safety event occurs,” says Center Director Noel Greis. “Our goal is to raise the intelligence and awareness of the global nature of food-safety problems and the lack of and need for coordinating safety regulations.”

The center will host the “International Symposium on Food Safety: Building Safe Food-Supply Chains” with China’s Tsinghua University in June for just this purpose. The symposium will bring together businesses, government agencies and academic experts to examine critical issues related to the safe and secure transport of food and other perishables, such as pharmaceuticals, with particular emphasis on emerging issues in China.

Symposium participants include the U.S. Department of Agriculture, the U.S. Food and Drug Administration, the Chinese State Food and Drug Administration and food companies from the United States and China, including General Mills, JiXiu Agri-Food and Cargill. Conference topics cover the gamut, from establishing and enforcing safety standards to developing new food safety technology to management and training issues.

Identifying needs through research

The center’s research plays an important role in guiding supply-chain management improvements. In one recent project, center-funded research led by Kenan-Flagler Business School ethics professor Ellen Pierce engaged eight undergraduate students in creating a database of research on food issues in China. The database includes papers on supply-chain and logistics issues, regulatory issues and management issues.
Tsinghua Professor Linning Cai, co-director with Greis of the new UNC-Tsinghua Center for Logistics and Enterprise Development in Beijing, is using the new database to develop systems to improve the safety of the milk supply chain in China.

Monica Nogueira, director of the center’s Intelligent Systems Laboratory, and Anne Marucheck, Kenan-Flagler professor of operations, technology and innovation management, are working on the science of “cold-chain logistics” — that is, how to keep food cold throughout the moving and storage process. Thirty to forty percent of food in Asia spoils during the journey from farm to customer, pointing to the need for developing infrastructure to move food and technologies to monitor food temperature in transit. Greis traveled to Kuala Lumpur, Malaysia, in October 2008 to present the latest strategies for building intelligent cold-chain systems.

In addition, Greis and Nogueira are preparing a report for the IBM Center for the Business of Government for public-sector managers about critical issues in food safety, including regulatory policies. More than 15 U.S. agencies are charged with regulating some aspect of the nation’s food supply and more than 80 percent of imported foods currently bypass inspection in the United States. Greis’s work hopes to develop effective and coordinated solutions to problems that are presented by such complex and disconnected systems.

Developing technology and infrastructure

With research pointing to the need for infrastructure and new technology in the world of food-chain systems, the center has partnered with Longistics, a North Carolina-based provider of global logistics services with a history of technological innovation. Working with Longistics President and CEO Duane Long, the center has developed a concept paper for the company to use in moving perishables between North Carolina and China, including pharmaceutical raw materials.

New technologies can provide increasing visibility for the supply chain and greater capacity to track and trace the movement of food products. Software applications that use information obtained by new radio frequency identification (RFID) technologies, for instance, are being developed at the center. RFIDs can provide a historical record of a product’s life as well as its health and status as it moves through the supply chain.

The center is also working on new technologies, such as organic greenhouses and intelligent food packaging, in partnership with Monterrey Institute of Technology and Higher Education (ITESM), Mexico’s top technology university.

"There are so many areas of growth in the field of food-chain safety,” says Greis. “With our capacity for research into regulatory and information systems, our ability to develop new technologies and the partnerships we are actively building, the center is uniquely positioned to pull the global community together to address critical issues in food-safety logistics.”