

What is the FSRC?

The Food Safety Research Consortium (FSRC) is a multi-disciplinary collaboration among researchers from eight diverse institutions to improve public health by making food safety decision making and priority setting more science-based, risk-informed, and driven by data and analysis.

The FSRC focuses on improving the allocation and effectiveness of food safety efforts through research projects that aim to estimate and understand the most significant foodborne risks, to prioritize opportunities to reduce risks, and to improve the information-base of policymaking. As an academic effort with a distinct policy focus, the FSRC also serves as a neutral third-party on difficult issues by convening meetings and workshops that further the dialogue between the public and private sectors, consumers, and academia.

The FSRC includes microbiologists, toxicologists, epidemiologists, food scientists, economists, lawyers, engineers, risk assessors, mathematical modelers,

and others from the social and physical sciences.

The FSRC is led by a Steering Committee that oversees an Executive Director and represents its member institutions:

Dr. J. Glenn Morris, Jr., (Interim Chair), Emerging Pathogens Institute, University of Florida;

Dr. Robert Buchanan, Center for Food Safety & Security Systems, University of Maryland;

Dr. Julie Caswell, Food Marketing Policy Center, University of Massachusetts, Amherst;

Dr. Michael Doyle, Center for Food Safety, University of Georgia;

Dr. Linda Harris, Western Institute for Food Safety & Security, University of California, Davis;

Dr. Sandra Hoffmann, Resources for the Future;

Dr. Helen Jensen, Center for Agricultural and Rural Development, Iowa State University;

Dr. Ewen Todd, Dept of Advertising, Public Relations & Retailing, Michigan State University;

FSRC member institutions



What does the FSRC do?

A science- and risk-based approach to food safety calls for estimating the public health impact of the most significant foodborne risks and prioritizing opportunities to reduce them. This task requires analytical and decision tools – organized ways of collecting and using relevant information to devise effective research, regulatory, and educational interventions and make resource allocation decisions. The FSRC works to develop these tools and to address fundamental issues that underlie the information and analytical needs for more risk-informed decisions.

Foodborne Illness Risk Ranking Model

The first major FSRC effort is FIRRM, which ranks and compares the public health impact of microbial foodborne hazards. The model ranks pathogens, foods, and pathogen-food pathways and takes into account:

- The incidence, severities, and health outcomes of illnesses resulting from specific pathogens;
- The attribution of these illnesses to categories of foods

- The economic impact of health outcomes in medical costs and lost productivity;
- The impact of health impacts in terms of Quality Adjusted Life Years (QALYs)
- Social values and other factors beyond the economic impact of illness, such as pain and suffering and impacts on children
- Uncertainties in available data

<http://www.thefsrc.org/firm.htm>

FSRC Report: *Identifying the Most Significant Microbiological Foodborne Hazards to Public Health: A New Risk Ranking Model*, 2004.

<http://www.thefsrc.org/Docs/FSRC-DP-01.pdf>

Expert Elicitation

To support FIRR, researchers in the FSRC conducted an expert elicitation to estimate the percentages of illnesses due to eleven major pathogens attributable to specific food categories. This large-scale survey resulted in quantitative estimates, with self-assessed uncertainties and inter-expert differences, that can be compared to empirical estimates from incidence data.

Hoffmann S, et al. [Using Expert Elicitation to Link Foodborne Illnesses in the United States to Foods](#), Journal of Food Protection, May 2007.

Food Attribution Workshop

The FSRC convened a workshop that explored the various principles, approaches, and challenges in attributing foodborne illnesses to food sources. This workshop explored the use of outbreak data, case-control studies, community studies, microbial fingerprinting, expert elicitation, and other approaches for attribution.

Batz M, et al. 2005. "Attributing Illness to Food." Emerging Infectious Diseases, July 2005. <http://www.cdc.gov/ncidod/EID/vol11n007/04-0634.htm>

Framework for Prioritizing Opportunities to Reduce Foodborne Illness Risk

The FSRC built upon FIRR with the development of a conceptual framework to identify opportunities for government intervention – including collaborations with the private sector – that are likely to lead to the greatest reductions in foodborne illness risk. The framework identifies the key principles, characterizes the analytical components, and describes the decision

process that incorporates these analyses. The framework:

- Addresses broad system-wide resource allocation, and targeted risk management for interventions for specific hazards;
- Estimates the relative contributions of specific foods and pathogen-food combinations to the risk of illness;
- Evaluates the feasibility and effectiveness of possible interventions, including research, regulation, and education; and
- Employs cost-effectiveness and cost-benefit analysis.

FSRC Report: *Prioritizing Opportunities to Reduce the Burden of Foodborne Risk: A Conceptual Framework*, 2005.

<http://www.thefsrc.org/Docs/FSRC-DP-03.pdf>

Agribusiness: An International Journal: Special Issue: Economic measures of food safety interventions, Spring 2007.

Risk Modeling

FSRC experts have developed mathematical models or created conceptual approaches for specific hazards in particular food products. These models have addressed:

- *E. coli* O157:H7 in lettuce and leafy greens, including modeling pathways for contamination from off-farm sources including water, air, and direct animal contact, and a risk assessment model to be developed as part of a large CSREES NIFSI grant to the University of Georgia;
- *Salmonella* and *Campylobacter* in broiler chickens, using in-plant microbial data on prevalence and enumeration for a processing model to identify interventions and evaluate their efficacy
- *Salmonella* in pork, using an economic and behavior model to incorporate incentives within the product chain

Priority Setting for Foodborne and Zoonotic Pathogens

The FSRC convened an international conference, in collaboration with MED-VET-NET, in Berlin, Germany. This meeting brought together scientists, experts, government representatives, and food safety decision makers from the US, Europe, and the rest of the world to compare approaches for prioritization. The conference explored methods and data needed

to: estimate disease incidence; measure and characterize health outcomes; attribute illnesses to foods; estimate economic impact; develop integrated measures of disease burden, and identify emerging pathogens.

Mangen M-J, et al. "Integrated Approaches for the Public Health Prioritization of Foodborne and Zoonotic Pathogens," *Risk Analysis*, Sept 2009 (online): <http://dx.doi.org/10.1111/j.1539-6924.2009.01291.x>

Food Safety Information Infrastructure

Researchers in the FSRC explored the challenges and opportunities to improve the FSII in the U.S.. This project convened four workshops to explore how food safety data are shared or made accessible between FDA, USDA, CDC, and other federal agencies, state and local agencies, private firms and trade associations, academic research institutions, and consumers. This project described the current landscape of data collection and sharing and the obstacles that impede data openness, such as institutional policies, individual incentives, the lack of adequate mechanisms, and others. The final report presented numerous recommendations for system improvement.

Taylor M and Batz M. *Harnessing Knowledge to Ensure Food Safety: Opportunities to Improve the Nation's Food Safety Information Infrastructure*, May 2008. <http://www.thefsrc.org/FSII/docs.htm>

Enhancing State and Local Roles in a National Integrated Food Safety System

This project, done in collaboration with AFDO, ASTHO, and NACCHO, brought together state and local officials, their federal counterparts, various sectors of the food industry, consumer groups, and other stakeholders to develop a forward-looking agenda to strengthen state and local roles in an improved national food safety system.

Through workshops and other dialogue-based processes, the project: formulated a modern vision for a nationally integrated food safety system and

identified obstacles to achieving it; recommended changes in law, policy and practice to enhance the effectiveness of state and local food safety agencies; identified opportunities to improve coordination among all levels of government; and described food safety resource needs at the state and local level.

Taylor M and David S. *Stronger Partnerships for Safer Food: An Agenda for Strengthening State and Local Roles in the Nation's Food Safety System*, 2009. http://www.thefsrc.org/statelocal_project.htm

A Public Health Framework for Analyzing Government Food Safety Resources

This project is developing and applying a descriptive framework for analyzing food safety resource allocation from a public health perspective. In consultation with food safety experts and federal, state and local government officials, the project staff is collecting data on government food safety resources and expenditures, creating a framework for describing the allocation of those resources, and applying the framework comprehensively to federal expenditures and on a pilot basis to selected state and local agencies.

http://www.thefsrc.org/analyzingresources_project.htm

Import Safety Workshop

The FSRC, led by the University of Florida Emerging Pathogens Institute, is convening a two-day workshop in Washington, DC that will bring together experts and stakeholders from the private sector, government, consumer groups, and academia to discuss the obstacles and opportunities to improve the safety of food imported into the US. The workshop will focus on the implementation challenges to creating a more risk-based approach to food import safety built upon coordinated efforts of both government and the private sector. The goal of the workshop is to make concrete and actionable recommendations on such a system, particularly in light of pending food safety legislation.

<http://www.thefsrc.org/importsafety.htm>

How does the FSRC conduct its work?

The work of the FSRC is inherently interdisciplinary and requires the efforts of experts in both the natural and social sciences and from many institutions. The FSRC seeks the widest possible collaboration on

specific projects with individual researchers and research institutions and welcomes additional institutions as project participants and as members of the consortium. Because the FSRC intends its work to

be of practical value to government policymakers and risk managers, it seeks and values dialogue and collaboration with government officials and experts.

A key component of every FSRC research or tool development project is a process (consisting of meetings, workshops, consensus conferences, or other vehicles) to directly engage and solicit input on the project from interested experts and stakeholders, and to disseminate the results of the project. The FSRC will also convene, upon request, forums to disseminate and solicit comment on the work of others.

The FSRC provides a flexible vehicle for identifying research needs and opportunities, and for planning projects. Specific projects may be carried out by the consortium as a whole, by two or more of the participating institutions, or by FSRC participants working on an *ad hoc* basis with other individuals and institutions. In addition, FSRC participants will continue to pursue their own food safety projects and activities independent of the consortium.

The results of FSRC projects are published in the scholarly literature and in reports and other forms accessible to non-technical audiences.

How is the FSRC funded?

Other than initial funding to form the FSRC, provided by the The Milbank Memorial Fund, all other funds have been provided through project-specific grants. The FSRC's initial risk ranking project was funded by The Robert Wood Johnson Foundation (RWJF), with follow up funding from USDA's National Integrated Food Safety Initiative (NIFSI), currently administered within the National Institute of Food and Agriculture (NIFA). The CSREES' National Research Initiative (NRI) grant program funded the development of the framework for prioritizing opportunities to reduce risk. RWJF has funded additional work on the food

safety information infrastructure, on analyzing food safety resources, on state and local roles in a national integrated food safety system, and on furthering the risk ranking model. The import safety workshop was funded by a conference grant awarded by the NIFSI program.

The USDA's Economic Research Service and Office of Risk Assessment and Cost-Benefit Analysis, FDA's Center for Food Safety and Applied Nutrition, and the Joint Institute for Food Safety and Applied Nutrition have also supported FSRC programs.

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