

# The Networker



...leading the global fight against foodborne illness

www.foodsafe.msu.edu

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## New Web site to help Michigan livestock producers recognize foot and mouth disease

### National Food Safety and Toxicology Center

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Livestock producers are the nation's most important first responders in defending the animal industry from bioterrorism. Michigan State University wants to help livestock producers across Michigan learn to recognize early signs of foot and mouth disease (FMD), should it appear in the state. Though FMD is not a foodborne illness, its impact on livestock and the food industry is clearly an emerging issue.

"FMD is the kind of organism that could be used against our food production industry," said Dan Grooms, assistant professor of large animal clinical sciences in the MSU College of Veterinary Medicine, "and livestock producers can be one of the greatest assets in identifying foot and mouth disease. If we can encourage Michigan's livestock producers to take a short survey on our newly launched Web site, we will have an idea of how many folks can identify the disease."

Those who visit the site [www.madars.msu.edu/fmd](http://www.madars.msu.edu/fmd) will view sample pictures of animals with FMD and then be asked to evaluate additional images.

"Early recognition and containment of an outbreak is our best defense," Grooms said. "Because cattle are the food animal species with the most rapid and recognizable symptoms, America's cattle farmers are our front line of defense for FMD early detection."

Cattle may be the most important species to watch for early signs of a foot and mouth disease epidemic, though pigs release enormous quantities of the infectious virus and are much more important in terms of infecting other animals.

Compared with goats, sheep and pigs, cattle

become ill more quickly after exposure to FMD and exhibit the most dramatic and recognizable signs of disease.

Responses to the Web site survey on recognizing FMD will be confidential, but scores will be tabulated and compared among different segments of the industry and among different geographical areas.

Tabulated results will be e-mailed to those who indicate on the survey that they wish to receive them.

FMD is a severe, highly communicable viral disease of cattle and swine. It also affects sheep, goats, deer, and other cloven-hooved ruminants. FMD is not recognized as a zoonotic disease.

FMD viruses can be spread by animals, people, or materials that bring the virus into physical contact with susceptible animals. An outbreak can occur when:

- People wearing contaminated clothes or footwear or using contaminated equipment pass the virus to susceptible animals.
- Animals carrying the virus are introduced into susceptible herds
- Contaminated facilities are used to hold susceptible animals.
- Contaminated vehicles are used to move susceptible animals.
- Raw or improperly cooked garbage containing infected meat or animal products is fed to susceptible animals.
- Susceptible animals are exposed to materials such as hay, feedstuffs, hides, or biologics contaminated with the virus.
- Susceptible animals drink common source contaminated water.
- A susceptible cow is inseminated by semen from an infected bull.

You can support U.S. efforts against FMD by:

- Watching for excessive salivating, lameness, and other signs of FMD in your herd; and
- Immediately reporting any unusual or suspicious signs of disease to your veterinarian, to state or federal animal disease control officials, or to your county agricultural agent.





## The Director's View



Ewen Todd

Success in today's environment requires that an organization's leaders have the ability to create a vision of the organization's future *direction* as well as the *course* it needs to get there. The NFSTC has embarked on a strategic planning journey that will chart its course for the next several years.

Strategic planning combines the necessities of the future and present with an organization's desires and capabilities. An organization can stretch beyond present-day necessities to envision and develop the organization to meet and exceed future needs.

Upon my arrival last spring, I requested a facilitation process to begin strategic planning for the NFSTC. During mid-May, individual and group interviews were held with faculty and staff at the center. In October and early November, the following background information on the center's research themes, which is worth repeating here, was provided to external stakeholders representing government, academia and industry.

**NFSTC Mission.** The mission of the NFSTC is to conduct research that will increase understanding of chemical and microbial hazards in foods and to use this knowledge to develop a safer food supply, well-founded public policy, and a greater public under-

standing of food safety issues. The central concept underlying these goals is risk analysis involving the identification, assessment, management and communication of risk.

**Toxicology.** The center has a broad range of capabilities to address the toxicology of chemical hazards in the food supply. Themes that run across this area increase our understanding of mechanisms of toxicity, the evaluation of the risk of dietary exposure to natural and synthetic chemicals, and the public policy and health implication of these studies. End-points of special interest include such areas as carcinogenesis, immunotoxicity and allergy, and hormonal dysfunction.

**Microbial Pathogens.** The center conducts research in areas of emerging and reemerging foodborne pathogens. Research focuses on the evolution of microbial pathogens within the food chain and the pathogenesis of virulent organisms. Specific research topics include the detection of antibiotic resistance in and chronic disease manifestations of these pathogens. Examples of pathogens of current study include *Campylobacter*, *Listeria*, *Salmonella* spp., and pathogenic *E. coli*.

**Analytical and Food Chemistry.** The center has advanced capabilities to develop and perform analytical and bioanalytical methods for a broad range of contaminants of food and water, with special expertise in trace analysis of pesticides, mycotoxins, natural products, metals and persistent organochlorine compounds.

**Epidemiology.** Working closely with microbiologists, toxicologists, agriculturalists and human health providers, the center's epidemiologists use risk analysis to determine the origins and extent of foodborne disease hazards. A wide range of data provides useful information, which assists in hazards identification and reduction.

**Risk Assessment.** Investigators at the NFSTC are exploring quantitative and qualitative risk assessments for pathogens in foods at different steps along the food chain, modeling growth and inactivation of microorganisms, and using epidemiology of foodborne and waterborne disease to help develop dose response assessments. Incorporation of mitigation strategies are being modeled to determine the most effective ways of reducing human illness or other adverse effects. The risk assessors are working with social scientists to help develop risk communication, risk perception strategies and policy.

**Social Dimensions and Communication.** The center conducts research on the social dimensions of risk analysis and the food safety system. Specific areas of interest include changes in agricultural production and food systems that affect food safety, and factors influencing the food safety behavior of individuals and organizations.

**Outreach and Education.** The center provides science-based, unbiased information and education on issues relating to food safety to both the public and food professionals. This information is shared via publications and training programs on topics of current interest such as HACCP.

A strategic planning retreat was held in mid-November, and the center is currently the hub of working group activities that will help us navigate our passageway.

We welcome your thoughts as we work through our strategic planning process. If you have not been contacted and would like to give us feedback on the NFSTC, please take a few moments to fill out the enclosed form. Your insight will help light our path.

**The greatest thing in this world is not so much where we are, but in what direction we are moving.**

Oliver Wendell Holmes



## What's in a name?

Scientific names may appear as convoluted jargon to many people, but scientists at the National Food Safety and Toxicology Center (NFSTC) know that each microscopic organism causes a unique disease. Most foodborne illness can be prevented through some simple food handling steps, and it is important to think about food safety at each step--from shopping to cooking to storing leftovers.

The disease, campylobacter enteritis, is caused by the bacteria *Campylobacter jejuni* and affects about seven million people in the United States each year. It is commonly associated with pets and ingesting raw (unpasteurized) milk, poultry, raw beef, and water and will cause nausea, abdominal cramps, diarrhea and fever starting in one to seven days. To avoid campylobacter enteritis use pasteurized milk, cook foods thoroughly (to the temperature recommended on the meat thermometer), prevent cross contact, and use sanitary practices (e.g., keep food handling surfaces and equipment clean) and wash hands after handling pets.

Botulism is caused by *Clostridium botulinum*. This disease is usually connected with underheated low-acid canned foods (e.g., green beans or tuna fish) and vacuum-packed meats, sausage and fish. Nausea, vomiting, diarrhea, fatigue, headache, dry mouth, double vision, droopy eyelids, muscle paralysis, trouble speaking and swallowing and difficulty breathing characterize this serious disease 18 to 36 hours after it is ingested. If left untreated, it can be fatal in three to 10 days. Following the recommended procedures when canning, cooking foods thoroughly and keeping packaged meats and fish refrigerated (at temperatures of 40 degrees F or less) can prevent botulism.

Another culprit making headlines is *Escherichia coli* O157:H7, which causes a serious disease known as hemorrhagic colitis. Two to five days after ingesting this organism, most people will have severe abdominal cramping and diarrhea (watery at first, then bloody). Some individuals will vomit, develop a low-grade fever or have watery diarrhea only. *E. coli* O157:H7 has been associated with raw or undercooked ground beef, raw milk, some fresh produce, unpasteurized apple juice, alfalfa and radish sprouts. Cook meats to the appropriate temperature, avoid cross contact, use sanitary practices and drink only pasteurized milk and apple juice to avoid this disease.

*Listeria monocytogenes* causes listeriosis, which is associated with soft or semi-soft cheeses, pate, raw vegetables, deli meat, poultry, seafood and improperly refrigerated milk.

Fever, nausea, vomiting and diarrhea may precede more serious forms of listeriosis, or may be the only symptoms expressed. More serious forms of listeriosis can lead to meningitis, septicemia and pre-term labor in pregnant women.

To avoid this disease, cook foods to appropriate temperatures, avoid cross contact, use sanitary practices, do not store foods in the refrigerator for long periods of time and keep the inside of the refrigerator clean. Pregnant individuals and those whose immune systems have been compromised should avoid high-risk foods such as soft cheeses and pate.

Six to 48 hours after ingesting food contaminated with *Salmonella*, victims of salmonellosis will exhibit

nausea, vomiting, diarrhea, abdominal cramps, fever, headache and chills. Arthritic symptoms may follow three to four weeks after the initial disease onset. Foods associated with this disease include raw or undercooked meats, poultry, eggs, alfalfa sprouts, milk and dairy products, shrimp, frog legs, non-commercial sauces, salad dressing, cream-filled desserts and toppings made with raw eggs, cocoa and chocolate. Cook foods thoroughly and use sanitary practices to avoid salmonellosis.

Members of the *Shigella* species cause shigellosis, a disease characterized by abdominal cramps, diarrhea with blood, pus or mucus, fever, vomiting and chills. Onset occurs between 12 and 50 hours after eating contaminated salads (potato, tuna, shrimp, macaroni and chicken), raw vegetable and untreated water. Foods are commonly contaminated by an infected food handler. To prevent this type of infection, use sanitary practices, avoid cross contact, cook foods thoroughly and store foods at proper temperatures.

NFSTC researchers continue to investigate these and other foodborne illnesses to learn how to prevent them at any point between the farm and table. Many food contaminations occur before the point of purchase, so handle all types of food with care. If symptoms of a foodborne illness last longer than two days, see a doctor and be prepared to recount all the foods eaten over the past week or longer.



# International Food Law Courses Prove Inspirational



International food law courses have been an inspiration for students who plan to attend law school.

Wendy Saunders, a student of 2000

International Food Laws in Asia Study Abroad Program, is currently attending law school at the University of Toronto.

“It was the international food laws study abroad program that got me interested in law in the first place,” Saunders said.

Although Saunders has yet to determine on which area of law she will focus, taking part in the program allowed her to consider several different issues.

“Participating in the international food laws study abroad program introduced

me to many legal issues in international trade and regulation,” Saunders said. “The primary focus was food law, but the instructors and speakers were very open to discussing many issues.”

Tamara Clark, who attended the 1999 Special Problems in Food Science course in Europe, has decided not to pursue a career in food law, but rather a career in law generally.

“While I maintain an interest in the regulation of foods, nutraceuticals and drugs,” Clark said, “I do not want to limit myself to this area.”

Both students noted the World Trade Organization (WTO) to be an interesting aspect of the course.

“The most important thing that I learned from the International Food Laws course was how the WTO and agreements such as the General Agreement on Trade and Tariffs (GATT) worked to regulate and facilitate international trade,” Saunders

said. “I also gained an appreciation of how complex this area of law is, but also how fascinating.”

The Institute for Food Laws and Regulations (IFLR), through the College of Agriculture and Natural Resources, offers these courses in either Europe or Asia on a rotational basis. International food law courses for the summer semester of 2002 will be held in Asia.

For more information about IFLR’s summer 2002 study abroad program, contact :

[www.msu.edu/course/fsc/490](http://www.msu.edu/course/fsc/490)



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For more information about the NFSTC or this newsletter, contact Patricia Stewart, Director of Communication and Education Services, at phone: 517-432-3100; fax: 517-432-2310; or e-mail: [stewartp@cvm.msu.edu](mailto:stewartp@cvm.msu.edu).

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MICHIGAN STATE UNIVERSITY

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1. In general, for any multidisciplinary food safety center in a major university, what aspects of food safety should be emphasized in mission and activities?

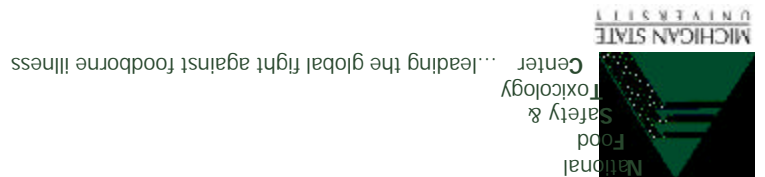
2. Are there any other observations, insights, or suggestions you would be willing to offer as advice for developing our strategic plan for the next several years?

Please fold along perforation and mail. Thank you for participating.

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