

The Food Safety Consortium Newsletter



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Murano Takes Helm at USDA Food Safety Post

Elsa A. Murano, formerly a principal investigator with the Food Safety Consortium when she served on the Iowa State University faculty, was sworn in as undersecretary of agriculture for food safety on Oct. 2 following the U.S. Senate's confirmation of her nomination by President Bush. She has most recently served as director of the Center for Food Safety at Texas A&M University.

As the undersecretary for food safety, Murano is USDA's top food safety official and oversees the policies and programs of the Food Safety and Inspection Service. She has extensive public and private experience in the field of food safety as both a manager and an educator. From 1995 until her recent swearing-in, Murano held several positions at Texas A&M University. Since

1997, she served as the director of the university's Center for Food Safety within the Institute of Food Science and Engineering. During this time she also served on the university's Department of Animal Science Research Advisory Committee and the Food Safety Response Team of the Texas Agriculture Extension Service, and served from 1999-2001 as the chair of the Food Safety State Initiative Committee of the Texas Agriculture Experiment Station. In 2000 she was appointed professor in the



Elsa Murano (left), undersecretary of agriculture for food safety, with Agriculture Secretary Ann Veneman.

Department of Animal Science, after having been an associate professor in that same department from 1995 to 2000. Murano was awarded the Sadie Hatfield Endowed Professorship in Agriculture in 2000.

Murano served as a professor in charge of research programs at the Linear Accelerator Facility at Iowa State University from 1992 to 1995. She had been

an assistant professor in the Department of Microbiology, Immunology, and Preventive Medicine at ISU since 1990.

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Matrix Helps Navigate Maze of Food Safety Laws

Start trying to figure out who has jurisdiction over a particular aspect of food safety among the numerous federal and state agencies and you may want a team of lawyers to sift through the maze. That's already been done for you by a University of Arkansas research group.

The agricultural attorneys spent more than a year reviewing all food safety laws of the federal government

and of the 50 states. They finished their work by producing the multi-volume *Food Safety: State and Federal Standards and Regulations*, which can be found on the Web at <http://www.nasda-hq.org/nasda/nasda/Foundation/foodsafety/index.html>.

"Although the matrix of differing agencies having similar responsibilities for the same food product may be bewildering, it is vital for everyone in the food chain to be familiar with the requirements of local, state and federal agencies,

especially in the area of food safety, to be successful," said the research team published in the April edition of *Food Technology* magazine.

The project's leaders are Philip G. Crandall, a U of A food science professor and Food Safety Consortium investigator; Jake W. Looney, a law professor in the National Center for Agricultural Law Research and Information at the U of A, and Anita K. Poole, a Fayetteville, Ark., lawyer and former research fellow with the NCAALRI.

"At the federal level the responsibilities for food safety are shared by at least a dozen agencies whose legal

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Murano Takes Helm ... continued

The following is the text of Murano's remarks to the U.S. Senate Agriculture, Nutrition and Forestry Committee on Sept. 26 during her confirmation hearing:

Chairman Harkin, Ranking Member Lugar and distinguished members of the Committee, I am greatly honored and humbled to appear before you today as President Bush's nominee for undersecretary for food safety at the United States Department of Agriculture. I would like to publicly thank the president and Secretary Ann Veneman for their support and for their trust in nominating me for this position.

I am a native of Havana, Cuba. My family and I emigrated to the United States 40 years ago. As a Cuban-American, I can proclaim to you without hesitation that we live in the greatest country on the face of the Earth. America opened her arms to Cubans fleeing Castro's regime, allowing me the incredible opportunities that have led to my appearing before you today. On behalf of my family and the countless other Cuban-Americans, I thank the United States of America, my country, for standing up for freedom and for the generosity and indomitable spirit of her people.

It was 1961 when my parents, my brother George and I left our homeland, settling in Puerto Rico, where I attended elementary school. A few years later, we moved to Miami, Fla., where I worked my way through school, graduating with a B.S. in biology from Florida

International University. I developed a deep interest in the medical field and in public health, which guided me to earn an M.S. degree in anaerobic microbiology and a Ph.D. in food science from Virginia Tech. I also developed an appreciation for the field of food microbiology and decided to dedicate my life to the study of bacteria, which although microscopic, are capable of causing so many cases of foodborne illness each year in our country and throughout the world.

As you know from reading my background documents, I have been a researcher and teacher in the field of food safety, both at Iowa State and Texas A&M Universities. My research efforts have led me to investigate organisms like *Escherichia coli* O157:H7, *Listeria monocytogenes* and *Salmonella*, all the bad actors that have become household words.

My approach in this work has been to determine where these pathogens are found and to investigate safe methods that can be used to control or eliminate them from farm to table.

Throughout my career as a researcher, I have become keenly aware of the importance of sound scientific studies and how these can help provide us with the critical information we need to make decisions that will truly reduce the risk of foodborne illness. I have also observed the need for a proactive approach, one that does not react to food safety crises

but rather anticipates risks. The events of Sept. 11 are a reminder to all of us that we need to be diligent in order to prevent threats to our food supply as much as humanly possible.

As an educator, I have seen how education can become one of our most effective tools in combating foodborne illness, and although I am aware of the great strides that have been made in this arena with the Fight Bac campaign, there is still much to be done. My work in Latin America on HACCP training has opened my eyes to the importance of helping those countries, of whom we are the customer, to improve their food safety prevention systems.

I have also come to believe very strongly that inclusion of all

stakeholders, working to attack the issues rather than each other, is the key to our success in decreasing the risk of foodborne

"We need to be diligent in order to prevent threats to our food supply as much as humanly possible."

illness. We're all in this together — government (and I mean not only those in USDA, but all other agencies that play a role in food safety), consumers, industry, educators and scientists. It is only through a team approach, working in total transparency and standing on the truth of science, that we will accomplish our goal for America of having the safest food supply possible.

Thank you, Mr. Chairman. I look forward to working with you and the members of the Committee on these issues. ■

Matrix Helps Navigate ... continued

authority is derived from 35 separate federal statutes," Crandall said. "Within this complex matrix, the type of food product being produced and in some cases the type of food contaminant separates wide ranging and often overlapping responsibilities."

Crandall said the project marks the first time that all federal and state laws and regulations have been condensed into one document. "This is invaluable

information for local, national and multinational food processors who must comply with these regulations," he said.

The present-day system has evolved from the nation's early days when food quality was regulated by state and local officials. Concerns about adulteration began

to emerge in the mid-19th century as more food was shipped across state lines. The U.S. Department of Agriculture was founded in 1862

with a mission that included training food producers. The publication of Upton Sinclair's landmark novel *The Jungle* at the

The project marks the first time that all federal and state laws and regulations have been condensed into one document.

turn of the century focused more public attention on problems with cleanliness in meat packing plants and the food supply in general.

By 1906, Congress passed the first federal laws regulating food production by prohibiting adulterated or misbranded food to be shipped in interstate commerce and requiring meat inspection.

Summarizing the breakdown of modern food safety law in the *Food Technology* article, the project team chose five federal agencies that have primary responsibilities for food safety: the Food Safety and Inspection Service, the Food and Drug Administration, the Environmental Protection Agency, the Federal Trade Commission and the National Oceanic and Atmospheric Administration Fisheries Service. Under each of those agencies, the researchers explored aspects of their authority in the areas of adulteration, misbranding/labeling and enforcement.

“States retain a considerable amount of authority,” the researchers wrote, because the federal Food, Drug and Cosmetic Act of 1938 contains no comprehensive provisions that would preempt state law. Most federal laws require states that choose to regulate labeling to adopt rules identical to those at the federal level.

States are free to act otherwise as they wish so long as their legislation is not inconsistent with federal law. States may regulate meat, poultry and egg inspection programs within their states provided that their regulations are at least as strict as those of the federal government. About half the states have their own meat and poultry inspection programs for products sold within their originating state. The state agencies may carry out those inspections in cooperation with the federal Food Safety and Inspection Service.

Reprints of the *Food Technology* article are available from the Food Safety Consortium at fsc@cavern.uark.edu or 110 Agriculture Building, University of Arkansas, Fayetteville, Ark. 72701. ■

After Irradiating, ISU Keeps Pork Cuts Attractive to Consumers

Irradiated meats aren't yet a common sight in the nation's grocery display cases as marketers carefully consider consumers' demands. Before processors sell products treated with electronic pasteurization, they have some findings from scientists to ponder that will make irradiated meats more palatable to shoppers.

Double packaging, for example, will reduce odors that can result when meat is irradiated. Longer shelf life is an added benefit that irradiation provides in certain cases. Research also shows that the dark, firm dry variety of pork best resists the development of odor.

“We follow a double-packaging strategy because odors from irradiation stay inside of the bag, no matter how long you store the meat,” said Dong Ahn, a Food Safety Consortium researcher at Iowa State University. When pork loins are only vacuum packaged, odors can build during the longer shelf life that irradiation allows. Double packaging involves individually packing the meat with oxygen-permeable film and then repackaging several individual packages in large vacuum bags. The vacuum bags are removed a few days before marketing or consumption.

“When you vacuum package only, you open the bag and can smell the irradiation odor,” Ahn said. That could discourage consumers from taking advantage of irradiation's assurance of a pathogen-free meat product.

Dark, firm dry cuts of pork can benefit most by the irradiation process, Ahn explained. These cuts are juicy and tender, but very susceptible to microbial

spoilage. So a prolonged storage time would ordinarily be harmful to their freshness. Irradiation can extend the length of storage time and enable markets to sell them as fresh cuts.

Ahn's team has not formally studied the extended shelf life of dark, firm dry

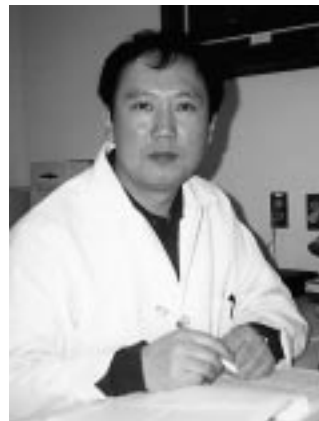
cuts of pork, but he estimated that irradiation “can usually extend shelf life for two weeks easily.” Without irradiation, the shelf life would be only three or four days.

“Irradiation also influences the color,” Ahn said. The three types of pork — normal; pale, soft exudative; and dark, firm dry — all become redder after irradiation, particularly the

pale cuts. The extra red is a benefit to consumers of pork, Ahn noted, a contrast from beef which becomes brown after irradiation.

The pale, soft exudative pork cuts become redder with irradiation, but they are more susceptible to off-odors in the process. Still, Ahn believes its acceptability will increase among consumers. Nonirradiated cuts of pale pork are unattractive to consumers because of their lack of color. If the color is appealing after irradiation, and the off-odor can be reduced by packaging, irradiated meat can be accepted by consumers, Ahn said.

Irradiated dark, firm dry pork tends to offer the best prospects and has fewer problems in storage, Ahn noted. “It has higher water-holding capacity and yield will be increased if used in further processing. Those meat products will be juicier and more tender than others.” ■



Dong Ahn

Report from the Coordinator



Gregory J. Weidemann

It's easy to become saturated in the details of individual issues and research projects, particularly in an organization such as the Food Safety Consortium. Our personnel explore specialized aspects of food safety research, with each project providing at least a small contribution to the nation's overall goal of providing a safe food supply.

Stepping back to gain some perspective is always useful when trying to place one's work in context. Two researchers with the U.S. Department of Agriculture Economic Research Service did that about a year ago in an article for the ERS publication *Food Review* titled "Food Safety Efforts Accelerate in the 1990s." In the September-December 2000 issue, Stephen Crutchfield and Tanya Roberts recapped the decade in food safety and confirmed that it was a busy one.

Their six-page review touches only on highlights, but even those alone make up a major set of advancements and developments. Here are just a few of them:

- The Food and Drug Administration raised the recommended internal

temperatures to which restaurants cook hamburgers to 155 degrees Fahrenheit.

- The USDA Food Safety and Inspection Service declared *E. coli* O157:H7 an adulterant in raw ground beef and implemented a sampling program to test for the pathogen.

- FSIS required a label with safe food handling instructions be placed on packages of raw meat and poultry for consumers.

- FSIS implemented in stages the Hazard Analysis and Critical Control Point (HACCP) inspection system in all federally inspected meat and poultry processing plants. Plants were required to develop HACCP plans to monitor and control their production operations by identifying food safety hazards and the critical control points in the process. Then they were required to establish critical limits for each critical control point and to develop procedures to ensure that the critical limits are met.

- The ERS conducted a benefit/cost analysis to measure the effectiveness of HACCP against its cost of implementation. The study found that the public health benefits — savings in medical costs and productivity losses from prevention

of foodborne illnesses — were greater than HACCP's costs.

- The federal government began the National Food Safety Initiative in 1997 which involved cooperation across several government agencies and included additional funding for food safety research. The national education campaign to promote safer food handling in homes and retail outlets — Fight BAC! — was established as part of this initiative.

- FoodNet, a system to monitor foodborne illnesses around the country as a way of warning against outbreaks, was established in 1996. The data collection system has shown a 20 percent decrease in illnesses caused by foodborne pathogens.

- FDA and USDA approved the use of irradiation on meat and poultry, although few processors and retailers offered irradiated foods for sale. Surveys

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Annual Meeting Convenes; Symposium Postponed

With approximately 80 participants in attendance, Food Safety Consortium personnel gathered for the annual meeting Sept. 16 and 17 hosted by Iowa State University in Ames. Plans for a symposium on risk assessment that had been set for Sept. 18 were called off because of the difficulty of transporting speakers to the conference site.

The FSC Steering Committee decided to try again next year and sponsor the symposium in conjunction with the 2002 annual meeting to be held Oct. 13-15 in Manhattan, Kan., hosted by Kansas State University.

The 2001 symposium's speakers would have been Doug Powell of the University of Guelph, Ontario; Anna Lammerding of Health Canada and Alice Johnson of the National Food Processors Association. The disruption in air service that followed the Sept. 11 terrorist attacks in New York and Washington prevented them from traveling to the symposium site in Iowa.

Steering Committee members expressed the desire to stay with the risk assessment topic as the focus for the 2002 symposium, which would conclude the annual meeting as a half-day session on the morning of Oct. 15. Details of the symposium will be announced next year.



Randy Phebus of Kansas State delivers a progress report during the 2001 FSC annual meeting in Ames, Iowa.

Fung's Inspiration Popped Up Before His Eyes

What a major manufacturer of adhesive tape intended as a way to facilitate gift wrapping turned into a way to expedite scientists' sampling for bacteria on meat.

Meat scientists checking for pathogens on meat surfaces have several methods from which to choose, and the use of adhesive tape is one of them. Laboratory personnel monitor the population of microbes on meat to learn about the potential of spoilage. Applying a piece of adhesive tape to the surface and then examining it for bacteria is the simplest way.

The problem with that method has been the awkwardness. "One inconvenience in the tape method was having to use both hands to peel the adhesive tape from the protective material before placing the tape onto the meat surface for removal of microbes," explained Daniel Fung, a Kansas State University food scientist and Food Safety Consortium researcher.

After pondering this dilemma, Fung found his inspiration while watching a

television commercial. 3M, the manufacturer of Scotch tape, was promoting its pop-up tape dispenser as a way for people to wrap gifts without feeling the need for a third hand. Pull a piece of tape out of the dispenser, and the next piece pops up ready to be pulled.

"They (3M) had no idea this can be used for microbiology," Fung said. But he did, and he set out to try it.

He found the method to be effective as well as cheap, about 1 cent per test, excluding the agar plate.

"Let's take a piece of tape and put it on the surface of the meat for 15 seconds," Fung explained. "Peel it off and put it on the surface of agar (a gelatin-like substance used as a base for culture media that grow bacteria) for 15 seconds. Peel it off and you're done. Incubate the agar for 12 to 24 hours. Count the colonies. You

don't have to do any dilutions."

In conventional swab-and-rinse methods, scientists would swab the meat surface, place the contents in a tube, shake it up in a mixture diluted by a ratio of 1 to 10 and incubate the dilution for 24 hours. The procedure costs about \$2 each time, a considerably higher expense than the pop-up tape method.

"Each sheet of tape along with part of an agar will provide information equivalent to one swab procedure, which utilizes diluents, sterile pipettes, sterile swabs, agar and petri plates to make viable cell counts," Fung said.

Using the tape is versatile not only

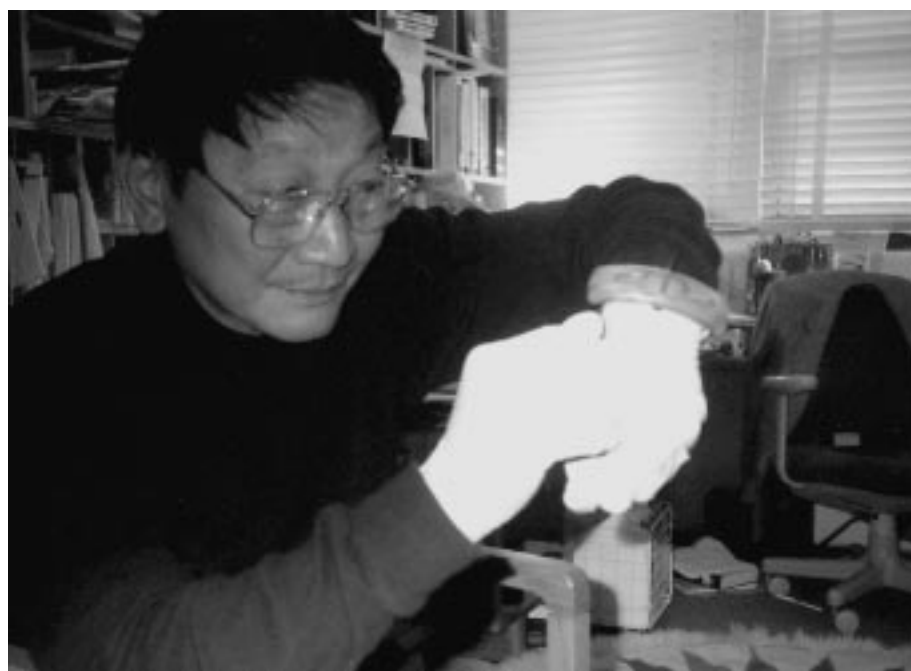
because the pop-up method allows a scientist a free hand, but the tape itself can be applied to curved meat surfaces as well as flat surfaces.

Adhesive tape has been used in meat sampling for about 30 years, but the procedure hasn't been promoted in an organized way, Fung said.

His experiments with the tape involved only beef surfaces, but the method can also be used on surfaces of poultry, fish, pork, fruit, tabletops and bench tops. Agars can be used to study the prevalence of organisms such as *Salmonella*, *Listeria monocytogenes* and lactic acid bacteria.

"This may be the one we can push. This is so simple and efficient. This will be the easiest possible way to do microbiological sampling for meat surfaces." ■

3M had no idea this can be used for microbiology. But Fung did, and he set out to try it.



Daniel Fung of Kansas State shows the pop-up adhesive tape dispenser used to facilitate microbial sampling of meat surfaces.

FSIS Chief Reviews HACCP and How to Evaluate Success

Excerpts of remarks prepared for delivery by Thomas J. Billy, Administrator, Food Safety and Inspection Service, at the 2001 International Association for Food Protection Annual Meeting, Panel Discussion — HACCP: How to Evaluate Success, August 8, 2001, Minneapolis.

Since the completion of the Hazard Analysis Critical Control Point (HACCP) implementation in meat and poultry establishments in January 2000, the agency has begun to evaluate its initial impact in improving the safety of meat and poultry products, and identified how it can keep moving forward, to further improve the safety of these products. ...

When FSIS published the Pathogen Reduction/HACCP final rule in July 1996, we stated that our goal was, and I quote: “to reduce foodborne illness from meat and poultry products to the maximum extent possible, by ensuring that appropriate and feasible preventive and corrective measures are taken at each stage of the food production process where food safety hazards occur.”

Given this goal, what are the criteria we should apply to measure success, and have we met them? ...

The first criterion is HACCP implementation. ... While I and others have declared success

in this area, I recognize that the implementation of HACCP involves much more than new requirements — it involves a culture change for industry, FSIS and the states. That culture change is an ongoing process that will require constant attention in the months and years to come.

The second criterion is improvements

in food safety as measured by prevalence data on *Salmonella* and reductions in foodborne illness.

In terms of reductions in *Salmonella* prevalence, the rule has been a resounding success. Based on test results, FSIS data show that the prevalence of *Salmonella* in raw meat and poultry has decreased since the implementation of HACCP in 1998. The latest report, released in April of this year, is the first aggregate data on all sizes of plants, including data from very small plants, which came under HACCP in January 2000.

The data demonstrate that all sized plants show improvement in all categories of product over baseline studies conducted prior to HACCP implementation. ...

Furthermore, there are growing indications that improvements in process control that result in reductions in *Salmonella* are resulting in reductions of other pathogens as well. ...

A major advantage of HACCP is that it has enabled FSIS to focus some of its resources on other important areas. Our regulatory reform initiatives are one of these areas, and I consider our progress

here to be a positive measure of success as well.

For example, FSIS has updated its sanitation requirements for meat and poultry plants by converting many of the highly prescriptive sanitation requirements to performance standards, thus providing the industry with the flexibility to innovate. We also have

eliminated burdensome prior approval requirements for certain types of product labels, blueprints and equipment. And we have approved the use of a number of new antimicrobials

that industry can use to improve food safety. All told, we have eliminated hundreds of pages of regulations, guidelines and procedures. ...

FSIS has made a number of changes to transition itself to a public health regulatory Agency. First, we established an Office of Public Health and Science, now staffed with scientists representing

numerous disciplines, including epidemiology, risk assessment, microbiology and toxicology. There now is a greater focus on using scientific data to make risk management decisions — particularly through the use of formal risk assessments when appropriate. ...

From what I’ve discussed today you can see that FSIS has changed, and that we have a lot more changes in the works. We have been able to achieve much, and are optimistic about the future, because these changes have been made through a thoroughly public process with an emphasis on transparency. This requires a lot of “up-front” work, but the result is the development of policies that work and that are accepted by stakeholders. That, I believe, is the key to our success. ■



Thomas J. Billy

HACCP involves much more than new requirements — it involves a culture change for industry, FSIS and the states

James Denton, Arkansas, was named Man of the Year by the Poultry Federation at its annual meeting in June in Hot Springs, Ark. Denton was also named chair of the National Alliance for Food Safety Operations Committee and director of the NAFS Poultry Safety Center. He also delivered an invited presentation in September at the Nutrition Conference. He was also interviewed by the *Chronicle of Higher Education* regarding the bioterrorism food security issue.

Lin Xie, Navam Hettiarachchy, Marlene Janes and Michael Johnson, Arkansas, delivered a presentation on “Antimicrobial Activity of Ginkgo Biloba Leaf Extract on *Listeria monocytogenes*” at the Institute of Food Technologists national meeting in June.

Rong Murphy, Arkansas, received grants of \$75,000 from USDA-NRI for “A Model for Pathogen Lethality and Heat/Mass Transfer of Meat Thermal Processing;” \$1,629 from Tyson Foods for “Value Added Poultry By-product Utilization;” \$5,000 from Bar-S Foods Co. for “Thermal Process Evaluation;” \$2,000 from Tyson Foods for “Steam Pasteurization Research;” \$6,000 from Advance Food Co. for “Thermal Process Evaluation;” and \$5,590 from Tyson Foods for “Thermal Lethality in Poultry Products.” **Murphy and John Marcy**, Arkansas, received a \$597,157 grant from USDA-CSREES for “Thermal Process Validation.” **Murphy and M.E. Berrang** received a \$97,858 grant from USDA-ARS for “Eliminating *Listeria monocytogenes* from RTE Poultry Products.”

Rong Murphy, Ellen Johnson, Bradley Marks, Michael Johnson and John Marcy, Arkansas, published “Thermal Inactivation of *Salmonella* Senftenberg and *Listeria innocua* in Ground Chicken Breast Patties Processed in an Air Convection Oven” in *Poultry Science*, 80: 515-521. **Murphy, Ellen Johnson, L.K. Duncan, Ed Clausen, M.D. Davis and Marcy** published “Heat

Transfer Properties, Moisture Loss, Product Yield and Soluble Proteins in Chicken Breast Patties During Air Convection Cooking” in *Poultry Science*, 80: 508-514. **Murphy, Ellen Johnson, Marcy and Michael Johnson** published “Survival and Growth of *Salmonella* and *Listeria* in the Chicken Breast Patties Subjected to Time and Temperature Abuse Under Varying Conditions” in *Journal of Food Science*, 64: 23-29.

Rong Murphy, Ellen Johnson and M.D. Davis, Arkansas, delivered a presentation on “Kinetic Parameters for Thermal Inactivation of *Salmonella* spp. and *Listeria innocua* in Commercially Formulated Chicken Patties and Franks” in August at the International Association of Food Processors (IAFP) meeting in Minneapolis. **Murphy, Johnson, L.K. Duncan and Davis** delivered a presentation on “Pathogen Survival, Moisture Change and Soluble Proteins in Chicken Patties Processed by an Air Impingement Oven” also at the IAFP meeting. **Murphy, Johnson, Davis, R.E. Wolfe and H.G. Brown** delivered a presentation on “Lethality of *Salmonella* Senftenberg and *Listeria innocua* During Steam Pasteurization of Ready-to-Eat Chicken Breast Strips” at the Institute of Food Technologists (IFT) annual meeting in June in New Orleans. **Murphy, Ellen Johnson, Davis, Michael**

Johnson and M. Wu delivered a presentation on “Pathogen Process Lethality and Product Yield for Chicken Patties Processed in a Pilot-Scale Air Impingement Oven” also at the IFT meeting.

Krista Fingerhut, P. Zhang and John (Sean) Fox, Kansas State, published “Consumer Preferences for Pathogen-Reducing Technologies in Beef” in the *Journal of Food Safety*, Vol. 21, No. 2.

Daniel Fung, Kansas State, conducted the first Rapid Methods Workshop in April in Wuhan, China, which attracted more than 200 participants. Fung also conducted workshops in April in Hong Kong and in July in Singapore. He chaired a symposium in April in Seoul, South Korea, was a keynote speaker at a workshop in May in Hungary, was a keynote speaker in August at the Food Safety Congress in San Jose, Costa Rica, and served as an advisory board member in June for Merck in Germany.

Fung also received the Outstanding Educator Award in August from the Society for Industrial Microbiology.

Fung’s research into dried plums received news coverage nationally in *The New York Times*, *The Kansas City Star* and *The Wichita (Kan.) Eagle*. The research shows that dried plum extracts can suppress the growth of *E. coli*

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Report From the Coordinator *continued*

of consumers indicate that education about irradiation’s benefits can promote consumer acceptance.

■ USDA, using the results of food safety research, began in 2000 a campaign to promote the use of food thermometers when cooking at home rather than relying on the appearance of meat to determine if it is fully cooked. The campaign encourages consumers to make sure that the internal temperature of meat has reached at least 160 degrees F.

All of above represents just part of the whole story. It is clear that research projects such as those pursued by the Food Safety Consortium have contributed to the body of knowledge that has enabled the nation to achieve this level of progress in 10 years. Before looking ahead to the next levels, it always helps to look back and see the broad sweep of where we’ve been, and this scene makes for a good view. ■

Food Safety Digest

by Dave Edmark

More efforts are under way on the irradiation education front. The Minnesota Beef Council and SureBeam Corp. are targeting cattle producers and processors, food scientists, public health agencies, public policymakers, restaurant and retail operators and consumers in several states about the benefits of the technology, according to *Feedstuffs*, the agribusiness newspaper.

The council and San Diego-based SureBeam have signed an agreement to take the program to other states. They are using as a model the consumer education campaign that was launched in 1997 in Minnesota. By 2000, Huisken Meats of Minnesota began marketing irradiated beef patties in the state's retail stores. Since then Huisken has expanded the product to 23 states.

A report by SureBeam and the council said they are contacting people in 17 states to arrange educational programs to promote irradiation. In those states, handbooks will be published, brochures will be distributed and product samplings will be conducted at public places.



Mad cow disease, which has caused problems for the meat industry in Europe for many months, has appeared in Japan. In September, Japan's largest fast food chain of beef bowl restaurants announced it was abandoning domestic beef and switching to American beef. McDonald's Japanese restaurants began using only Australian beef.



Dr. Howard Eugene Bauman, who is credited with being the developer of the Hazard Analysis and Critical Control Point (HACCP) system of food inspection, died Aug. 8 in Minneapolis at age 76.

He worked for 36 years as a food scientist for the Pillsbury Co., joining the company in 1953 after earning a doctorate at the University of Wisconsin. At Pillsbury he first served as head of research in its bacteria section, then director of corporate research and finally as vice president for science and regulatory affairs before he retired in 1989.

Although his development of the HACCP system assured him of a prominent role in the history of food safety, he was better known nationally as the man who conceived ways to feed astronauts in the early days of the space program. *The New York Times* reported that Pillsbury put him in charge of a team that designed astronauts' meals. "He developed edibles that had to last a month without refrigeration, withstand high temperatures and humidity, and

bounce off the walls without crumbling, among other things," the *Times* said.

His work to provide safe food for the space program led to development of the HACCP systems for earthbound processors. In the early 1970s, he tested the HACCP system of monitoring potential hazards at various stages of processing. The U.S. Department of Agriculture asked for a system to insure safety in canning vegetables. After Bauman's tests, the Food and Drug Administration implemented regulations adopting his HACCP system for canners. By the late 1990s, USDA required its use in the meat and poultry processing industries, and FDA required it of seafood processors. ■

Papers & Presentations continued

O157:H7, *Salmonella typhimurium*, *S. aureus*, *Listeria monocytogenes* and *Yersinia enterocolitica*. Fung plans to present data on the research at meetings in Chicago and Japan.

Irene Wesley, Iowa State, delivered a presentation on "Campylobacter: Genotyping Methods" in a seminar at the annual meeting of the Association of Analytical Chemists in September in Kansas City, Mo. Also in September, she participated in a meeting of the International Taxonomy Committee for *Campylobacter* and Related Organisms in Freiburg, Germany. ■

The Food Safety Consortium Newsletter

is a production of the three member schools of the consortium: University of Arkansas, Iowa State University and Kansas State University. Your comments are welcome.

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