

BOARD

Van Ayvazian
Boar's Head Provisions Co., Inc.

Wesley Batista
JBS Swift & Company

Greg Benedict
American Foods Group, LLC

J. Patrick Boyle
American Meat Institute

Rod Brenneman
Seaboard Foods

Bill Buckner
Cargill, Incorporated

Philip Clemens
Clemens Family Corporation

Henry A. Davis
Greater Omaha Packing Co., Inc.

Tim Day
Bar-S Foods Co.

Jeffrey Ettinger
Hormel Foods Corporation

Neil Genshaft
Fresh Mark, Inc.

John Griffin
Griffin Industries, Inc.

Tom Hayes
Sara Lee Corporation

James H. Hodges
American Meat Institute

Gary Jacobson
Indiana Packers Corporation

Tim Klein
National Beef Packing Co., LLC

Jim Lochner
Tyson Foods, Inc.

Michael McCain
Maple Leaf Foods Inc.

Dave McDonald
OSI Industries, LLC

Nick Meriglioli
Kraft Foods, Inc./Oscar Mayer

David Miniati
Ed Miniati, Inc.

Brian Nilsson
XL Foods, Inc.

Larry Odom
Odom's Tennessee Pride Sausage
Inc.

Larry Pope
Smithfield Foods, Inc.

Dennis Vignieri
Kenosha Beef International, Ltd.

AMIF Clarifies Role of Microbiological Testing Programs in Ground Beef Safety

In an effort to clarify the role of microbiological testing, the AMI Foundation released a backgrounder on the role of N-60 microbial sampling programs in ensuring ground beef safety.

The term "N-60" is a term used by the beef industry to describe a sampling program for raw beef components that are used to make ground beef. Statisticians use the letter "n" to indicate the number of samples taken from a production unit or lot. These samples are removed from the exterior surface of beef cuts or trimmings that are used in the production of ground beef. Hence, the term N-60 describes a sampling plan where 60 individual samples are randomly drawn from a lot.

AMIF's backgrounder explains, in detail, how a company that manufactures beef trimmings may define a "lot," the typical steps involved in the sampling process, and how many different

analytical methods can be utilized by meat companies for testing ground beef. The laboratory method must be validated to provide accurate results and be equivalent to the analytical methods used by the USDA Food Safety and Inspection Service (FSIS).

"Industry-wide, N-60 sampling programs have improved beef safety based on historical testing results for *Escherichia coli* O157:H7. Beef slaughter plants use N-60 testing results to provide feedback that is used to monitor and maintain sanitary slaughter procedures and to verify the effectiveness of microbial interventions," the backgrounder states. "High rates of positive test results indicate that the process needs to be reviewed and that corrective actions may be required to address the finding. All lots that test positive for *E. coli* O157:H7 are diverted from use in raw ground beef."

AMIF says that N-60 trim (see page 3)

AMI President and CEO Defends Ground Beef Safety During Recent Media Appearances

"The meat industry has invested tens of millions of dollars over the last ten years in research programs to make our products safer. And they've shared the results in a non-competitive environment, so we can spread the knowledge throughout the industry," AMI President and CEO J. Patrick Boyle said during an appearance on CNN's "Larry King Live" that aired in October 2009.

The segment, entitled "Beef: Safe or Scary," was prompted by the *New York Times* article on ground beef safety by investigative reporter Michael Moss that ran on October 4 ("Woman's Shattered Life Shows Ground Beef Inspection Flaws").

Boyle was part of a large panel of guests that included attorney Bill Marler; former U.S.

Department of Agriculture (USDA) Under Secretary for Food Safety Elsa A. Murano, Ph.D.; Colin Campbell, Ph.D., Cornell University; Nancy Rodriguez, Ph.D., University of Connecticut; and chef Anthony Bourdain.

During the segment, Boyle noted that while the meat and poultry industry has a great deal of sympathy and empathy for those affected by *E. coli* O157:H7, the positive development is that these kinds of tragic illnesses are decreasing in America.

"These illnesses are down 60 percent in the last 10 years," Boyle said. "And the reason for that reduction in *E. coli* related illnesses is because the incidence of that pathogen in our beef products has dropped by 45 percent during that same 10-year period and that's not just a (see page 2)

AMI Urges National Salt Reduction Initiative to Consider Science, Safety When Determining Targeted Reductions

“The public health of our customers is the foremost driving force in the production of our products, not only improving the food safety of our products, but also in offering diverse products to our customers so they can make an educated decision in choosing the food that best fits their personal lifestyle and family needs,” AMI said in recent comments submitted to the New York City Department of Health and Mental Hygiene (NYCDOH).

AMI’s comments were filed in response to a recent National Salt Reduction Initiative launched by NYCDOH. The goal of the initiative is to reduce dietary sodium intake by 20 percent. NYCDOH proposed specific reductions ranging from 15 to 30 percent for various food product categories. The comments

submitted by AMI address proposed targets for a variety of meat product categories including processed meats and whole muscle cuts.

AMI argued that a 20 percent reduction is not likely feasible for meat processors that produce traditional products and a 25 percent reduction is unlikely to be achieved as it would require new technology, as yet totally unknown, to be developed and implemented.

Listeria monocytogenes is of particular concern in ready-to-eat processed meat and poultry items, AMI said, because it is very difficult to eradicate from the environment (see page 4)

Boyle Defends Meat Safety Progress on Larry King Live, GMA

(from page 1)

random development. It’s because of investment, technology, research and more sophisticated process control. So we are making significant progress in taking a very safe food supply and making it even safer.”

Attorney Bill Marler agreed with King when he pointed out that the vast majority of people eat hamburgers without any incident. “Absolutely,” said Marler. “The industry has done a very good job.”

Boyle said there are two steps available to eliminate *E. coli* in the ground beef supply. One is through irradiation, which is not widely used. And the other is through proper cooking of the product.

During the segment, which included questions from viewers, Boyle also defended modern agriculture production, noting that low cost, efficient meat and poultry processing facilities give Americans an abundant variety of safe and wholesome products at the lowest price in terms of disposable income of any developed country in the world.

King gave Boyle the last word on *E. coli* at the end of the segment. “The beef supply is safer today in terms of *E. coli* incidents than it was five years ago,” Boyle concluded. “It was safer five years ago than it was ten years ago. We continue to

“You have to recall we are dealing with fresh product. ... We’ve made enormous progress over the last 10 years.”

- AMI President and CEO J. Patrick Boyle



make enormous investments in technology and process controls. The industry itself conducts millions of *E. coli* tests within our plants to better understand the effectiveness of our interventions. We need more interventions. For example, five years ago, the American Meat Institute petitioned USDA to allow us to use irradiation on the exterior of carcasses. Five years later, the department has yet to commence a rulemaking to determine if we can utilize that technology. We need good responses from USDA.”

In a separate appearance on ABC’s “Good Morning America,” Boyle again defended the safety record of the meat industry.

The segment, which aired November 9, 2009, focused on *E. coli* O157:H7 in ground beef, and was the first in a three-part series, “What’s in Your Food.”

“You have to recall we are dealing with a fresh product,” Boyle said. “But as we have tried to comply with zero-tolerance standards, we’ve made enormous progress over the last 10 years.”

During the segment, GMA announced that test results on ground beef bought at retail showed that meat from multiple cows was found in the samples tested — something GMA suggested was somehow problematic.

Boyle explained the reason that hamburger often contains meat from multiple sources. “Our ground beef supply is a combination of different types of meat in proportion to certain levels of fat,” Boyle said. “So one has to have multiple sources of the raw material to make the finished product that Americans enjoy so much.”

Also appearing in the segment was Elisabeth Hagan, M.D., chief medical officer with USDA, who said the key to preventing *E. coli*-related illness is in the cooking.

“The safest way to ensure that your meat is properly cooked is to use a meat thermometer,” Hagen said.

AMI Outlines Keys to Effective Traceability System at Joint Meeting

AMI Vice President of Food Safety and Inspection Services Scott Goltry told a joint Food and Drug Administration (FDA) and Food Safety and Inspection Service (FSIS) meeting recently that traceability is “a reactive, yet essential part of a food safety system,” but also cautioned that “enhancements to traceability systems must be based on risk and the success of meeting traceability objectives.” The meeting was held to discuss enhancements for product tracing systems for food.

Goltry outlined the key objectives of a traceability system, which are: 1) to help determine the cause of the foodborne outbreak; 2) to help determine the source of the contamination; and 3) to create the ability to remove specific illness-associated product from commerce without causing market disruption while maintaining consumer and trading partner confidence.

Goltry explained that change to an existing traceability system is more difficult than developing a new trace system when one does not exist. He said that data and information systems that deal with product traceability are directly related to product availability, cost and production formulation systems and therefore

a change to a tracing system could create an overhaul of the complete information system. “Duplicate traceability systems will do nothing but add cost and confusion to the food chain and should not be created,” Goltry noted.

Goltry also noted that current law requires meat and poultry products to bear an establishment number clearly visible on the label and that, although not required, production lot or code date information almost always is printed on the consumer package. Additionally, the Packers and Stockyard Act requires that records be maintained that can identify the supplier of livestock purchased.

AMI supports the tracing system referred in the Public Meeting Notice as “one up/one down” tracing system, according to Goltry. This type of tracing system would begin with livestock purchased and delivered to the manufacturing plant and include ability to trace the product through the supply chain by processors, distributors and retailer to the consumers. He also said that good recordkeeping by everyone in the chain is critical, emphasizing the importance good records by any company that processes ground beef.

AMI Foundation Backgrounder Clarifies Role of N-60 Programs

(from page 1)

sampling must be robust, the analytical test method must be accurate and sensitive and actions must be taken on associated product in response to multiple findings of positives during a production period. This is a ‘systems’ approach issue, not a sampling scheme issue,” the backgrounder notes.

However, the backgrounder notes, a false perception exists that N-60 testing makes raw ground beef totally safe. It does not, just as any sampling scheme short of 100 percent testing cannot make food safe. N-60 testing cannot guarantee with 100 percent certainty that beef trimmings are free from *E. coli* O157:H7 contamination.

The N-60 testing programs are a valuable process feedback verification tool. When done correctly – and only when done correctly – does an N-60 program achieve this outcome. “Individual test results do not – and cannot – guarantee that a product is ‘free’ of *E. coli* O157:H7,” the backgrounder stresses.

For example, FSIS sampling data show a rate of slightly more than 1 percent positive for *E. coli* O157:H7 in beef trimmings. If the prevalence rate is 1 percent and 60 sample units (n=60) are tested, there is a 45 percent probability that the sample will test positive and the lot will be rejected. But if the prevalence rate is 5 percent, as may be the case with a more highly contaminated lot, and 60 sample units are tested, there is a 95 percent probability that the sample will be found positive and the lot will be rejected.

It is statistically impractical, according to AMIF, to implement a sampling program to detect and reject contaminated product with a very low prevalence of contamination. For example, if the prevalence rate of *E. coli* O157:H7 in beef trimmings is 0.1

percent, the number of samples required to detect the pathogen would be 2,995 units with a 95 percent confidence level. Furthermore, the probability of finding *E. coli* O157:H7 in a lot does not increase when the lot is re-sampled. Testing a single lot of beef trim over and over again does not guarantee that raw product is “free” of *E. coli* O157:H7 unless all of the product is tested. Under that scenario, no beef product would remain to enter the marketplace.

“All microbial sampling programs have limitations. That is why food safety experts continue to support the development and implementation of a complete food safety system that includes multiple hurdles to prevent harmful pathogens in the final product. These multiple hurdles include not only microbial intervention treatments, but also methods to measure their effectiveness.

In addition to this resource, AMI Foundation President James H. Hodges recently led a media webinar to address reporters’ questions about microbiological testing. Reporters from Meatingplace, *Meat and Poultry Magazine*, *Food Protection Report* and a veteran agriculture reporter with the national newswire Oster Dow Jones participated.

AMI is also scheduling briefings for the media about the issue and is developing a video that will be useful to rapidly and succinctly educate reporters about the testing issue.

The AMIF Backgrounder and Hodges’ webinar PowerPoint are both available in their entirety at MeatAMI.com, under Food Safety/Inspection, *E. coli* O157:H7.

AMIF Honors John Butts, Ph.D., With Scientific Achievement Award

John Butts, Ph.D., vice president of research at Land O' Frost, was awarded the AMI Foundation Scientific Achievement Award. The award was presented during AMI's International Meat, Poultry & Seafood Convention & Exposition, part of Worldwide Food Expo, Oct. 28-31, 2009, at McCormick Place in Chicago, Ill.



John Butts, Ph.D., accepts the AMI Foundation Scientific Achievement Award during AMI's International Meat, Poultry & Seafood Convention & Exposition, part of Worldwide Food Expo, Oct. 28-31, 2009, at McCormick Place in Chicago, Ill.

Butts has been instrumental in promoting food safety efforts for all meat and poultry companies by embracing the philosophy that food safety should be a non-competitive issue, according to AMI's Immediate Past Chairman Rod Brenneman, president of Seaboard Foods, who presented the award. At every turn, Butts can be counted upon to share the benefit of his knowledge and experience. His development of the "Seek and Destroy" program of sanitation, equipment design and maintenance put him at the forefront of food safety in the industry.

Additionally, he introduced a pasteurization step and a one-way product process through the plant in the 1980s and implemented one of the first plant HACCP programs in the 1990s. Butts also co-authored AMI's *Listeria* Prevention and Control Program and is a regular and well-respected instructor.

Butts has worked on several AMI committees, and served as chairman of the Scientific Affairs Advisory Committee from 2001 to 2003.

"John's scientific achievements extend well beyond his own resume and company," said AMI President and CEO J. Patrick Boyle. "His efforts have had a profound effect on all members of our industry and their products. Those that know him marvel at his microbiological knowledge and his scientific generosity."

AMI Foundation Responds to National Salt Reduction Initiative

(from page 2)

and if products are contaminated, the organism will survive and grow (even at refrigerated temperatures) unless growth inhibitor systems are used. Three common ingredients used for this purpose are sodium chloride, sodium or potassium lactate and sodium diacetate, found in up to 70 percent of processed items in the U.S. marketplace.

"Reduction in one requires a concomitant increase in another in order to maintain the same degree of safety based on the current state of knowledge using prediction models. Validation of the effectiveness of *Listeria* growth inhibitors will take up to 4 months for each experimental variant to ensure effectiveness well beyond current quality based code dates used in the industry," AMI said.

AMI also noted that salt or sodium chloride has a critical role in the production of meat products, whether used by large commercial processors, local butchers, or even within the consumer's home, to improve the flavor, texture, and safety of the meat product. The addition of sodium chloride improves the functionality of the muscle proteins. The change in ionic strength increases hydration of the proteins, improving the binding of fat by the muscle protein in products like bologna and sausages. It also improves tenderness during cooking. The water binding of meat proteins caused by sodium stabilizes the delicate protein matrix during cooking, thus producing a final product that has improved texture, tenderness and palatability.

"Reductions in sodium, at some of the proposed NYCDOH targets would produce meat products that would be unacceptable in

texture, tenderness and flavor to consumers and ultimately never be purchased," AMI said.

AMI also asked NYCDOH to consider the unforeseen economic consequences these targets may have on the final product being sold to the consumers. Sodium Reduction in meat and poultry products may have unintended consequences, like significantly increasing the expense to the consumer.

"Meat is a healthy component of the human diet as it provides essential amino acids, minerals like iron, vitamins, and other dietary requirements at an affordable price. The likely increase in product price could likely be applied more gradually if the timeline of proposed reduction targets was extended to be more realistic and feasible. This would allow the food industry to find solutions to these challenging obstacles," the comments concluded.

In addition to the comments, AMI has also provided input during a number of stakeholder meetings on the initiative. On January 11, NYCDOH publicly released for technical comment its proposed targets for sodium reduction for 2012 and 2014 in packaged and restaurant foods. The technical comment period will run until Monday, February 1.

The food industry will be asked to submit baseline data and asked to publicly commit to the targets in 2010. For more information on this initiative, contact Director of Research Susan Backus at sbackus@meatami.com or Director of Scientific Affairs Betsy Booren, Ph.D., at bbooren@meatami.com.

▶ AMIF Research

AMIF Study Examines Effectiveness of Levulinic Acid

Research performed by Utah State University examined if levulinic acid could reduce pathogenic bacteria when applied as a topical surface treatment and what, if any, protective effect the treatment had when applied to beef plates, turkey roll slices, chicken skin and pork bellies. This AMIF-funded study concluded that it was not possible to establish the potential for levulinic acid as a substitute for lactic and acetic acids as a surface decontamination treatment for meat products.

The study, conducted by Charles E. Carpenter, Ph.D., and Jeffery R. Broadbent, Ph.D., investigated the reduction and any residual protection against pathogenic bacteria on meat surfaces that result from washing meat with water and 2 percent of either lactic, acetic, or levulinic acid. The study also evaluated the organoleptic implications from spraying slices of turkey roll or beef trim with water and organic acids.

Lactic acid was found to significantly ($P < 0.05$) reduce the prevalence of *Listeria monocytogenes* on turkey roll slices compared to the control samples. All organic washes decreased the levels of *Salmonella* on skin-on pork bellies and chicken skin,

with a significant reduction ($P < 0.05$) observed when compared to the control samples. Overall, the application of 2 percent lactic acid was the most effective ($P < 0.05$) in reducing pathogenic bacteria when used as a surface decontamination treatment on meat products. Levulinic acid did not have any effect ($P > 0.05$) on reducing levels of *Escherichia coli* O157:H7 on beef plates, regardless of concentration or temperature of the levulinic acid treatment solution.

Spraying slices of turkey roll and beef trim with 2 percent lactic, acetic, or levulinic acid did not change the sensory attribute for overall liking of the turkey roll or cooked patties, respectively. Some differences were reported on the instrumental measures of color, but these appeared to be of little practical significance.

“It is not possible to establish the potential for levulinic acid as a substitute for lactic and acetic acids employed for surface decontamination of meat. This may be related to the 2 percent concentration of acids used in this research that was chosen based on industry practice at the time the proposal was submitted,” the report concludes.

▶ AMIF Research

White Paper Analyzes Information on Non-O157:H7 Strains

Numerous serotypes of non-O157 Shiga-toxin producing *E. coli* (STEC) are present in ruminants and occasionally in other animals, produce and drinking and surface water. Although many non-O157 STEC strains lack some important virulence genes and have a low pathogenic potential, there are other strains that cause sporadic cases of HUS and outbreaks with serious illness and fatalities, according to a new AMIF White Paper by Charles Kaspar, Ph.D. and M. Ellin Doyle, Ph.D., University of Wisconsin-Madison.

The White Paper, which summarizes available epidemiological data on cases and outbreaks caused by non-O157:H7 STEC associated with meat and non-meat vehicles and evaluates the prevalence of non-O157:H7 STEC in meat and non-meat sources, says the true number of cases of illness caused by non-O157:H7 STEC is underestimated because many health laboratories do not routinely test for bacteria.

The paper also examined the existing interventions and analytic methods for non-O157 STEC. According to Kaspar and Doyle, interventions for control of STEC range from different diets fed to ruminants (more forage, probiotics), treatments for animal drinking water, vaccines for livestock, slaughterhouse interventions such as cleaning carcasses and environmental control with sanitizers. Interventions for foods include thermal treatments, high pressure, addition of organic acids or lactobacilli, nisin, herbs or spices.

The paper includes a series of recommendations from

government sources for preventing transmission of STEC and other bacteria from animals in public settings. Interventions have been tested mainly with *E. coli* O157:H7. These may also be effective for controlling non-O157 STEC. However, because of variations in resistance to environmental stresses, the lethality of interventions and processes used to control *E. coli* O157:H7 will need to be evaluated with a select set of non-O157 STEC.

Analytical methods for detection of non-O157 STEC include PCR detection system for genes encoding shiga toxins, other virulence factors, and serotype specific proteins and immunoassays for shiga toxin proteins and specific O antigens. Some types of enrichment procedures and culture media may aid in screening bacterial isolates. Several reports evaluated commercially available assays, researchers found.

Regarding future research needs, authors say recently published studies also demonstrate that a large number of serotypes may be present in animals: at least 10 detected on beef carcasses in the Pacific northwest (53) and 31 serogroups detected in dairy cattle in Japan.

“Estimates of prevalence are much higher from PCR or immunoassays detecting shiga toxins or genes coding for these toxins (23-30 percent) than estimates obtained from isolation of STEC bacteria (6-12 percent). Many of these STEC strains may not be virulent but it would be useful to know how readily these strains can exchange genetic information and acquire virulence factors,” the report concludes.

Science Soundbites

***Listeria Monocytogenes* Prevalent, Diverse in Retail Establishments**

Listeria monocytogenes is regularly found in some retail environments, strains are often widely distributed indicating cross-contamination with the pathogen can persist in environments for more than a year, according to a new analysis by Cornell University.

The study, which sought to better define *Listeria monocytogenes* in retail and deli operations, conducted a cross-sectional study of *L. monocytogenes* contamination patterns in 121 retail establishments, using testing of food and environmental samples and subtype analysis of *L. monocytogenes* isolates.

Seventy-three (60 percent) establishments had at least one sample that tested positive for *L. monocytogenes*; 5 (2.7 percent) of the 183 food and 151 (13.0 percent) of the 1,161 environmental samples tested positive for *L. monocytogenes*, including 125 (16.7 percent) and 26 (6.3 percent) of non-food contact and food contact surface samples, respectively.

The study also identified specific contamination patterns in retail establishments, providing critical information for the development of control strategies.

Thirty-two EcoRI ribotypes were identified among the 156 *L. monocytogenes* isolated. Twenty-seven establishments had two or more *L. monocytogenes* with the same ribotype within a given establishment, including nine establishments where isolates from three to five samples had the same ribotype. In five of seven establishments where follow-up sampling was conducted 8 to 19 months after the initial sampling, isolates with the same ribotype were obtained in both samplings; persistence of a given strain was also confirmed by pulsed-field gel electrophoresis.

Journal of Food Protection (2009)
72(11):2337-2349

Study Examines Effectiveness of Chlorine Dioxide Against *Listeria monocytogenes*

Removal of divalent cations and organic material in brine solutions prior to disinfection with ClO₂ should be investigated to improve the efficacy of the compound against *L. monocytogenes*, a study by Pennsylvania State University has found.

Chlorine dioxide (ClO₂) was investigated as an antimicrobial additive to eliminate *Listeria monocytogenes*. Several

experiments were performed using brine solutions made of sodium chloride (NaCl) and calcium chloride (CaCl₂) inoculated with *L. monocytogenes* and/or treated with 3 ppm of ClO₂. First, 10 and 20 percent CaCl₂ and NaCl solutions (pH 7.0) were inoculated with a five-strain cocktail of *L. monocytogenes* to obtain 7 log CFU/ml and incubated 8 hours at 0 degrees Celsius. The results demonstrated that *L. monocytogenes* survived in 10 percent CaCl₂, 10 and 20 percent NaCl, and pure water. *L. monocytogenes* levels were reduced, 1.2 log CFU/ml in 20 percent CaCl₂.

Second, inoculated brine solutions treated with 3 ppm of ClO₂ resulted in a 4-log reduction of the pathogen within 90 seconds. The same was not observed in a solution of 20 percent CaCl₂; further investigation demonstrated that high levels of divalent cations interfere with the disinfectant. Spent brine solutions from hot dog and ham chilling were treated with ClO₂ at concentrations of 3 or 30 ppm. At these concentrations, ClO₂ did not reduce *L. monocytogenes*.

The information from this study may be useful to processing establishments and researchers who are investigating antimicrobials in chilling brine solutions.

Journal of Food Protection (2009)
72(11):2272-2277

Nutrition News Corner

Study: Meat Consumption Could Have Positive Impact on Long-Term Health

Moderate consumption of lean red meat as part of a balanced diet is unlikely to increase risk for cardiovascular disease or colon cancer, but may positively influence nutrient intakes and fatty acid profiles, thereby impacting positively on long-term health, a study by the Northern Ireland Centre for Food and Health has found.

According to the study, several methodological limitations and inconsistencies were identified which may impact claims that red meat may increase the risk for cardiovascular disease or colon cancer. Overall, there is no strong evidence to support the recent conclusion from the World Cancer Research Fund (WCRF) report that red meat has a convincing role to play in colon cancer. A substantial amount of evidence supports the role of lean red meat as a positive moderator of lipid profiles with recent studies identifying it as a dietary source of the anti-inflammatory long chain and conjugated linoleic acid.

Meat Science(2010) 84:1-13

Analysis: Health Benefits of Nitrite/Nitrate Far Outweigh Inconclusive Data on Risks

The weak and inconclusive data on the cancer risk of nitrite, nitrate and processed meats are far outweighed by the health benefits of restoring NO homeostasis via dietary nitrite and nitrate, according to a new analysis by Andrew Milkowski, Harsha K. Garg, James R. Coughlin and Nathan S. Bryan.

The authors support this conclusion through the utilization of epidemiological data and a discussion of the risk-benefit evaluation of dietary nitrite and nitrate in the context of nitric oxide biology.

“This risk/benefit balance should be a strong consideration before there are any suggestions for new regulatory or public health guidelines for dietary nitrite and nitrate exposures,” the authors conclude.

Meat Science(2009)

Ongoing AMI Foundation Research

Listeria monocytogenes

<u>Investigator</u>	<u>Institution</u>	<u>Project Title</u>
Mary Alice Smith, Joseph Frank	University of Georgia	Refinement of <i>Listeria monocytogenes</i> (<i>L. monocytogenes</i>) Low Dose Data from Pregnant Guinea Pigs for Human Risk Assessment
Kathy Glass, Jeff Sindelar	University of Wisconsin	Evaluation of anti-Listerial Properties of Natural and/or Organic Ingredients in Ready-to-Eat Meat and Poultry Products
Phil Crandall, John Marcy, Steve Ricke, Mike Johnson, Betty Martin, Corliss O'Bryan, Sara Rose Milillo	University of Arkansas	Cost Effective Treatments to Minimize In-Store Deli Meat Slicer Cross Contamination of Ready-To-Eat Meats by <i>Listeria monocytogenes</i> , Phase II
Sophia Kathariou, Dana Hanson	North Carolina State University	Genetic Attributes Associated with the Ability of Different Serotypes of <i>Listeria monocytogenes</i> to Colonize the Meat Processing Plant Environment and to Contaminate Read-to-Eat Meat Products (Chicken, Turkey, Pork and Beef)
Richard Meinersmann, Mark Berrang, Tim Hollibaugh, Joseph Frank	Agricultural Research Service, USDA, University of Georgia	Role of Protozoa in the Persistence of <i>Listeria monocytogenes</i> in a Ready-to-Eat Poultry Processing Plant

Salmonella

<u>Investigator</u>	<u>Institution</u>	<u>Project Title</u>
Annette O'Connor	Iowa State University	A Workshop to Develop Reporting Guidelines for Interventions Studies in Food Safety and Production Animal Science: Modifying the CONSORT Statement
Michael Doyle, Tong Zhao	University of Georgia	Reduction of <i>E. coli</i> O157:H7 and <i>Salmonella</i> in Ground Beef
Margaret Hardin, Jayne Stratton, Marcos Sanchez-Plata	Texas A&M University, University of Nebraska-Lincoln, Inter-American Institute for the Cooperation in Agriculture	Evaluation and Performance of the Premi-Test™ <i>Salmonella</i> Serotyping System on Pork and Poultry Isolates from Commercial Sources

Other Food Safety

<u>Investigator</u>	<u>Institution</u>	<u>Project Title</u>
Randy Wehling, Michael Zeece, Harshavardhan Thippareddi	University of Nebraska	Evaluation and Analysis of Meat Products Contaminated by Low Levels of Ammonia (Targeted Research)
Ellin Doyle, Kathy Kurth, Andrew Milkowski	University of Wisconsin	White Paper on Effectiveness of Existing Interventions on Virus Inactivation in Meat and Poultry Products (Targeted Research)

Diet and Health

<u>Investigator</u>	<u>Institution</u>	<u>Project Title</u>
J. Scott Smith, Terry Houser, Melvin Hunt	Kansas State University	Analysis of Heterocyclic Amines (HCAs) Formation in Various Cooked Meat Products (Targeted Research) ¹

¹ Co-funded with the National Pork Board

► Upcoming Events

AMC to Highlight Hot Topics

Registration is now open for the industry's premier retail meat merchandising educational event, the Annual Meat Conference (AMC), slated for March 7-9, 2010, at the Rosen Shingle Creek in Orlando, Florida. This event is co-sponsored by the American Meat Institute (AMI) and Food Marketing Institute (FMI).

The conference each year attracts 800 members of the retail food and meat industries. It is considered the leading educational event focusing on meat and poultry marketing innovations, merchandising issues and consumer purchasing trends.

Associate sponsors include the American Lamb Board, Beef Checkoff, National Chicken Council, National Pork Board and National Turkey Federation.

Scheduled general session topics include the impact of the economy on business, optimizing business intelligence, results from the annual Power of Meat survey, sustainability and how to prepare for the future. Workshops will focus on business decision-making, food safety, responding to animal welfare concerns, regulatory updates, crisis communication, strategies for adding value for consumers, using new technologies and future trends.

The 2010 conference will feature the popular Product Tasting Reception on March 8. Nearly 50 meat and poultry companies are expected to showcase new products and brand line extensions to retail buyers.

AMC 2010 also will feature the annual Technology Fair on March 8 starting at 10:45 a.m. At this one hour networking session, suppliers to the meat, poultry and retail supermarket industries display new technology, ranging from irradiation systems to labeling machinery to in-store processing and packaging equipment. Following the exhibit will be a luncheon.

The advance registration fee for the conference is \$595 per person, or \$545 for three or more members of the sponsoring associations. On-site registration is \$695 per person, or \$645 for three or more members registering together, or \$515 when five or more retailers/wholesalers register together. The nonmember registration rate is \$1,290 per person.

Visit www.MeatConference.com to view the complete conference program and register online.

AMIF to Cosponsor Updated *Listeria* Workshop

The AMI Foundation will host an updated Advanced *Listeria* Intervention and Control Workshop February 3-4, 2010, at the Westin Michigan Avenue, Chicago, Illinois. The workshop is being co-sponsored by the North American Meat Processors Association (NAMP) and the Canadian Meat Council (CMC).

This updated two-day workshop is designed to help manufacturers of ready-to-eat (RTE) meat and meat products examine the issues surrounding control methods, and to provide experience in developing appropriate sanitation protocols and testing plans for processing RTE products. In addition to assuring optimal product safety and implementing best practices for RTE processes, the workshop offers a key benefit: helping to assure compliance.

The event will begin with an introduction to process control technology and principles, followed by sessions on sanitary equipment and design and sanitation best practices, and updates on the *Listeria* rule and implementation. Afternoon sessions will focus on understanding product risk and appropriate intervention, monitoring for process control and an evaluation of current sampling plans. The day will conclude with a reception and technology fair and panel discussion with workshop experts.

On the second day, attendees will benefit from discussions concerning a number of case studies in process control. Sessions on lot and line segregation, data analysis, corrective actions and successfully completing risk-based *L. monocytogenes* sampling (RLM) and Food Safety Assessment will also be featured.

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