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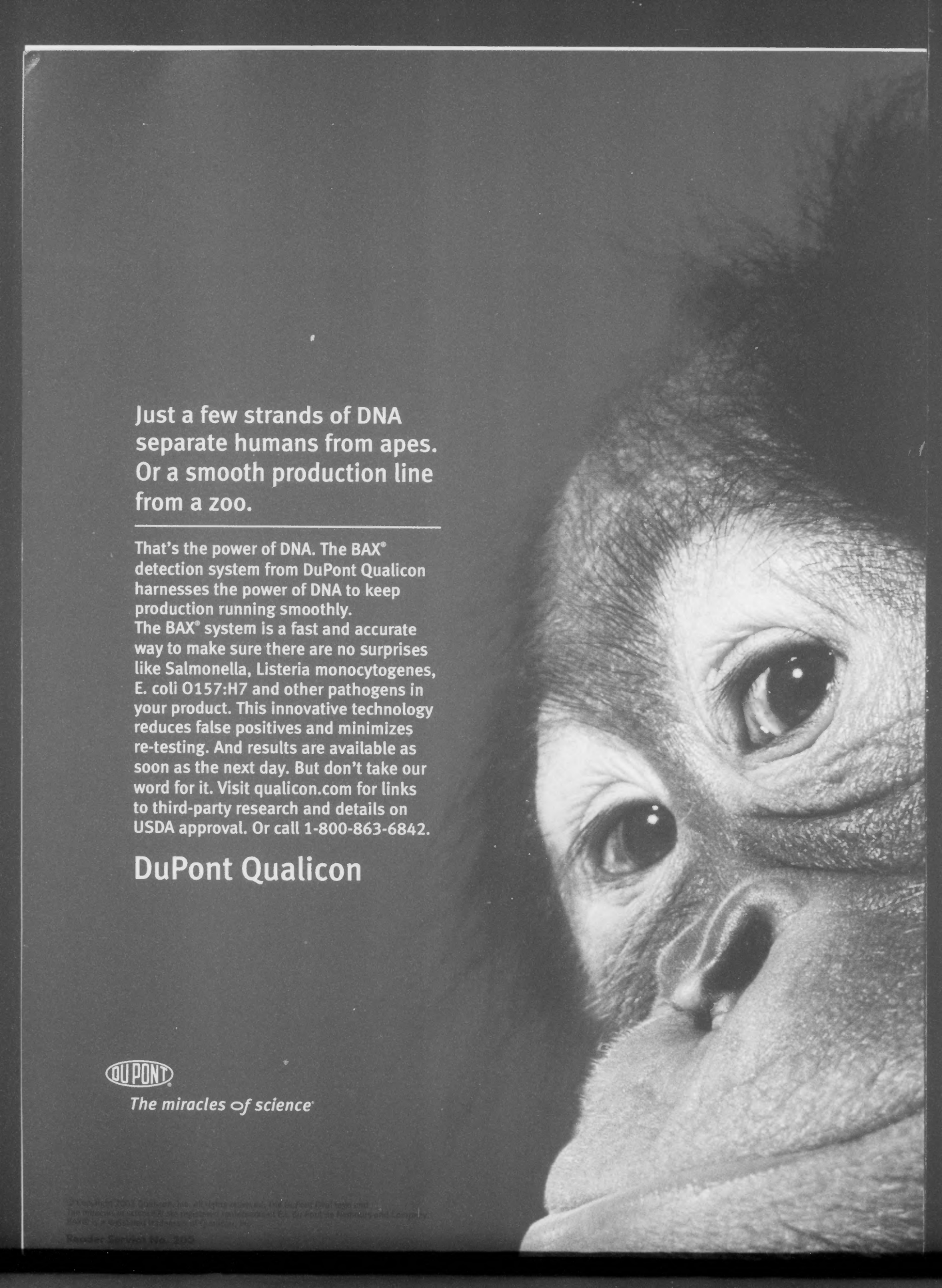
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New Orleans, Louisiana

IAFP 2004

August 8-11

JW Marriott Desert
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International Association for Food Protection

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THOUGHTS FROM THE PRESIDENT

"TIMING IS EVERYTHING"

By ANNA M. LAMMERDING
President

"The only constant thing in life is change, and it is no different for IAFP"

Frog legs, eel, Mandarin fish, pork tongue, squid, drunken shrimp, braised veal, sea cucumber, Shanghai crab, chicken feet ...and all this in just one meal! One of the many meals we enjoyed during a recent trip when a colleague and I traveled to Shanghai in the People's Republic of China, to teach a two-week workshop on risk analysis. Although I passed on the chicken feet, altogether there were some very intriguing eating experiences!

The workshop, sponsored by the U.N. Food and Agriculture Organization, was directed towards participants from the fishery industries and organized locally by the Ministry of Agriculture, the China Society of Fisheries, and INFOYU, the information dissemination service for the industry. Seafood of all kinds is a huge export commodity for the country. Given the enthusiasm of the participants, it was clear that as the global community embraces risk analysis concepts in all aspects of food trade, there is an increasing need for training and exchange of information in risk assessment, risk management, and risk communication.

Despite the language barrier (we communicated through a translator for all our lectures), it struck me that our food safety concerns, how to assess risk and how to implement and optimize new technologies to ensure the safety and quality of foods, are remarkably similar in all parts of the globe. In discussing the public health impacts of foodborne disease, the same issues exist in China as everywhere: the need for better surveillance data about infectious food and waterborne disease, information about prevalence and levels of hazards and the primary vehicles for specific pathogens, a better understanding of the ecology and behavior of pathogens, and, equally important, easy access to the information that is available.

I learned a lot during my time in Shanghai, about the fisheries industry, new adventures in eating, amazement at the sophisticated modern architecture contrasted with centuries-old history. And not least, the experience reinforced that we need to explore new partnerships and take advantage of opportunities to exchange knowledge and ideas worldwide on protecting the food supply.

This issue of *DFES* reports on the events of our 2002 Annual Meeting in beautiful San Diego. Among the scenes from the meeting, we include the recipients of the IAFP 2002 Awards. It is always an honor to be recognized for one's achievements and contributions by your peers, and I congratulate each of our distinguished Award winners for their accomplishments.

It is worth taking a glance at the reports of the Professional Development Groups (PDGs), which met just before the technical program commenced. The diversity of the PDGs simply reflects the strengths of what our individual members bring to our Association. The newest addition this year was the Water Safety and

Quality PDG. Members of a PDG include anyone interested in the topic! These groups offer an opportunity to meet informally, catch up on newest developments in the field, and generate ideas that develop into symposia for next year's Annual Meeting. In this way, you, our Members, have direct input into organizing sessions that meet your information needs. We appreciate the hard work of all PDG members that results in a scientific program that is multidisciplinary, touches all aspects of microbiological food protection, and ultimately contributes to the success of each year's Annual Meeting.

The IAFP Web site lists the PDGs, their missions, and members. Some, for example the Microbial Risk Assessment PDG, are adding links to other related Web sites. We encourage PDG members to develop their Web pages as resources for other members and food safety professionals, and to continue communicating throughout the year.

I want to give a special thank-you to all Members of the Student PDG who helped ensure that everything ran smoothly in each session room in San Diego. Student Members also contributed the symposia summaries that are published in this issue, and for that we are most appreciative!

Finally, the only constant thing in life is change, and it is no different for IAFP! A new name and a new look for *Dairy, Food and Environmental Sanitation* is on the horizon! "Read all about it!"...Executive Director David Tharp's column last month covered the name change issue. Look on page 822 in this issue to preview the new name and cover design.

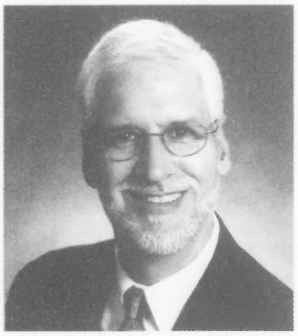
CORPORATE CHALLENGE

Kraft Foods has generously donated $50,000 to the IAFP Foundation. Now the challenge is out to other corporations. Our goal is to build the Foundation to $1 million. The Foundation supports programs which fulfill the mission of the Association. Contact the Association office for additional details.

Thank you Kraft Foods!!!

COMMENTARY

From the Executive Director



By DAVID W. THARP, CAE
Executive Director

"It continues to be an exciting time in IAFP history"

In this issue of *Dairy, Food and Environmental Sanitation,* we report on IAFP 2002 – the 89th Annual Meeting that was held last July. The report begins on page 752 and includes many pictures, a summary of events and sessions, minutes of committee meetings and the Annual Business Meeting, and pictures of our award presentations. If you attended IAFP 2002, this report will help bring back your memories of the San Diego meeting; and if you were unable to be with us, we hope you enjoy reviewing the highlights of IAFP 2002!

We want to recognize the many sponsors of IAFP 2002. On page 782, a list of our Annual Meeting sponsors is shown. On the following page, our special contributors are shown. These companies have certainly committed themselves to IAFP and our mission of *providing a forum to exchange information on protecting the food supply*. Without the help of our sponsors and special contributors, we would not be able to enjoy the many experiences at IAFP 2002 as fully as we did. Thank you and we look forward to additional years of your support!

A new feature of our Annual Meeting report is an entire section of session summaries from IAFP 2002. Turn to page 768 for a summary from most every session. These were written by students from the IAFP Student Professional Development Group. We deeply appreciate the dedication of these students and especially want to recognize Manan Sharma and Michelle Danyluk. Manan and Michelle coordinated the submission, collation and submission of the summaries. You have all done a great job and I am positive that many IAFP Members will benefit from your work!

There are so many people that come together to make the IAFP Annual Meeting THE MEETING for food safety that it is hard to thank everyone. Two groups that we couldn't have had such a successful meeting with out their help are the Program Committee and the Local Arrangements Committee (LAC). Frank Yiannas (Program Committee Chair), Margaret Burton (LAC Chair), and Jennylynd James (LAC Chair) were wonderful to work with over the past year! They were able to inject enthusiasm into their Committees and have a lot of fun while accomplishing their duties. Thanks to each of you and to your Committee Members.

Another group which we recognize for their extreme contributions are the session organizers, convenors and presenters. So many people, so much coordination of effort and timing to bring everyone together just at the right times so that the program all flows seamlessly. Anyone who had a part in this year's program is to be recognized and thanked for his or her help in producing an excellent program for IAFP 2002.

All in all, this was the biggest, most diverse program; the largest attended Annual Meeting on record. Our Exhibit Hall was full

and had great traffic, our sessions were well attended, the poster presentations were very popular and we had more than 1,400 attendees this year in San Diego. Over 600 attended the Monday Night Social at the San Diego Zoo – our previous record for a Monday Night Social was just more than 350!

Be sure to take time to review the Annual Meeting recap. We had fun putting it together and we hope that you enjoy reading the section. So now we close the book on IAFP 2002. Just one more chapter in the history of IAFP! Mark your calendars for IAFP 2003 in New Orleans, Louisiana. The dates are August 10-13 at the Hilton New Orleans Riverside Hotel.

Speaking of history, we are embarking upon a historic trail by changing the name of *Dairy, Food and Environmental Sanitation*. With the January 2003 issue, *DFES* becomes *Food Protection Trends*. See page 822 for a preview of the new cover design. If you want additional details about this name change, please review my September column. We look forward to this new endeavor as this Journal evolves to *Food Protection Trends*!

It continues to be an exciting time in IAFP history. Be sure to visit with your colleagues about the new name for *DFES* so that everyone knows about the new name and recognizes it as "News and Science from the International Association for Food Protection."

Dairy, Food and Environmental Sanitation, Vol. 22, No. 10, Pages 734-739

Adequacy of the Temperature Recommended by USDA-FSIS for Re-Cooking Poultry Meat

Omar A. Oyarzabal, Virginia N. Scott, and David E. Gombas*
National Food Processors Association
Washington, D.C. 20005

SUMMARY

Experiments were performed to evaluate whether fully recooking poultry to 71.1°C (160°F) following a deviation in which the product did not reach the appropriate temperature is adequate to inactivate *Salmonella*. A composite of six *Salmonella* strains were inoculated at levels that equate to 7 logs of *Salmonella* per 143 g of ground chicken meat. Inoculated pouches containing poultry were heated to different temperatures, ranging from 51.7°C (125°F) to 71.1°C (160°F). Samples that did not reach 71.1°C (160°F) were recooked to achieve this internal temperature. To simulate product that is cooled and reprocessed immediately, One group of samples was refrigerated and reheated to 71.1°C (160°F) within five hours after removal. Another group of samples was held overnight at 4°C (39°F), reheated to 71.1°C (160°F), and cooled, and then before being tested for *Salmonella*, to simulate product that is reprocessed the day after the deviation occurs. In addition, an experiment was done to determine the impact of cooking on cells exposed to temperatures reported to induce resistance. Negative and positive controls were made and tested for *Salmonella* simultaneously during the experiments. Results confirm that recooking poultry to 71.1°C (160°F) after a cooking deviation is adequate to ensure the destruction of 7 logs of *Salmonella*. We conclude that the US Department of Agriculture Food Safety and Inspection Service-recommended guidelines to cook poultry products to an internal temperature of 71.1°C (160°F) are adequate to ensure the safety of poultry that has to undergo a recooking step.

A peer-reviewed article.

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TABLE 1. *Salmonella* strains used in the studies and cell counts for each experiment

Organism	Source	Origin	NFPA #	First Experiment Calculated Inoculum Level (log)		Second and Third Experiment Calculated Inoculum Level (log)	
				Per Pouch	Per 143 g	Per Pouch	Per 143 g
Salmonella Thompson	Stan Bailey, USDA-ARS, Athens, GA	Chicken	4023	5.1	6.5	6.3	7.7
Salmonella Montevideo	Stan Bailey, USDA-ARS, Athens, GA	Chicken	4045	5.0	6.5	6.0	7.5
Salmonella Typhimurium	ATCC 13311	Clinical isolate	4046	5.0	6.5	6.1	7.5
Salmonella Enteritidis	ATCC 13076	Clinical isolate	4047	4.6	6.1	5.7	7.2
Salmonella Mbandaka	Stan Bailey, USDA-ARS, Athens, GA	Chicken	4052	4.9	6.3	5.9	7.4
Salmonella Heidelberg	Stan Bailey, USDA-ARS, Athens, GA	Chicken feces	4083	4.4	5.8	5.7	7.1

INTRODUCTION

The United States Department of Agriculture Food Safety and Inspection Service (USDA FSIS) has established a lethality performance standard – the level of pathogen reduction – of 7 logs for *Salmonella* in ready-to-eat meat and poultry products *(5)*. This performance standard has been derived from a hypothetical worst case level of 6.7 log *Salmonella* in 143 g of raw ground poultry. The standard of 7 logs provides an additional margin of safety in the finished poultry products *(1)*. The USDA FSIS has also recommended guidelines to cook poultry products to an internal temperature of 71.1°C (160°F) to achieve the 7-log reduction for *Salmonella (3)*.

Scientific studies support the theory that pathogenic bacteria that undergo a heat shock become more resistant to heat treatments. Strains of *Salmonella* Enteritidis and Typhimurium that undergo a sublethal heat shock increase their heat resistance by approximately 2 to 20 fold *(7, 9, 12)*. It has been suggested that this heat shock phenomenon may pose a risk for poultry that has been recooked to a final internal temperature of 71.1°C (160°F) following a cooking deviation. The goal of our experiments was to evaluate whether fully recooking poultry to 71.1°C (160°F) following a deviation in which the product did not reach the appropriate temperature is adequate to inactivate *Salmonella*.

MATERIALS AND METHODS

Sample preparation

Refrigerated raw chicken breast meat was purchased from a local supermarket. To reduce the indigenous flora, the meat was steamed in an autoclave at 121°C for 30 to 50 s. The meat was ground in a chlorine-disinfected meat grinder (Robot Couple USA, Inc., Ridgeland, MS) and kept at refrigeration temperature (approximately 4°C) until use. Samples (5 g) of the ground chicken were aseptically weighed and transferred into 4 in. × 4 in. polyester pouches (Kapak Co., Minneapolis, MN). After inoculation, pouches were flattened to distribute the inoculum throughout the product, to exclude air and to minimize heating time. Pouches were then heat-sealed.

Salmonella testing

The procedure outlined by USDA FSIS for *Salmonella* isolation was followed *(2)*, but buffered peptone water (BPW) was substituted for lactate broth to recover sublethally injured cells *(2)*. Briefly, BPW was added to pouches containing the poultry at a ratio of 9:1. Samples were stomached for 1 min and incubated at 35°C overnight. Pre-en-

TABLE 2. *Salmonella* cells inoculated in different experiments

	Number of *Salmonella* per 143 g			
Experiment	Pouches	Log	Counts	Log
First (average of three pouches)	1.5×10^5	5.2	2.1×10^7	7.3
Second and third (average of four pouches)	1.5×10^6	6.2	4.3×10^8	7.6

riched samples were transferred into tetrathionate (TT, Difco Laboratories, Detroit, MI) broth (0.5 ml of the sample into10 ml of TT) and into Rappaport Vassiliadis R10 (RV, Difco Laboratories) broth (0.1 ml of the sample into 10 ml of RV). Enrichment broths were incubated at 42°C for 24 h and then streaked onto both Brilliant Green Sulfa agar (BGS, Difco Laboratories) and Xylose-Lysine-Desoxycholate agar (XLD, BD Difco Laboratories). In some cases, BGS was replaced by double strength Lysine Iron Agar (LIA, BD Difco Laboratories) without the addition of any antimicrobial *(6)*. Plates were incubated at 35°C for 24 h and examined for typical *Salmonella* colonies.

The sample plus BPW was used to test initial product for background microflora and *Salmonella*, except that background microflora dilutions were made in 0.1% peptone water and spread-plated on tryptic soy agar (TSA, Difco Laboratories). Plates were incubated at 35°C overnight.

Inoculum preparation and cell counts

A composite of six *Salmonella* strains (Table 1) was used in the experiments. Stock cultures were maintained on TSA slants at 4°C. From slants, cultures were transferred to tryptic soy broth (TSB, Difco Laboratories) and incubated at 35°C for 18 to 24 h. Cells were harvested by centrifugation (International Equipment, Co., Needham Hts., MA) at 2600 rpm for 12 to 14 minutes, washed once and suspended in 0.1% peptone water.

Each *Salmonella* strain grown in TSB was serially diluted in 0.1% peptone water and spread-plated on TSA for cell count. Plates were incubated at 35°C for 24 h. Table 1 shows the counts for each *Salmonella* strain and for each experiment. Immediately after inoculation, the contents of three pouches were serially diluted and used for enumeration of post-inoculation levels. Table 2 shows the average count from three pouches for each experiment.

Heating studies

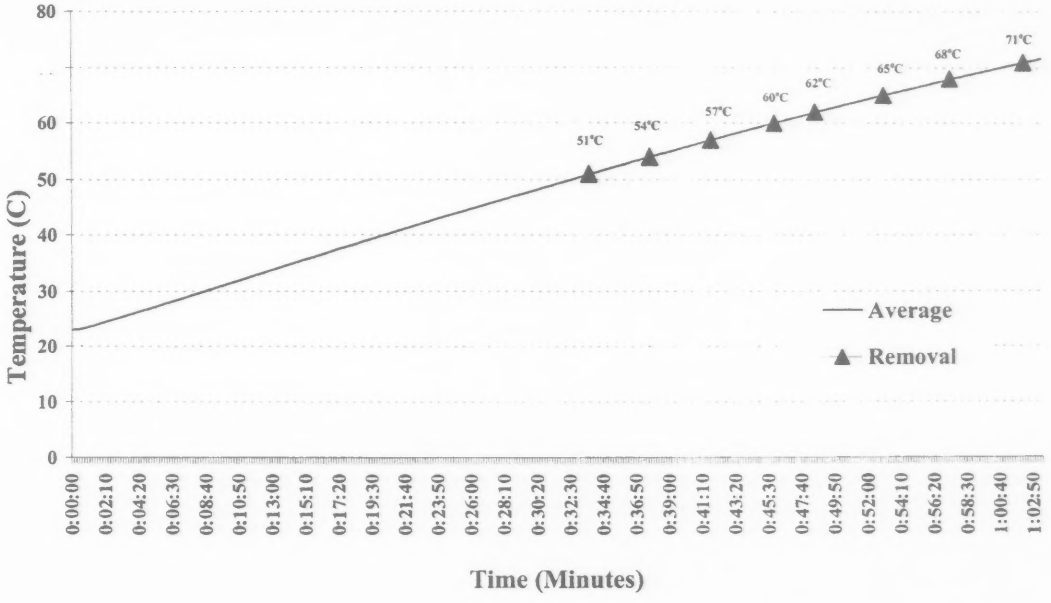
Two similar experiments were done. In both experiments, the pouches were first fully immersed in a thermostatically controlled water bath at room temperature (Haake, Model DL 30, Paramus, NJ), and then heated to 71.1°C (160°F). During this heat treatment, three pouches (representing groups A, B and C) were removed when the temperature of the product reached 51.7, 54.4, 57.2, 60.0, 62.8, 65.6, 68.3 and 71.1°C (125, 130, 135, 140, 145, 150, 155 and 160°F, respectively). Type-T thermocouples linked to a data logger (CalPlex,™ TechniCAL, Inc., New Orleans, LA) were used to monitor the temperature of the water and the ground poultry inside pouches. The data were collected using CAL™ Thermal Processing software (TechniCAL, Inc., New Orleans, LA). The re-cooking was done in different ways in the two experiments. In the first experiment, the pouches were immersed in a water bath at room temperature and then heated to 71.1°C (160°F). In the second experiment, the water was pre-heated to 71.1°C (160°F) and then samples were immersed in the water bath.

In both experiments, samples were removed when product achieved the target temperature. Samples were then immediately cooled to 4°C (39°F) and analyzed for *Salmonella*. Samples from group A were tested for *Salmonella* within 2 h of cooling to determine at which temperature survival would occur. Samples from group B were refrigerated and reheated to 71.1°C (160°F) within five hours after removal to simulate product that is cooled and reprocessed immediately. Samples from group C were held overnight at 4°C (39°F), reheated to 71.1°C (160°F), cooled and then tested for *Salmonella* to simulate reprocessing the day after the deviation occurs.

Negative controls were made by dispensing 0.5 ml of 0.1% peptone water in pouches containing ground chicken. Positive controls consisted of pouches containing chicken that were heated to 71.1°C (160°F), cooled, and spiked with approximately 10^3 *Salmonella* cells. Controls were tested for *Salmonella* as described previously.

To determine the impact of cooking on cells with heat-shock induced resistance, a third experiment was done. Three groups (SA, SB and SC; five replicates per group) of inoculated samples were heat shocked by exposing them to 47.7°C (118°F) for 30 min, a time and temperature combination that has been demonstrated to enhance heat resistance *(7)*. Cells were then quickly cooled to 4°C. Samples from group SA were tested for *Salmonella* immediately; samples from group SB were maintained at 4°C (39°F) and re-heated to 71.1°C (160°F) within 5 hours; and samples from group SC were held overnight at 4°C and then

Figure 1. Removal of pouches at several end-point temperatures. The triangles show the temperatures at which the pouches were removed from the water bath. The line shows the average temperature from three thermocouples inserted in 5 g pouches.



re-heated to 71.1°C (160°F). All samples from groups SB and SC were tested for *Salmonella* immediately after re-heating.

RESULTS AND DISCUSSION

Studies were done with ground poultry inoculated with six *Salmonella* strains at levels that exceeded 7 logs of *Salmonella* per 143 g of ground chicken meat. This value of 143 g is the amount used in the calculation of the "worst case" by USDA FSIS *(1)*, and equates to a 100 g portion after cooking. The *Salmonella* serotypes used in our experiments were chosen because they are commonly associated with chicken. Typhimurium and Enteritidis are the two leading serotypes isolated from humans as reported by the Centers for Disease Control and Prevention *(4)*, while serotypes Montevideo, Mbandaka, Heidelberg and Thompson are among the strains most frequently isolated from humans *(4)*.

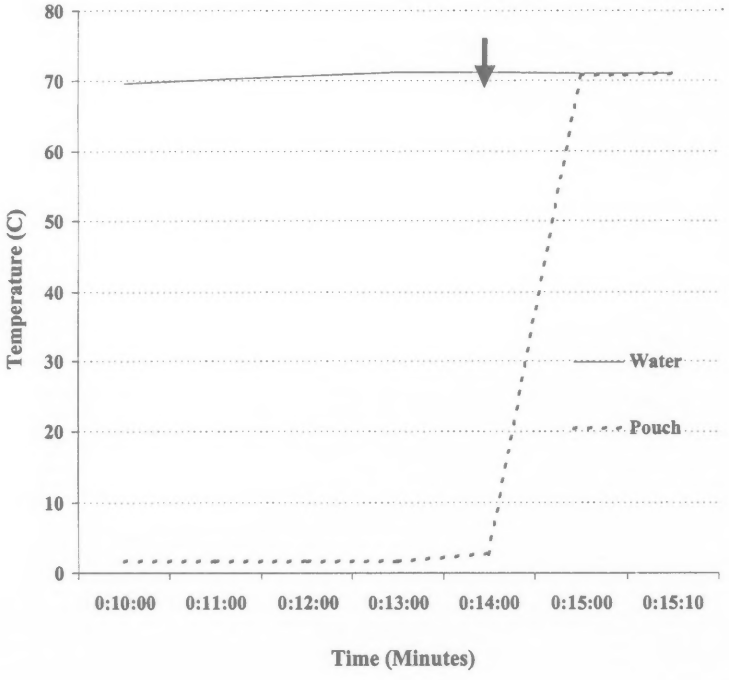
A pre-enrichment step in BPW was added to the USDA FSIS *Salmonella* isolation procedure to allow injured cells to recover and replicate to higher levels before samples were transferred to selective enrichment and differential plating media. The purchased chicken did not have naturally occurring *Salmonella*, nor did it present any microflora detectable in TSA plates after the short autoclaving process.

Cells used in the experiments were in stationary phase, and therefore more resistant to heat stress *(8)*. The level of *Salmonella* cells inoculated equated to 7.3 logs of *Salmonella* cells in 143 g of poultry for the first re-cooking experiment with non-heat-shocked cells (Table 2). The inoculum was 7.6 logs in 143 g of poultry in the second experiment with non-heat-shocked cells and the experiment with heat-shocked cells. These inoculation levels are in excess of the 6.7 log calculated for the "worst case" by USDA FSIS *(1)*. Each individual *Salmonella* strain was inoculated at levels that varied from 4.4 to 5.1 log per 5 g pouch in the first experiment, and 5.7 to 6.3 log per 5 g pouch in the second and third experiment (Table 1).

In the first experiment, it took approximately 1 h for the poultry to reach 71.1°C (160°F) from room temperature (Fig. 1). Samples were removed at different temperatures and immediately cooled in ice water to reduce to a minimum the exposure time of the samples at the end-point temperatures and to assure the survival of *Salmonella* cells that were heat-injured but not killed by the high temperatures. Results showed that *Salmonella* survived in all samples from group A (non-re-heated) that were heated up to 62.8°C (145°F). No positive was detected from any sample from group A that was heated to 65.6, 68.3 or 71.1°C (150, 155 or 160°F, respectively). All re-cooked samples from group B and group C were *Salmonella* negative.

To evaluate if a faster increase in temperature may allow survival, a second experiment was done in which samples were removed at the same intervals as in the previous experiment, but the recooking of

Figure 2. Recooking of poultry meat. Chicken in pouches was kept at 4°C and recooked rapidly by immersing pauches in water at 71.1°C. The dotted line shaws the average temperature fram three thermacouples in 5 g pouches. The salid line shows the averoge temperoture of faur thermocauples immersed in water. The arraw shaws the time at which the pouches were immersed into the water both.



the group B and C was more rapid. In this experiment, the change in temperature from 4°C (39°F) to 71.1°C (160°F) during re-cooking occurred in approximately one minute (Fig. 2). Samples from the group A (non-re-heated) removed at temperatures up to 60°C (140°F) were *Salmonella* positive. No positive was detected from any sample from group A that was heated to 62.8, 65.6, 68.3 or 71.1°C (145, 150, 155 or 160°F, respectively). All recooked samples from groups B and C were *Salmonella* negative.

These studies corroborate that the guidelines recommended by USDA FSIS *(3)* to cook poultry products to an internal temperature of 71.1°C (160°F) are more than sufficient to destroy 5.2 to 6.2 logs of *Salmonella* cells in samples containing 5 g of poultry. Consequently, 7 logs of *Salmonella* in 143 g of poultry will also be destroyed by reaching an end-point temperature of 71.1°C. The end-point temperature seems to be more important than the time required to reach the end-point temperature when recooking poultry.

In addition, an experiment in which *Salmonella* cells were heat shocked by holding product at 47.7°C (118°F) for 30 minutes was performed. This temperature and time combination has been reported to stress cells and make them more thermotolerant *(7, 10, 11)*. The number of *Salmonella* inoculated per pouch was 1.5×10^6 (6.2 log). This inoculation level equates to 4.3 10^7 (7.6 log) in 143 g of poultry. Immediately after the heat shock, five pouches were tested for *Salmonella* (group SA) and the rest were reheated to 71.1°C (160°F) approximately 5 hours later (group SB, five pouches) or after overnight holding at 4°C (group SC, five pouches). All samples from group SA were positive, but the samples from group SB and SC were all *Salmonella* negative. Although we did not verify that the time-temperature combination increased thermal tolerance, we believe that the results of these experiments indicate that the issue of increased heat resistance is not a concern with respect to under-cooked poultry.

CONCLUSIONS

The performance standard for poultry establishes a 7-log inactivation of *Salmonella* in finished poultry products. The USDA FSIS has also recommended guidelines to cook poultry products to an internal temperature of 71.1°C (160°F) to achieve the 7-log reduction for *Salmonella*. The re-processing of undercooked poultry to 71.1°C (160°F) is adequate to ensure the destruction of *Salmonella*, even if poultry were contaminated at the hypothetical "worst case" levels calculated by USDA FSIS.

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Consumer Behavior Regarding Time Lapse between Store-Purchase and Subsequent Home-Storage of Fresh Beef Retail Cuts

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SUMMARY

This study used postcards to determine consumers' self-reported time lapse between purchase of fresh beef retail cuts at supermarkets and placement of those products in the home refrigerator or freezer. Postcard return rate (46.4%) was very favorable, ranging from 36.6% in Wisconsin to 61.2% in Oklahoma. More than 3 of 5 (61.5%) respondents refrigerated, rather than froze, fresh beef products in the home, and mean values (58 vs. 61 min) for time lapse to placement in the refrigerator vs. freezer, respectively, for all states combined were not significantly different. In four individual states and in all states combined, shoppers took longer to chill/freeze beef purchases in the cold season than in the warm season (67 vs. 53 min, respectively). On average, for data from all five states combined, shoppers took 59 min to place purchased fresh beef retail cuts in a refrigerator or freezer; of concern were time-lapse extremes of up to 8 h and 19 min reported by individual respondents. Among respondents from different states, 52.5% to 78.6% chilled or froze fresh beef products within 60 min of purchase, while 2.2% to 21.7% took more than 2 h after purchase to chill/freeze fresh beef products. Because the natural microbial flora on fresh meat products may include pathogenic organisms, consumers must be educated on safe and responsible handling of meat products after purchase to help reduce the risk of foodborne illness.

A peer-reviewed article.

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TABLE 1. Statistics for postcard responses (N=1,055*) arrayed by state of origin and whether beef products were placed in the home refrigerator or freezer

Stote of Origin	Where ploced in the home	Postcords returned		Time (min) from purchose to in-home plocement		
		N	%	Meon	Minimum	Moxiumum
CO	Refrigerotor	83	48.5	43	1	130
	Freezer	88	51.5	52	5	269
OK	Refrigerotor	184	72.4	86	7	330
	Freezer	70	27.6	69	10	210
WI	Refrigerotor	86	50.0	55	9	310
	Freezer	86	50.0	73	10	499
PA	Refrigerotor	136	59.9	48	3	223
	Freezer	91	40.1	58	1	362
NV	Refrigerotor	158	68.4	43	1	247
	Freezer	73	31.6	54	8	382
All	Refrigerotor	647	61.5	58	1	330
	Freezer	408	38.5	61	1	499

*Although 1,104 useoble postcords were returned, only 1,055 hod informotion relotive to plocement in o refrigerotor vs. freezer, in the home.

INTRODUCTION

Those in all sectors of the beef industry attempt to minimize the presence of pathogenic microorganisms on products sold fresh to consumers. Consumers, in turn, must follow good post-purchase handling practices, and must properly cook the products, to assure that they are safe to eat. Audits International *(3)* reported that temperature abuse of fresh and processed meats occur during retail display, between store-purchase and home-storage, and during home-storage. Meer and Misner *(7)* concluded that one of the biggest problems in food-handling is temperature abuse with respect to proper cooling and thawing of foods. Minimizing risk of foodborne illness during meal preparation is critical, but if fresh beef is temperature-abused prior to home-storage, and if cooking endpoint temperature is compromised, risk of food poisoning could increase.

Consumer education remains the key to helping prevent foodborne illness in the home, despite findings by several researchers *(2, 5, 7, 12)* suggesting that greater education or knowledge of foodborne illnesses and their etiological agents do not necessarily lead to proper food handling practices. Several studies have investigated consumer habits regarding home food preparation; additional studies are appropriate for evaluation of consumer behavior regarding time lapse between store-purchase and subsequent home-storage of fresh beef. This study used postcards to determine self-reported time lapse between purchase of fresh beef retail cuts at supermarkets and storage of those products in the home refrigerator or freezer as a means of estimating potential for temperature abuse. Results of this study provide guidance for developing education programs to improve consumer practices relative to handling and storage of fresh meat following purchase at retail outlets.

MATERIALS AND METHODS

Members of research teams from Colorado State University, University of Nevada-Reno, Oklahoma State University, Pennsylvania State University and University of Wisconsin-Madison intercepted 2,380 grocery shoppers who were observed placing a fresh beef product in their grocery basket at supermarkets. The goal was to recruit, in each of five states (CO, NV, OK, PA and WI), about 250 shoppers in summer months and 250 shoppers in winter months, who said they were willing to accept an addressed, stamped postcard, to respond to two questions and to mail the completed postcard to the university. In both Spanish and English, verbiage on the postcard requested that shoppers (a) check the appropriate box, depending on whether they placed the fresh beef item in a

TABLE 2. Statistics for postcard responses (N=1,104) arrayed by state of origin and season of the year

State of origin	Season of the year	Postcards returned N	Time (min) from purchase to in-home placement		
			Mean	Minimum	Maximum
CO	Cold	87	51	9	239
	Warm	91	44	1	269
OK	Cold	182	83	7	288
	Warm	77	80	11	330
WI	Cold	97	71	1	499
	Warm	90	58	9	178
PA	Cold	100	54	1	362
	Warm	149	49	1	348
NV	Cold	19	42	27	65
	Warm	212	47	1	382
All	Cold	485	67	1	499
	Warm	619	53	1	382

refrigerator or a freezer, and (b) record the time at which the meat was refrigerated or frozen in the home. As each card was given to a recruit, card number, date, time, and type of product purchased was recorded. Postcards were collected by individual universities, data written on the card by the consumer was recorded, time-lapse between purchase and placement was determined, and compiled data were sent to Colorado State University for analyses.

Data analyses

Means, analysis of variance and mean separation analysis were computed/calculated following procedures of SAS *(9)*.

RESULTS AND DISCUSSION

Postcard return rate (46.4%) was very favorable. Of the 1,104 useable postcards returned, 1,104 had "acceptable" times recorded and 1,055 had recorded whether placement was in a refrigerator or a freezer. Return rate results reflected only usable postcards as some of those returned were discarded because of missing data or inaccurate information (i.e., negative timelapse). Even so, data were included that reported times of in-home placement in refrigerators/freezers that are improbable, if not impossible; for example, in four of five states (Table 1) minimum calculated time-lapses of 1 min were included in the data-sets. These values are likely a result of differences between researchers' and consumers' time pieces and/or inaccuracies in consumer reporting. The highest rate of return (data not presented in tabular form) was in Oklahoma (61.2%), followed by Pennsylvania (50.0%), Nevada (47.0%), Colorado (39.0%) and Wisconsin (36.6%).

In Oklahoma, Pennsylvania, Nevada and all states combined, more respondents placed fresh beef products in the refrigerator than in the freezer (Table 1). In Colorado, Wisconsin, Pennsylvania, Nevada and all states combined, the longest timelapse (maximum time from purchase to in-home placement) was for fresh beef product placed in the freezer, rather than in the refrigerator, but mean values (58 min vs. 61 min) for time-lapse to placement in the refrigerator vs. freezer, respectively, for all states combined were not significantly different (Table 1).

In Colorado, Oklahoma, Wisconsin, Pennsylvania and all states combined, mean time-lapse from purchase to in-home placement in the refrigerator or freezer was greater in the cold, rather than warm, season of the year (Table 2). The almost-15-min shorter time-lapse for respondents from all states combined for placement in the refrigerator or freezer during the warm, as opposed to cold, season of the year suggests that consumers are aware of the effects of higher ambient temperatures on meat spoilage, quality deterioration and/or pathogen proliferation and are more diligent about chilling or freezing beef when outside temperatures are high. In the Audits International *(3)* study, 67% of con-

TABLE 3. Statistics for postcard responses (N=1,104) for combined season of the year and whether beef products were placed in the home refrigerator or freezer, arrayed by state of origin

State of origin	Postcards returned N	Time (min) fram purchase to in-hame placement		
		Mean	Minimum	Maximum
CO	178	47	1	269
OK	259	82	7	330
WI	187	64	1	499
PA	249	51	1	362
NV	231	46	1	382
All	1,104	59	1	499

TABLE 4. Proportions of respondents that placed fresh beef products in the home refrigerator or freezer within 1 to 60, 61 to 120, 121 to 180 or more than 180 min, arrayed by state of origin

State of origin	Postcards returned N	Time (min) from purchase to in-home placement			
		1 to 60	61 to 120	121 ta 180	Mare than 180
CO	178	78.6[a]	16.9[b]	3.4[c]	1.1[c]
OK	259	52.5[a]	25.8[b]	12.0[c]	9.7[c]
WI	187	56.6[a]	34.8[b]	5.9[c]	2.7[d]
PA	249	75.1[a]	18.9[b]	3.2[c]	2.8[c]
NV	231	77.0[a]	20.8[b]	1.3[c]	0.9[c]
All	1,104	67.7[a]	23.3[b]	5.3[c]	3.7[c]

[abcd]Means, within raws, bearing a common superscript letter da nat differ significantly ($P > .05$)

sumers said they did not handle groceries differently in the summer, but results revealed that 52% of consumers took between 61 and 120 min to return product to a refrigerator or freezer when outside (ambient) temperature was lower than 21°C, as compared to 44% when outside temperature was above 32°C. In addition, the Audits International study revealed that product temperature differences from retail display to in-home refrigeration/freezing ranged from 2.9 to 5.3°C when outside temperature was lower than 21°C but that product temperature differences were 3.8 to 5.7°C when outside temperature was above 32°C.

On average, for data from all five states combined, shoppers took 59 min to place purchased fresh beef items in a refrigerator or freezer (Table 3); this result parallels closely the 60-min average time lapse between store purchases and home storage of fresh meat reported by Audits International *(3)*. In the present study, respondents from Oklahoma waited longest (82 min) to chill/freeze beef purchases, while respondents from Nevada and Colorado were quickest (46 and 47 min, respectively) to chill/freeze beef products after purchase (Table 3). Minimum times from purchase to in-home placement were 1 min for respondents from four states of

origin and 7 min for respondents from Oklahoma. A time lapse of 1 min is, of course, not possible; Audits International *(3)* reported a nationwide minimum time of 14 min and a maximum time of 5 h and 43 min, in which time the product temperature increased by 3.6°C. Individual respondents from Wisconsin, Nevada, Pennsylvania, Oklahoma and Colorado reported maximum time lapses between purchase and in-home placement of 8 h and 19 min, 6 h and 22 min, 6 h and 2 min, 5 h and 30 min, and 4 h and 29 min, respectively (Table 3).

Proportions of respondents who placed fresh beef products in the home refrigerator or freezer within specified ranges in time are presented in Table 4. Among respondents from different states, 52.5% (Oklahoma) to 78.6% (Colorado) chilled or froze fresh beef products within 60 min of purchase, while 2.2% (Nevada) to 21.7% (Oklahoma) took more than 2h after purchase to chill/freeze fresh beef products. The majority (67.7%) of respondents (all states combined) took between 1 and 60 min to refrigerate or freeze fresh beef product, compared to the 9% of consumers who waited more than 120 min before freezing or refrigerating it (Table 4). These results are comparable to those of Audits International *(3)*, which reported that 48.5% of consumers took between 1 and 60 min to place product in refrigerated storage, while 2% took more than 120 min. In that study, the indicated temperature differences between product at retail vs. product at home for items left unrefrigerated for less than 60, 61 to 120, or more than 120 min were 3.4, 4.3, and 5.7°C, respectively *(3)*. Typically, the temperature rise in perishable product is 4.4 to 5.6°C during a normal summer shopping trip, but Audits International reported that the worst case of abuse in its study led to a product temperature difference of 32°C, due to 84 min of delay at an outside temperature of 39°C. Consumers must be made aware that if a long delay between purchase and chilling/freezing is anticipated, especially during warmer months, perishable product should be held in an insulated cooler to maintain product temperature, shelf life and safety.

Many consumer habit surveys have been conducted *(1, 2, 3, 4, 7, 8, 10, 12, 13, 14)*. People in the meat industry are well aware that temperature is one of the most important factors determining whether or not spoilage and pathogenic microorganisms grow during storage *(11)*. At one or more points during transportation, distribution, retail preparation and display, and consumer handling (from store to home; at home prior to consumption), temperature abuse is likely to occur *(6)*.

The National Advisory Committee on Microbiological Criteria for Foods has recommended that time/temperature indicators be used wherever possible and that they be made easy to read and interpret by consumers *(8)*. Such devices would help consumers know if a specific food product has been temperature-abused prior to preparation for consumption and might increase consumer awareness of the importance of maintaining proper temperature of food products in order to minimize the risk of foodborne illness. The fact that consumers are unlikely to adopt proper food handling practices through educational efforts argues forcefully for deployment, by industry personnel and government officials, of mitigation strategies to protect consumers from foodborne pathogens.

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A Survey of Apple Cider Production Practices and Microbial Loads in Cider in the State of Iowa

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SUMMARY

The purpose of this study was to evaluate the practices of Iowa cider producers and determine the microbial loads of apples and cider during various points in the process. Questionnaires were mailed to 21 Iowa cider producers, and visits were made to five of these producers to obtain samples for microbial testing. Most producers sorted apples before washing, stored apples under refrigeration, washed and brushed apples before pressing, and did not use drop apples. Only 45% of producers used a chemical sanitizer on the apples. Most producers (73%) pasteurized their cider and several more considered purchasing pasteurization units. Microbial loads in finished cider were as follows: standard plate count, 15 to > 1.1×10^5/ml; coliforms, < 1 to > 2.1×10^3/ml; *E. coli*, <10/ml; yeasts and molds, < 10 to 7.3×10^4/ml. *E. coli* was detected in 8.6% of apple samples but not in any cider samples tested. Counts in pasteurized cider were lower than those in nonpasteurized samples. To lower microbial loads in cider, operators must follow good manufacturing practices and sanitation procedures.

A peer-reviewed article.

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INTRODUCTION

Escherichia coli O157:H7 was first recognized as a human pathogen in 1982 and is now known as a recurring causative agent in food-associated illnesses, including hemorrhagic colitis and hemolytic uremic syndrome (HUS) *(11)*. The vehicle of transmission is usually undercooked ground beef products such as beef burgers *(12)*. However, in the past decade a wider variety of foods have been identified in *E. coli* O157:H7 outbreaks, including apple cider, apple juice, mayonnaise, salad dressing, lettuce, and water *(1, 5, 7, 20, 24)*.

E. coli O157:H7 was first associated with apple cider in a 1980 outbreak of HUS in Canada *(19)*. In the United States, the first outbreak of hemorrhagic colitis associated with apple cider occurred in 1991 in Massachusetts *(2)*; *E. coli* O157:H7 was believed to be the causative agent. The most publicized of several *E. coli* O157:H7 outbreaks linked to apple cider was associated with drinking Odwalla brand un-

TABLE 1. Responses of 11 Iowa cider producers to questions regarding harvest and processing methods

Harvest or Processing Method	% Yes	% No
Manure fertilizer used in orchard	0	100
Deer fence around orchard	9	91
Drop apples used to make cider	18	82
Apples from another supplier used to make cider	45	55
Apples stored in cooler	91	9
Processing water chlorinated	45	55
Apples washed and brushed	91	9
Apples sanitized	55	45
Cider pasteurized	73	27
Cider filtered	82	18
Bottling performed by hand	91	9

pasteurized apple juice *(5)*. This outbreak included 66 cases and one death. The source of the contaminating *E. coli* O157:H7 was not determined in many of these apple cider outbreaks, but drop apples that had come into contact with fecal material in the orchard and were then used for cider production were likely suspects *(2)*. However, cider manufactured using only tree-picked fruit has been found to contain *E. coli (6)*. Potential sources of *E. coli* O157:H7 may be bird droppings and feces of domestic or feral animals, the storage environment of the apples (outside or warehouse) and inadequate pest control measures *(13)*.

In response to concern about the safety of fresh fruit juices, the Food and Drug Administration *(8)* has mandated that a warning label be placed on fruit juices not processed in a manner to produce at least a 5-log (100,000-fold) reduction in the pertinent target microorganism (63 CFR 20450). In addition, the FDA requires all apple cider producers to have a Hazard Analysis Critical Control Point (HACCP) program in place by January 20, 2004 *(8)*.

Thermal processing (pasteurization) of apple juice/cider could achieve the desired microbial reduction, but time-temperature pasteurization conditions have not been defined for the cider industry. Other means of *E. coli* O157:H7 reduction currently under investigation in cider include ultraviolet light treatment, irradiation, high pressure, and pulsed electric fields *(3, 9, 14, 15, 23)*.

The objectives of this study were to look in detail at cider production in Iowa to determine microbial loads in cider, evaluate production practices affecting these microbial loads, and assist cider producers in reducing microbial contamination of their product.

MATERIALS AND METHODS

Survey and sampling

To obtain summary information on apple cider production practices in Iowa, a questionnaire was developed by the investigators and was mailed to 21 Iowa certified apple cider producers (those who had attended a series of seminars on cider production and food safety). A single mailing was done with no follow-up reminders. Responses were returned anonymously.

Three or four visits per cider season (1999–2000 and 2000–2001) were made to five cider producers for collection of samples from apples, cider and the processing environment.

Apples were taken from containers recently brought from the orchard, from refrigerated storage before or after washing, and from the conveyor belt on the processing equipment. Two to four apples were taken for each sample. Samples were placed in sterile stomacher bags (Fisher Scientific Co., Itasca, IL). Single cider samples were collected in 1-l sterile glass jars before and after preservatives were added and after pasteurization. Occasionally producers saved cider samples in 1-gallon retail containers for pickup the following day. Sterile swabs wetted with 0.1% peptone diluent (Difco, Detroit, MI) were used to recover organisms from equipment surfaces. All samples were held at 4°C for 2 to 24 h until testing.

Microbiological analyses

Organisms were recovered from apples by placing 100 ml of sterile 0.1% peptone diluent into the bag containing an apple. The bags were vigorously shaken for 2 min to dislodge bacteria from the apple surface *(22)*.

All cider and apple rinse solution samples were diluted in sterile 0.1% peptone and tested by standard procedures *(10)* for the following organisms under the following conditions: aerobic bacteria were counted on Tryptic Soy Agar (TSA, Difco) incubated at 35°C for 48 h; yeasts and molds on Potato Dextrose Agar (PDA, Difco) incu-

bated at 25°C, 5 days; coliforms on Violet Red Bile Agar (VRBA, Difco) incubated at 35°C for 24 h or on *E. coli*/coliform Petrifilm (3M, St. Paul, MN) incubated at 35°C for 24 and 48 h. *E. coli*/coliform Petrifilm replaced VRB agar in the second year of the study because of its ease of use and shorter time to obtain results. Silk et al. *(18)* found no significant difference ($P > 0.05$) between mean coliform counts obtained on Petrifilm and VRB agar. Averages of counts from replicate apple samples are reported.

Biochemical tests to identify microorganisms isolated from apples and cider included the IMVIC (Indole, Methyl-red, Voges-Proskauer, Oxidase, Citrate) series, gram stains, and catalase tests performed according to standard methods *(10)*. The BBL crystal kit (Becton Dickinson and Company, Cockeysville, MD) for enteric non-fermenters (E/NF) was used according to the manufacturer's instructions.

Statistical analysis

The nonparametric Wilcoxon Rank Sum Test *(16)* was used to compare microbial counts within groups of samples and to analyze the effects of pasteurization and use of preservatives on microbial loads.

RESULTS AND DISCUSSION

General survey of producers

Eleven producers returned surveys, for a return rate of slightly over 50%. Most were small operations that produced from 3,000 to 85,000 gallons of cider per year. Responses are summarized in Table 1.

Most producers reported that they did not use drop or windfall apples. Almost half of the producers received apples from another source at some time during the cider season. Because no specifications for tree-picked apples were made prior to purchase and no auditing was performed, drop apples could have been present in these loads. Although all producers stated that they sorted apples before processing and stored apples in a cooler, it was observed on visits to orchards that apples were sometimes stored outside, uncovered, especially at the beginning of the season when cooler space was limited.

Given their rural location, many processors used well water that was not tested regularly for microorganisms or for chlorine content. With 91% of survey respondents indicating that they washed their apples, water quality becomes a key factor in the microbiological quality of the cider process.

Responses to this survey suggested that cider processing in Iowa is slowly disappearing. Two producers reported they had stopped making cider; three other producers sold large portions of their orchards during the course of this study, but continue cider production for now.

The current method of choice to achieve the FDA-mandated 5-log pathogen reduction is pasteurization. It is estimated that the cost of incorporating pasteurization into the cider-making process could range from $9,500 to $35,000/year, depending on the production rate *(4)*. This estimate includes the fixed costs of the equipment as well as installation and operating costs. Such costs could be prohibitive for many small producers who process < 20,000 gallons of cider per year. The majority of Iowa processors pasteurized their cider, but temperatures and times of pasteurization varied widely: from 160 to 179°F (71 to 82°C) for 2 to 20 s. Most pasteurizers were plate heat exchangers with alarm and divert valve systems.

Cider producers would welcome a less expensive, yet effective, alternative to pasteurization to reduce pathogens in cider. Methods such as UV light treatment, ozonation, ionizing irradiation, and even freeze/thaw and other temperature changes *(3, 9, 14, 15, 21, 23)* that are under current investigation might prove to be successful alternatives. Equipment and operating costs, effectiveness in killing targeted organisms, ease of use, and possible changes induced in the cider must all be taken into consideration when determining the usefulness of these methods.

The Iowa cider producers surveyed here are using sound orchard management practices and are incorporating methods (e.g. apple sanitizers, temperature control, filtration, addition of preservatives, pasteurization) to lower the risk of *E. coli* O157:H7 contamination. Specific recommendations for improvement include the use of chlorinated processing water and auditing of outside apple suppliers.

Sampling from five producers

Three cider producers were visited three or four times during both 1999-2000 and 2000-2001 cider seasons. One producer's facility was sampled only in the first season, and was replaced by a fifth producer in the second season. All processors, whether or not they pasteurized their cider, added 0.1% potassium sorbate as a preservative, and one producer also added 0.1% sodium benzoate. Two producers added preservative before pasteurization, but one producer added preservative after pasteurization. It was recommended to this producer that addition of preservative be done before rather than after the pasteurization step.

Microbial counts obtained at each sampling time were averaged for each year of the study. Data for yeast and mold and aerobic bacteria counts on apples were averaged across all producers because little variation was observed. However, coliform levels on apples did vary among producers, so data for each producer are presented separately. Microbial counts in cider are reported as averages of pasteurized and nonpasteurized products.

The limits of detection for aerobic bacteria and yeasts and molds were 100 CFU/apple and 10 CFU/ml of cider. The limits of detection for coliforms on apples and in cider on VRB agar were 100 CFU/apple and 1 CFU/ml, respectively. A 1:10 dilution of cider was plated on Petrifilm to avoid interference with pH indi-

Figure 1. Average microbial loads on apples throughout the 1999-2000 and 2000-2001 seasons. ■1999-2000 season;□ 2000-2001 season.

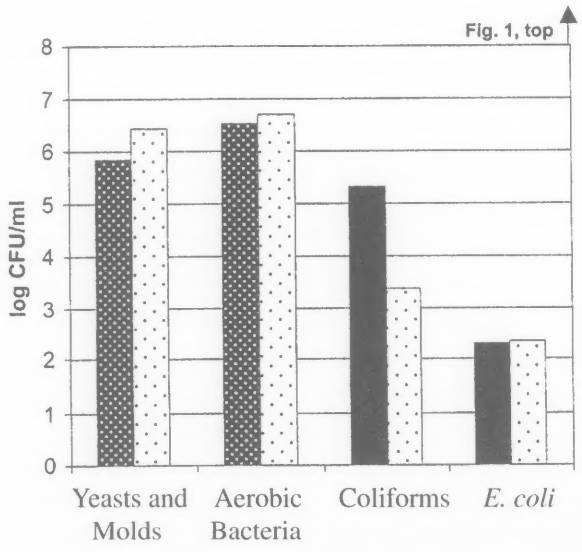


TABLE 2. Effects of washing on average bacterial loads of apples from Producer A during the 2000–2001 season

Triol	Type of Orgonism	CFU/apple Unwoshed	(± SD)	Washed	(± SD)
1	Aerobic Bacteria	6.7×10^6	4.6×10^6	8.3×10^6	6.7×10^6
1	Coliforms	1.1×10^2	25	1.4×10^3	9.6×10^2
2	Aerobic Bocteria	5.3×10^5	4.6×10^5	5.9×10^6	6.1×10^6
2	Coliforms	1.0×10^2	0	4.6×10^3	6.9×10^3
3	Aerobic Bacteria	1.2×10^6	1.2×10^6	1.5×10^7	1.3×10^7
3	Coliforms	1.0×10^2	0	8.2×10^3	9.9×10^3

cators present in Petrifilm and allow correct color reactions for coliform and *E. coli* colonies to be seen. Thus, the coliform and *E. coli* detection limit on Petrifilm was 10 CFU/ml.

Microbial counts on apples

Figure 1 presents the average contamination levels for apples destined for cider. Average counts of yeasts and molds were similar for the two years of the study, usually between 3.0×10^4 and 1.0×10^6 CFU/apple; the highest average value was 1.1×10^7 CFU/apple. About 85% of these counts were yeasts.

Aerobic bacterial counts on apples were also similar over the two seasons, generally between 2.6×10^5 and 8.0×10^6 CFU/apple; the highest average count was 1.4×10^7 CFU/apple. If it is assumed that a typical small apple weighs 100–150 g, these numbers would be similar to the average aerobic bacterial count of 4.6×10^4 CFU/g of apple reported by Senkel et al. *(17)* in a study of Maryland cider producers.

Coliform counts on apples varied among producers and were generally lower in the second year than in the first year of the study. Counts ranged between < 100 and 1.0×10^6 CFU/apple. No coliforms were detected on apples from Producer E, whereas apples from Producer B were contaminated with up to 10^6 CFU/apple. Producer E waxed the apples, which may have reduced the levels of coliforms detected. Typical *E. coli* colonies were detected in only 8.6% of the apple samples tested.

It might be anticipated that washing and/or brushing apples would remove some microbial contaminants. Most of the participating processors washed and/or brushed their apples immediately after harvest, so unwashed apples were not generally available for sampling. However, it was possible to evaluate the effect of washing apples on microbial counts for Producer A, who washed and brushed apples immediately prior to processing. Microbial counts on Producer A's apples before and after this wash step during the 2000–2001 season are shown in Table 2.

Aerobic bacteria and coliforms on Producer A's apples increased significantly ($P < 0.001$) after washing and brushing. On average, aerobic bacteria increased by 240% and coliforms increased by over 4000% after the apples were washed. Yeasts and molds were not similarly affected; washing reduced counts by 2.3%. Upon further investigation, aerobic bacteria were found in all six samples of water taken from the processing room. The source of processing water, a well, had not been chlorinated that year, and the well water had not been tested in the previous six months. It is likely that the well water was the source of contamination on the washed apples.

With the high microbial loads (including coliforms) seen on apples, it is essential that producers use sound fruit for cider produc-

Figure 2. Average microbiol loods in unpasteurized cider throughout the 1999-2000 and 2000-2001 seosons. ■ 1999-2000 season; □ 2000-2001 season.

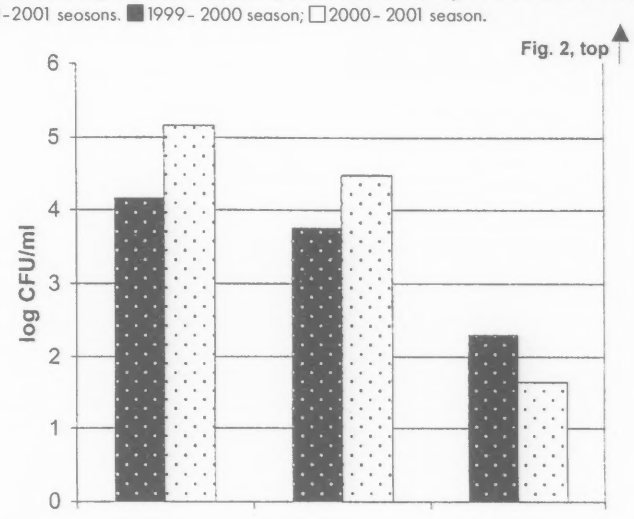
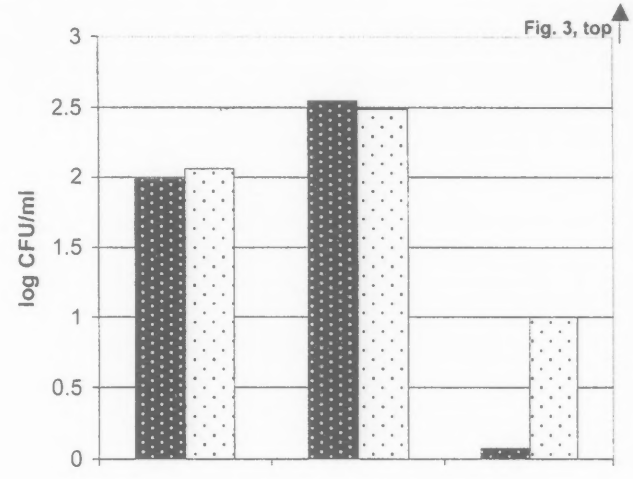


Figure 3. Averoge microbiol loods in pasteurized cider throughout the 1999-2000 and 2000-2001 seasons. ■ 1999-2000 season; □ 2000-2001 seoson.



tion and maintain proper storage conditions. While *E. coli* were found in only a small percentage of apples tested, the possibility of such contamination is real and must be considered by processors. The steps in apple handling (washing, storage, culling) must be performed with care. Any reductions in microbial loads on incoming apples will assist further processing steps in reducing counts in the final product.

Microbial counts in cider

Figures 2 and 3 summarize microbial counts in cider for the two years of the study. Yeast and mold counts in pasteurized cider were always less than 1.0×10^3 CFU/ml and were usually between 10 and 20 CFU/ml. Counts were higher in unpasteurized cider, with more variability among producers; the highest count obtained was 7.3×10^4 CFU/ml in the first year and 3.9×10^5 CFU/ml in the second year.

Levels of aerobic bacteria ranged between 15 and 1.6×10^5 CFU/ml in pasteurized cider and between 210 and 1.1×10^5 CFU/ml in unpasteurized cider. Counts were slightly higher in the second year of the study. These results agree with those from a Maryland study that reported 10^3 to 10^4 aerobic bacteria per ml in pasteurized cider and 10^4 to 10^5 aerobic bacteria per ml in unpasteurized cider *(17)*.

Coliform levels in cider were low and fluctuated very little between the two seasons. Counts were below the limit of detection (10 CFU/ml) in pasteurized ciders. Unpasteurized samples had less than 1.3×10^3 coliforms per ml; most were in the range of 10 to 200 CFU/ml. In contrast, Senkel et al. *(17)* reported an average coliform count of 1.3×10^5 CFU/ml in unpasteurized cider and 3.2×10^3 CFU/ml in pasteurized samples. No *E. coli* were found in cider samples in the present study.

HACCP plans were prepared for the four cider producers who were studied in depth during the 1999-2000 season. It was anticipated that implementation of these plans during the 2000-2001 season might result in reduced microbial loads seen on these producers' apples and cider. However, microbial loads differed very little between the two years of the study. Observations made during site visits in 2000-2001 noted improvements in good manufacturing and sanitation practices. Such improvements should contribute to overall cider quality and safety even if reductions in microbial counts weren't significant.

Effect of preservatives and pasteurization

Table 3 summarizes the average percent kill achieved by the five

TABLE 3. Average percent kill of yeasts and molds, aerobic bacteria, and coliforms in apple cider by pasteurization and addition of preservative

	Pasteurization			Preservative		
Producer	Y&M	Aerobes	Coliforms	Y&M	Aerobes	Coliforms
A	99.95	95.9	86	0	31	36
B	99.86	99.1	97.5	0	1	67
C	N/A	N/A	N/A	60	74	74
D	N/A	N/A	N/A	77	76	70

N/A –not applicable since producer did not pasteurize

cider producers through use of preservative and pasteurization. The values in the table were obtained by comparing microbial counts in cider before and after addition of preservative and before and after pasteurization (if this process was used). The data illustrate each producer's process effectiveness in reducing microorganisms during the two years of the study.

In the 1999–2000 season, pasteurization significantly ($P < 0.001$) reduced counts of yeasts and molds, aerobic bacteria, and coliforms. Similar results were obtained for the 2000–2001 season, but the coliform counts were already so low that statistically significant reductions could not be demonstrated. Yeast and mold counts were reduced by at least 99.9% (3 logs) and aerobic bacteria were reduced by at least 95%. Senkel et al. *(17)* reported that pasteurization reduced aerobic bacteria in cider by 2.63 logs (> 99%).

Addition of 0.1% potassium sorbate to cider had a smaller and more variable effect on microbial numbers, reducing viable counts of yeasts and molds by 32% to 88%, of aerobic bacteria by 2% to 99%, and of coliforms by 40% to 99.98%. Large differences among producers about measurement and addition of preservative to the cider were observed. Inaccurate measurement of preservative and contamination through the use of poorly cleaned untensils were likely, and could contribute to variations seen in antimicrobial effects. Addition of preservative after pasteurization by one producer would be a likely source of post-processing contamination.

Pasteurization is an effective means of reducing microbial loads in cider and lengthening its shelf life. However, cider producers lack a time-temperature standard for pasteurization conditions, and so far must either use equipment designed for milk processing or put together units that may not achieve the proper conditions. Their pasteurization equipment, particularly thermometers and flow diversion devices, must be inspected, tested, and calibrated regularly to ensure proper function of all components. Validated processes for 5-log reduction of pertinent pathogens and appropriate equipment that can attain these process conditions are needed.

Identification of common contaminants

Of the organisms present in typical apple and cider samples, approximately 60% were gram-negative bacteria, 15% were gram-positive bacteria, and 25% were yeasts. Representative colonies were streaked for purity on TSA and tentatively identified by common procedures. Approximately 275 colonies were selected; from observations of colony appearance, gram reaction, and cell morphology, it was estimated that at least 12 different gram-negative bacteria, 8 different gram-positive bacteria, 15 different yeasts, and 10 different molds were present.

Most of the gram-positive bacteria were tentatively identified as *Bacillus* spp. or *Streptomyces* spp. The gram-negative bacteria were either long and narrow or short and fat rods; about 80% of these bacteria were classified as members of the *Enterobacteriaceae* based on their ability to ferment lactose. Further identification of 10 of these organisms was attempted by using the BBL Crystal E/NF identification kit. Organisms were placed in the following genera: *Enterobacter* (on apples), *Klebsiella*, Rahnella, *Acinetobacter*, and *Pseudomonas*. Species could not be identified in most cases because of atypical biochemical reactions.

Although *Enterobacteriaceae* are commonly found in the environment, counts on apples and in cider could be reduced further with proper storage and handling of apples, sound water source processing, proper sanitation and pest management programs, good manufacturing practices, and the incorporation of HACCP systems.

ACKNOWLEDGMENTS

The authors gratefully acknowledge the cooperation of the cider producers who participated in the field studies, and Hui Wang and Dr. Phillip Dixon for statistical support. This material is based upon work supported by the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture, under Agreements 98-35502-6604 and 00-51110-9831. Journal paper No. J-19684 of the Iowa Agriculture and Home Economics Experiment Station, Ames, Iowa, Project 6528, and supported by Hatch Act and State of Iowa funds.

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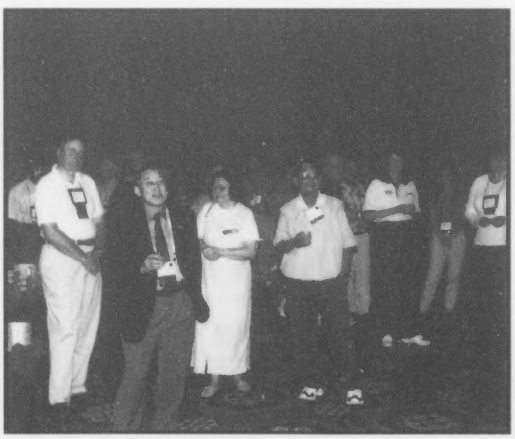
Scenes from IAFP 2002

IAFP 2002 – the Association's 89th Annual Meeting once again showed how the Association continues to grow and expand with a record attendance. This is a remarkable accomplishment given the year of tragedy and economic struggles which we have faced.

More than 1,400 individuals from 31 countries gathered in San Diego to share ideas, gather information and grow their professional networks. Over 80 companies exhibited the latest technology and innovations in food safety. Congratulations on making this year's meeting the best ever!

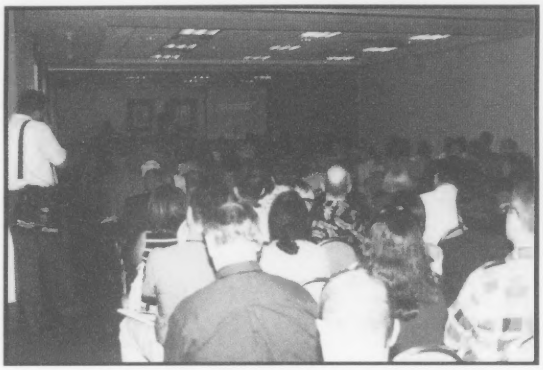
Several individuals got a head start by participating in the four workshops that were held on Friday and Saturday prior to the Meeting. The workshops covered a wide spectrum of topics including the detection of *Listeria monocytogenes*, current practices in produce safety, control of pathogens in the dairy processing environment, and media training.

Two receptions were held Saturday evening – the New Member Reception and the Affiliate Educational Reception. Both were well attended and provided excellent interaction among attendees.



Sunday was a busy day. Committee meetings started the day off bright and early. Minutes from these meetings are published starting on page 786. Dr. Mitchell L. Cohen, Director, Division of Bacterial and Mycotic Diseases, National Center for Infectious Diseases, Centers for Disease Control and Prevention, delivered the prestigious Ivan Parkin Lecture at the Opening Session. His presentation was titled "Food Safety in the Time of Anthrax." Following the lecture, a Cheese and Wine reception sponsored by Kraft Foods was enjoyed by all.

Monday morning was the start of 3 days filled with more than 400 scientific presentations including 23 symposia, 66 technical sessions and 225 poster presentations. A special thank you to Chairperson Frank Yiannas and the 2002 Program Committee for an excellent program! Summaries of the sessions, prepared by the Student Professional Development Group, begin on page 768. Abstracts from IAFP 2002 can be found on our Web site.



At the end of the day, several attendees took part in the social activities offered in conjunction with IAFP 2002. A reception sponsored by Qualicon welcomed attendees into the exhibit hall. Then it was off to the world famous San Diego Zoo. Over

600 individuals explored the Zoo during the Monday Night Social sponsored by IGEN International. From Polar Bear Plunge to Tiger River, everyone had a great time!

The Annual Business Meeting was held on Tuesday afternoon. President Jim Dickson reported on the activities and accomplishments of the Association over the past year. Charters were presented to two new Affiliates, the Brazil Association for Food Protection and the Southern California Association for Food Protection. Welcome new Affiliates! See page 784 for the Business Meeting Minutes.

On Tuesday evening many attendees took advantage of touring beautiful scenic San Diego. Over 170 individuals boarded the Lord Hornblower for a relaxing dinner cruise. Everyone was amazed by the endless things to do and see in San Diego!

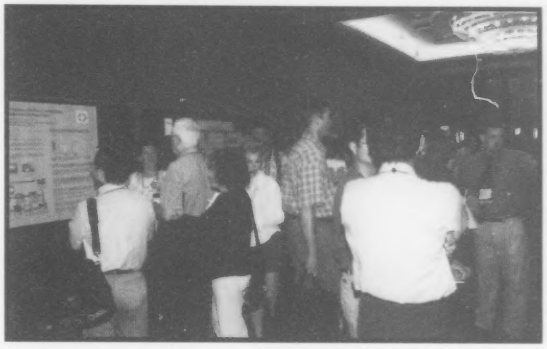
Several deserving individuals were recognized for their dedication to "Advancing Food Safety" and their active participation in the Association at the Awards Banquet on Wednesday evening. See page 758 for a listing of the Award Recipients.

A group that deserves special recognition for the success of IAFP 2002 is the Southern California Association for Food Protection (SCAFP). Under the leadership of Margaret Burton and Jennylynd James, SCAFP contributed many hours both prior to and during the Meeting to make it a success. Thank you SCAFP for your time and dedication!

Another group that deserves a round of applause is our Student Professional Development Group and their chairperson, Manan Sharma. The presence of students was recognized everywhere at IAFP 2002 from their booth in the exhibit hall foyer,

to their involvement as session room monitors and audiovisual assistants, to their technical and poster presentations. You are the future leaders of the Association!

IAFP 2002 is the leading food safety conference. We are confident that IAFP 2003 will continue this tradition. Reserve the dates August 10–13, for IAFP 2003 in New Orleans.

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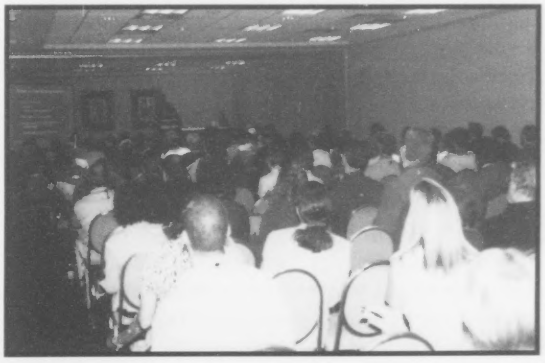


2002 Award Winners

DARDEN Restaurants receives the 2002 Block Pearl Award, (left to right) Al Fain, John Chrisman, Peter Hibbord, Tom Chesnut, Greg Brun and IAFP Past President Jenny Scott. F & H Food Equipment Co. and Wilbur Feagan sponsor the award.

BLACK PEARL AWARD

Darden Restaurants
Orlando, Florida

Each year, the International Association for Food Protection honors a single company with its most prestigious award, "The Black Pearl," in recognition of that company's efforts in advancing food safety and quality through consumer programs, employee relations, educational activities, adherence to standards and support of the goals and objectives of IAFP. The recipient of the 2002 Black Pearl Award is Darden Restaurants.

Darden Restaurants is the largest publicly traded casual dining company in the world, serving almost 300 million meals annually at 1,200 restaurants across North America. Headquartered in Orlando, Florida, Darden operates four distinct restaurant companies: Red Lobster, The Olive Garden, Bahama Breeze, and Smokey Bones.

Food safety has always been a top priority at Darden Restaurants. Their Total Quality Team, which consists of over 50 food scientists, microbiologists, and public health professionals, oversees their "farm-to-fork" food safety net. This team includes food safety specialists who visit every restaurant to evaluate performance, provide training, and reinforce the best food safety and sanitation practices. As part of their farm-to-fork program, Darden has team members in six different countries that work directly with suppliers and distributors to ensure that food safety standards are met in every step of the process. All points in the supply chain must meet Darden's stringent food safety specifications, from supplier to distributor to restaurant. From developing new food safety technologies to evaluating products in its seven laboratories, Darden goes to great lengths to see that the food products they serve meets the highest standards.

HONORARY LIFE MEMBERSHIP AWARD

This prestigious honor is awarded to long-time IAFP Members for their dedication to the high ideals and objectives of IAFP and for dedicated service to the Association.

IAFP President James Dickson (right) presents the 2002 Honorary Life Membership Award to Warren Clark (David Fry accepting the award for Warren Clark).

Dr. Warren S. Clark, Jr.
Addison, Illinois

Dr. Warren S. Clark, Jr., is a native of Connecticut. He received his BS degree, with distinction, in dairy manufacturing from the University of Connecticut. Following military service he earned MS and Ph.D. degrees in dairy microbiology and human

nutrition from Iowa State University. Dr. Clark joined the American Dry Milk Institute, predecessor organization of the American Dairy Products Institute, following employment in education and industry.

Beginning with his international involvement with whey product standards in the mid-1970s, Dr. Clark has become recognized and widely respected for his ability to represent the processed dairy products industry, both nationally and internationally.

In 1986, Dr. Clark became the seventh person, the first and only US individual, to be recognized as a member of the French Society *Confrérie des Tasteurs de Petit Lait* for his dedicated and outstanding service to the whey processing industry internationally. Dr. Clark held leadership roles in the planning and conduct of International Whey Conferences held in the United States in 1986 and 1997, and in Germany in 2001.

In 1999, Dr. Clark was awarded the USDA Agriculture Honor Award for Excellence as a member of the European Union Certification Team. He also was appointed by the Secretary of Agriculture and the US Trade Ambassador to serve three terms on the Agricultural Technical Advisory Committee for Trade in Dairy Products.

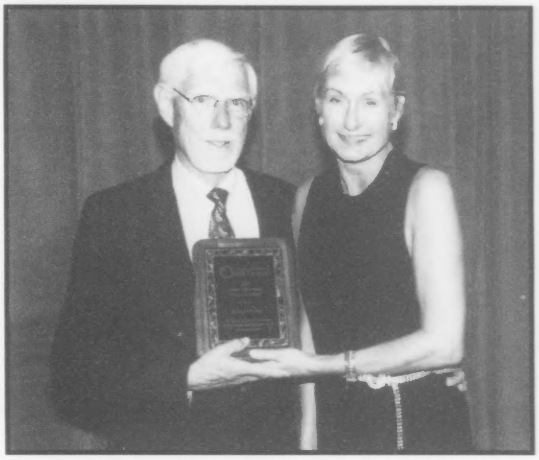
Dr. Clark has worked to advance the processed dairy products industry including active service on the board of directors and as an officer of the US National Committee of the International Dairy Federation; service on the American Public Health Association's Intersociety Council to develop two editions of *Standard Methods for the Examination of Dairy Products*; on the editorial review boards for *Dairy, Food and Environmental Sanitation* and the *Journal of Food Protection*; and as an IAFP committee member. In 1993 he received the 3-A Bronze Award for meritorious service to the 3-A Sanitary Standards program. He currently serves as Chairman of the 3-A Sanitary Standards Symbol Administrative Council, a position he was first elected to in 1977.

In February, 2002, Dr. Clark retired from the American Dairy Products Institute following 35 years of service, 26 of which were as CEO of the association. He was awarded the Institute's Award of Merit in April, 2002.

HARRY HAVERLAND CITATION AWARD

Mr. John G. Cerveny
Madison, Wisconsin

Mr. John G. Cerveny is this year's recipient of the Harry Haverland Citation Award for his years of devotion to the ideals and objectives of IAFP.



IAFP President-Elect Anna Lammerding presents John Cerveny with the 2002 Harry Haverland Citation Award. Silliker Inc. spansors this award.

Mr. Cerveny has been a food safety consultant since retiring from Oscar Meyer Foods in March 1996. His thirty-seven-year career at Oscar Meyer as a microbiologist was directed toward the safety and quality of ready-to-eat meat and poultry products.

From 1986 to 1996, Mr. Cerveny represented Oscar Meyer on the International Life Sciences Institute North America (ILSI-N.A.) Technical Committee on Food Microbiology. The purpose of this Committee, which is made up of food industry representatives, is to proactively identify and fund research on microorganisms that are of public health concern. As a representative of ILSI, Mr. Cerveny met with the IAFP Program Committee in 1992 and submitted proposals for three symposia for the 1993 IAFP Annual Meeting. All three were accepted and since then, this professional relationship between IAFP and ILSI continues to benefit both organizations.

Mr. Cerveny has been a Member of IAFP since 1969. He was a member of the IAFP Program Committee from 1992 until 1997 and served as Chairperson for two years. He also served as the Chairperson of the Meat Safety and Quality Professional Development Group and the Developing Scientists Awards Committee. He was a member of the IAFP Long Range Planning Committee and has organized several symposia for Annual Meetings.

Mr. Cerveny was awarded the IAFP Harold Barnum Industry Award in 1997, and in 2001 was awarded the IAFP Honorary Life Membership Award. In 1999, the Wisconsin Association of Milk and Food Sanitarians recognized him with the Sanitarian Award.

IAFP Secretory, Kathy Gloss and Fritz Buss, (left) Nelson-Jameson, Inc. present Douglas Marshall with the 2002 Educator Award. Nelson-Jameson, Inc. sponsors this award.

EDUCATOR AWARD

Dr. Douglas L. Marshall
Mississippi State, Mississippi

Dr. Douglas L. Marshall is this year's recipient of the Educator Award. This Award recognizes an IAFP Member for outstanding service to the public, the Association and the arena of education in food safety.

Dr. Marshall is a Kearney, Nebraska native and has B.S. and M.S. degrees from the University of Nebraska-Lincoln. During his M.S. degree, mentored by Dr. Lloyd Bullerman, he worked on the antimicrobial properties of sucrose fatty acid esters.

Dr. Marshall earned his Ph.D. degree from the University of Florida where he worked with Dr. Ronald Schmidt on understanding the physiological basis for commensalism between *Listeria monocytogenes* and *Pseudomonas* in milk. He has served on the faculty of Louisiana State University and Mississippi State University where he is now a professor of food science and technology. He also is president and director of the Louisiana-based consulting firm, the Food Safety Institute, LLC. During his professorships he has directed twelve M.S. and nine Ph.D. students and has taught a number of food microbiology and food science courses. He has over 150 contributions to the research literature, with recent efforts focused on developing methods to rapidly detect and control foodborne pathogens in muscle foods. His commodity interest is marine and aquacultured seafoods.

His service record is highlighted by four consecutive terms on the editorial board of the *Journal of Food Protection*. He also serves as contributing editor for the journal *Food Microbiology* and has been a consultant for NIH, WHO, FAO, and other government agencies and private companies in the area of food safety.

IAFP President-Elect, Anna Lommerding presents Don Erickson with the 2002 Sanitarian Award. Ecolab Inc., Food and Beverage Division sponsors this award.

SANITARIAN AWARD

Mr. Dan Erickson
St. Paul, Minnesota

Mr. Dan Erickson is this year's recipient of the Sanitarian Award for his service to the public, the Association and the profession of the Sanitarian. Mr. Erickson began his career as a dairy sanitarian with the Minnesota Department of Agriculture (MDA) in 1984. He accepted the position of Interstate Milk Shipper (IMS) Certification Officer in the MDA St. Paul office in April of 1986. The department has regulatory and certification responsibility for all milk and milk products produced and processed in the state of Minnesota.

In addition to his duties as IMS Certification Officer, Mr. Erickson has responsibility for regulatory inspection, pasteurization equipment testing and product sampling in three fluid milk bottling plants and one cultured foods processing plant in the Minneapolis and St. Paul area. He provides training and assistance to Minnesota's dairy industry in the areas of milk transportation and sampling, dairy farm inspection and milk pasteurization and processing. Mr. Erickson is active in the International Association for Food Protection (IAFP), serving as a member of the 3-A Committee on Sanitary Procedures since 1993 and as the Committee's Chairperson since 1997. Mr. Erickson is a member of the National Conference on Interstate Milk Shipments (NCIMS)

and serves on the NCIMS Milk Transport Committee which he has submitted many proposed updates for revising the Pasteurized Milk Ordinance and presented work completed by the committee at IAFP 2000 in Atlanta, Georgia.

Mr. Erickson has been a member of the Minnesota affiliate since 1984, an officer for the board of directors since 1995 and was president of the organization in 1997. He worked as a co-chair of the Local Arrangements Committee for IAFP 2001 in Minneapolis, Minnesota.

IAFP President, James Dicksan (right) and Fred Weber, Weber Scientific present Mansel Griffiths (Diane Waad accepting the award far Mansel Griffiths) with the 2002 Maurice Weber Labaratarian Award. Weber Scientific spansars this award.

MAURICE WEBER LABORATORIAN AWARD

Dr. Mansel W. Griffiths
Guelph, Ontario, Canada

Dr. Mansel W. Griffiths is this year's recipient of the Maurice Weber Laboratorian Award. This award recognizes Dr. Griffiths for his outstanding contributions in the laboratory and his commitment in the development of innovative and practical analytical approaches to support food safety.

Dr. Griffiths was born and raised in Swansea, South Wales. He received his B.Sc. degree in applied biology at North East London Polytechnic and his Ph.D. was obtained from Leicester University where he studied the biochemistry of thermophilic microorganisms.

Dr. Griffiths was appointed to the staff of the Hannah Research Institute, Ayr, Scotland in 1974 and, in 1980, he became head of the Dairy Microbiology group. In 1990 Dr. Griffiths accepted the position of chairperson of dairy microbiology in the Food Science Department at the University of Guelph. He is program chairperson for the M.Sc. in Food Safety and Quality Assurance, and has recently been appointed director of the Canadian Research Institute for Food Safety.

His current research interests include rapid detection of foodborne pathogens, factors controlling growth and survival of microorganisms in food, and beneficial uses of microorganisms. Dr. Griffiths has authored more than 170 peer-reviewed articles.

Dr. Griffiths is an associate scientific editor of the *Journal of Food Science*, a member of the executive editorial board of *Journal of the Science of Food and Agriculture*, and serves on the editorial boards of *Food Research International*, *Journal of Food Protection* and *International Journal of Food Microbiology*. He is a member of the International Dairy Federation working group on milk-borne pathogens and serves on the Expert Scientific Advisory Committee for Dairy Farmers of Canada. He is a member of the working party on Academic Education in Food Microbiology of the International Union of Microbiological Societies and was the G. Malcolm Trout visiting scholar at Michigan State University in 1999.

IAFP Vice President, Paul Hall (alsa representing Kraft Faads) presents Thamas McMeeken (left) with the 2002 Internatianal Leadership Award. Kraft Faads spansars this award.

INTERNATIONAL LEADERSHIP AWARD

Dr. Thomas A. McMeekin
Hobart, Tasmania, Australia

Dr. Tom McMeekin is this year's recipient of the International Leadership Award. This award is presented to Dr. McMeekin for his dedicaton to the high ideals and objectives of IAFP and for promotion of the mission of the Association in countries outside of the United States and Canada.

Dr. McMeekin received undergraduate and postgraduate degrees [B.Agr.(Hons) and Ph.D.] from The Queen's University, Belfast, UK, in 1968 and 1971, and in 1989 was awarded a doctor of science degree by that institution for contributions to food microbiology and bacterial taxonomy.

Currently he holds a personal chair of microbiology at the University of Tasmania where he is also director of the Centre for Food Safety and Quality. His research interests are in food microbiology and Antarctic biotechnology, in which he directs a team of 30 researchers.

Dr. McMeekin has contributed to numerous publications, including the monograph "Predictive Microbiology: Theory and Application," and has made over 30 invited international conference and workshop presentations.

In 1994 Dr. McMeekin was elected a Fellow of the Australian Academy of Technological Sciences and Engineering, and in 2000 was appointed a Scientific Fellow by the Australia New Zealand Food Authority. Awards include the JR Vickery Medal (International Institute of Refrigeration, 1987), and in 1998 the Annual Award of Merit of the Australian Institute of Food Science and Technology. He is an executive board member of the International Committee of Food Microbiology and Hygiene, an editor of the *International Journal of Food Microbiology*, and a member of the editorial board of the *Journal of Food Protection*. Dr. McMeekin's work in Antarctic microbiology was recognized in 1998 by description of a new bacterial species, *Planococcus mcmeekinii.*

NFPA FOOD SAFETY AWARD

Dr. Nelson Cox
Athens, Georgia

Dr. Nelson Cox is this year's recipient of the National Food Processors Association's (NFPA) Food Safety Award for his outstanding contribution to food safety research and education.

Dr. Cox earned a B.S. in bacteriology (1966), an M.S. in food science (1968), and a Ph.D. in poultry science (1971) from Louisiana State University. Since 1971, he has been a research scientist at Russell Research Center in Athens, Georgia and has published more than 500 scientific publications in the area of food and poultry microbiology, concentrating

IAFP Past President, Jenny Scott (olso representing NFPA) presents Nelson Cox with the 2002 NFPA Food Sofety Aword. The Notionol Food Processors Associotion sponsors this oward.

primarily on *Salmonella*, *Campylobacter*, *Clostridium perfringens*, *Listeria*, and *Yersinia*. In the last three years Dr. Cox has focused on the persistent problem of *Campylobacter* in chickens. Despite the relatively short time that Dr. Cox has worked in this area he has made a paradigm-shifting discovery. He was the fist person in the world to demonstrate that *Campylobacter jejuni* can be transmitted from the breeder flock through eggs to broilers in the field.

Dr. Cox is a Fellow of the American Academy of Microbiology and currently serves as an adjunct professor at the University of Georgia and Louisiana State University. He has been issued seven patents that have been licensed by commercial companies; served on the editorial board of *Journal of Food Protection; Poultry Science; Journal of Applied Poultry Research; Dairy, Food and Environmental Sanitation; Journal of Muscle Foods,* and *Journal of Rapid Methods and Automation in Microbiology*.

Awards received by Dr. Cox include: C.W. Upp Award (1971), Ralston Purina Research Award (1972), Poultry and Egg Institute of America Award (1977), Federal Laboratory Consortium Award in Technology Transfer (1996), ARS Technology Transfer Award (1996), National Broiler Research Award (1997), Kansas State University Distinguished Service Award (1997), and nine USDA Certificates of Merit.

DEVELOPING SCIENTIST AWARDS

ORAL

1st – Tam Mai
2nd – Maha Hajmeer
3rd – Leslie Thompson

POSTER

1st – Kimberly Lamar
2nd – Kidon Sung
3rd – Julie Jean

LeeAnne Jacksan (left) presents Kimberly Lamar with the 1st place Paster Develaping Scientist Award.

LeeAnne Jacksan (right) presents Julie Jean with the 3rd place Paster Develaping Scientist Award.

FELLOW AWARD

This prestigious award honors professionals who have contributed to IAFP and its affiliates with quiet distinction over an extended period of time. These individuals received a distinguished plaque in recognition of this prestigious honor.

IAFP President, James Dickson (left) and IAFP Past President Jenny Scatt present Dave Fry with the 2002 Fellow Award.

AFFILIATE AWARDS

MEMBERSHIP ACHIEVEMENT FOR AFFILIATES

Highest Number Increase:

Upper Midwest Dairy Industry Association

Highest Percentage Increase:

Kansas Association of Sanitarians

BEST COMMUNICATION MATERIALS FOR AFFILIATES

New York State Association for Food Protection

BEST EDUCATIONAL CONFERENCE FOR AFFILIATES

Wisconsin Association of Milk and Food Sanitarians, Inc.

BEST ANNUAL MEETING FOR AFFILIATES

Washington Association for Food Protection

C. B. SHOGREN MEMORIAL

Florida Association for Food Protection

Affiliate Award Winners: Fritz Buss (left), Wisconsin Association of Milk and Food Sanitorians receives Best Educational Conference for Affiliates; Stephanie Olmsted, Washington Association for Food Protection receives Best Affiliate Meeting; and Don Erickson, Upper Midwest Dairy Industry Association receives Affiliate Membership Achievement for Highest Number Increase Award.

Affiliate Council Chairperson Peter Hibbard (right) presents Zeb Blanton Florida Association for Food Protection with the 2002 C. B. Shogren Memorial Award.

AFFILIATE CHARTERS

IAFP President James Dickson presents Marizo Landgraf (middle) and Mario Tereso Destro of Brazil Association for Food Protection with an Affiliate Charter.

IAFP President James Dickson presents Margaret Burton (right) and Jennylynd James of Southern California Association for Food

Darden Restaurants, Inc.

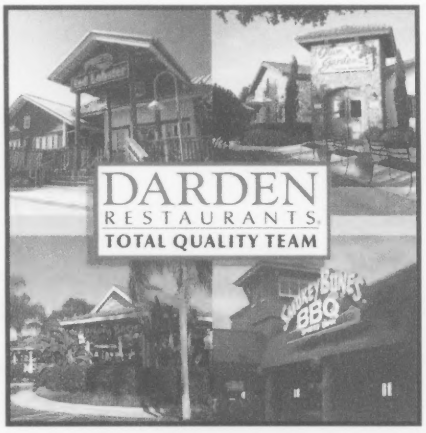
IAFP 2002 Black Pearl Award Winner

Orlando, Florida, USA

The Black Pearl Award recognizes a company for its efforts in adherence to the goals and objectives of the International Association for Food Protection. Advancement in food safety and quality through consumer programs, employee relations, and educational activities are key characteristics a company must exemplify to be recognized for the Black Pearl Award.

Darden Restaurants, Inc. is a family of local restaurants that has delighted more than 250 million guests for more than 30 years. Darden is the largest casual dining restaurant company in the world. It operates more than 1,200 Red Lobster, Olive Garden, Bahama Breeze and Smokey Bones restaurants in North America, leading each of its market segments and employing more than 122,000 people.

To make sure every guest has an outrageous, over-the-top dining experience, Darden Restaurant employees live each and every day with high standards that uphold Darden Restaurants' principles and promises. Not only does the company promise their guests extraordinary food and beverages that are unique and high quality; to be treated special and provide service that will add delight to the dining experience. They also promise their team members, vendors, and communities on-going training, a partnership that's based on mutual trust, fairness, loyalty, support and respect, as well as support in times of crisis. These are just a few of the many promises Darden's devoted team upholds every day.



Chairman and CEO, Joe Lee may have summarized it best when he said, "At Darden Restaurants, it's our passion to be the best in casual dining, now and for generations. Throughout our organization, this passion translates into a drive to create and consistently exceed new standards of excellence. Nowhere is this better exemplified than in our commitment to the highest standards of food safety."

The Darden Restaurant Total Quality Team has earned the reputation of being an industry leader. The food safety program encompasses a "farm-to-fork" effort. To make sure they meet and exceed their own high standards, the company employs 23 food safety specialists across North America who visit every restaurant to provide training and reinforce best practices. This team is just part of a staff of more than 50 food scientists, microbiologists, and public health professionals, who make up Darden Restaurants Quality Assurance Department. This diverse team includes six countries from around the globe, and truly sets Darden apart from its competition.

Darden Restaurants' commitment to providing outstanding quality in the safest, cleanest restaurants in the industry is seen in the many programs developed and upheld by everyone who contributes to the company's success. A comprehensive food safety program reflects Darden's values and principles in delivering hospitality that you can taste and touch. These programs include employee and manager food safety training, supplier audits, HACCP and Total Quality programs, restaurant inspections, microbial monitoring, and

a proactive approach to assess and address new issues and threats to food safety.

Darden exemplifies the farm-to-fork with its Point Source Program. Before any seafood is served in any Darden restaurant it's approved for production and purchase, and then inspected by the Total Quality Specialists located throughout Southeast Asia, including China, Thailand, and Singapore. All prospective vendors must pass a rigorous group of tests to make sure they produce the highest quality seafood that's processed under sanitary conditions and maintains compliance with all food safety standards. This is just a snapshot of Darden's Point Source Program, which has been a part of Darden's culture in the eastern hemisphere for more than five years.

Darden also has a Seafood Inspection Program in the western hemisphere through which millions of pounds of seafood are inspected each year. Due to Darden's stringent specifications, about 6% of the seafood is rejected because it didn't meet quality and food safety standards. Seafood evaluations consist of physical, chemical, and microbiological tests. Darden's seafood inspection team performs physical and organoleptic tests according to a statistical sampling plan developed by the National Oceanographic and Atmospheric Administration and the United States Department of Commerce. Both the Point Source Program and the Seafood Inspection Program are hands-on and provide training for vendors to make sure they have the right tools and development to provide the highest quality, safest seafood, which continually exceeds Darden's product specifications.

Darden's Seafood Inspection Program has been an industry leader for the last three decades. Some examples of their success include the integrated lot inspection program and fresh fish vacuum packaging. The company continues to make recommendations and work closely with the industry to develop better packaging that enhances the integrity and safety of seafood as it travels through the supply chain.

Darden is not only focused on the quality of seafood but on every product that is brought into the restaurants. The Total Quality Supplier program is a partnership between Darden, its suppliers, and internal team members that guarantees everyone will deliver outstanding food safety, quality and sanitation. The program develops new suppliers, and guides current suppliers to an advanced "world-class" level, that raises their awareness and commitment to manufacture high-quality, safe food products, whether it comes from fields, ponds, oceans, manufacturing facilities or distribution centers.

To make sure these products truly are world-class, Darden's own microbiology and analytical laboratory contribute significantly. The QA lab was the first in the casual dining industry. Every consumable non-retail product used by any of Darden Restaurant's four concepts is tested at least once a year for safety and quality. The microbiological safety is verified on more than 1,100 products per year. The lab also tests new products from potential vendors to verify the products meet Darden's expectations. The food scientists also contribute their expertise to the restaurant field team by supplying microbiological training aides during restaurant openings.

Another key to Darden's success is the hands-on training provided by the 23 individuals in the field. These public health professionals provide operations support through training, routine quality assurance restaurant evaluations, and during new restaurant openings. In fact, the Quality Assurance staff has trained more than 180,000 employees during restaurant openings since the first concept opened. The team also reviews and assesses HACCP programs within the restaurant, as well as food safety, personal safety, sanitation, and food quality standards.

Throughout the company's history, Darden restaurants and its employees have played an active role in the community and given back to the environment. Disaster relief and charitable food assistance is a common practice for Darden. The company feels it has a responsibility to set a positive example by conducting business with an ethical long-term respect for the environment, which they believe can be done without harming the environment, people, or company.

It's Darden Restaurants' passion to be the best in casual dining now and for generations, and they truly have set a standard with their Total Quality Team. Overall, they're proud to be recognized as a leader in this critically important area of quality assurance. They visualize quality assurance as an essential ingredient in their growth and continued success.

IAFP 2002 Session Summaries

At the request of the *Dairy, Food and Environmental Sanitation* Management Committee, Members of the Student Professional Development Group were invited to prepare summaries of sessions they attended at IAFP 2002. Following are the write-ups the students prepared.

S01 — Antibiotic Resistance

Michelle Danyluk, University of Georgia
and Kelly Felkey, University of Florida

This session provided an extensive background on antibiotic resistance in relation to history, persistence, multiple resistance factors, transmission, and removal. T. O'Brien discussed the history and mechanism of antibiotic resistance. Antibiotic use began 65 years ago. When antibiotics are utilized at moderate concentrations, bacteria survive by natural selection. Evolution involves mutations of genes on chromosomes or plasmids. Such changes may lead to a strain or species with a selective advantage, such as the ability to resist antibiotics. A. Gupta presented information on *Salmonella* Newport resistance and difficulties in obtaining specimens. *Salmonella* spp. is part of a surveillance system operated by the Center for Disease Control and Prevention and the National Antimicrobial Resistance Monitoring System (NARMS). The system has assisted in monitoring identification of the ACSSuT resistance pattern and new resistance patterns.

P. J. Fedorka-Cray covered multiple drug resistance in foodborne bacteria, defining multiple resistance patterns in relation to various pathogens. Multiple drug resistance was defined as the ability of a bacterium to grow in the presence of two or more antibiotics. Some pathogens discussed in this regard were *S.* Newport, *S.* Typhimurium DT104, *C. jejuni* and *C. coli*.

E. J. Threlfall discussed antibiotic resistance trends in Europe, and their surveillance system "Enter-Net", which is similar to NARMS. He detailed the use of standard methods for surveying antimicrobial resistance in *Salmonella* spp. and *E. coli*. Outbreaks of *Campylobacter* spp. resistant to quinolones and macrolides, and globalization of *S.* Typhimurium DT104 through movement of humans and animals, were also discussed.

S. F. Kotarski introduced the topic of cephalosporin safety in animal medicine and discussed a study that was performed to determine residues of cephalosporin in feces and urine. Four generations of cephalosporins exist, and ceftiofur has been used in the US for 14 years to treat cattle diseases. Ceftiofur residues are low in the intestinal tract and high in the environment, but their levels decline with time. The transmission of antimicrobial resistance in *Salmonella* spp. can be monitored, and possibly controlled, by observing shedding, health management, farm biosecurity, feed and water, transport, comingling, and other stressors.

H.-D. Emborg presented an opposing viewpoint and a solution to the antibiotic resistance problem. He proposed complete removal of antibiotic growth promoters (AGP). AGPs were banned for use in cattle and pigs in Denmark, which produced worries in producers and slaughterhouse workers, relating to health, production, and feed use. Pigs and broilers produced without AGP showed few effects with regard to these issues. In *Salmonella* spp., resistance to antimicrobials decreased when broilers and pigs were grown without AGPs.

S02 — Viruses in Foods

Gabriel Sanglay, Virginia Tech
and Angela Hartman, Virginia Tech

Dr. Craig Hedberg, of the University of Minnesota, discussed the epidemiology of Norwalk-like viral gastroenteritis. Norwalk-like viruses (NLVs) have caused approximately 23 million cases, of which 40% are food related. While the fecal-oral route is the primary mode of transmission, NLVs can also be transmitted by person-to-person contact, fomites, or airborne transmission. NLVs are commonly associated with foods such as produce, oysters, or bakery products. Although these foods can act as vehicles, it has been found that NLVs do not replicate in the foods. Currently, there is no effective surveillance for viral pathogens. To prevent outbreaks, preventive measures such as protecting produce and shellfish beds from human feces, as well as rapid investigation of outbreaks to identify sources, must be undertaken. Outbreaks must be investigated rapidly to identify sources.

Dr. Paul Allwood, of the Minnesota Department of Health, discussed investigating outbreaks of foodborne viral gastroenteritis. Outbreak investigation is important in order to identify the source, prevent transmission of the virus, enhance understanding of agents, assess effectiveness of existing safeguards, develop more effective safeguards, and prevent the use of viruses in bioterrorism. The goal of investigating outbreaks is to confirm that the outbreak occurred, identify the agent or agents involved, identify the food vehicle, and implement control measures. Outbreaks can be identified by phone calls to a complaint hotline, surveillance, voluntary reports from healthcare providers, and

reports from public health agencies and establishments. If an outbreak is identified, an investigation begins. Investigation has 3 phases: epidemiologic, environmental, and laboratory. If a foodborne viral outbreak has occurred, then enforcement measures and/or operational recommendations are needed. These can include discarding ready-to-eat foods, excluding ill workers for up to 72 hours, handwashing training, vaccination of workers (if Hepatitis A is implicated), or closing down the facility.

Dr. Steve Monroe, of the Center for Disease Control and Prevention, discussed CaliciNet as a tool to improve surveillance of NLVs. CaliciNet is a molecular taxonomy tool that can be used in surveillance for the family of Caliciviridae. The family of Caliciviridae includes the Vesiviruses, Sapoviruses, Lagoviruses, and Noroviruses (NLVs). CaliciNet is used to identify caliciviruses because they do not grow in cell culture and there is a great deal of genetic variation within NLVs. NLVs are rarely detected and reported because they will be found only if they are specifically targeted. This tool aids in the molecular epidemiology of NLV outbreaks. Results using CaliciNet have shown that 197 out of 229 (86%) samples have been positive for NLV detection using RT-PCR. CaliciNet may also be used to link nucleotide sequences to epidemiologic information so as to identify and compare calicivirus strains in "real time."

Dr. Lee-Ann Jaykus of North Carolina State University discussed environmental persistence and transfer of NLVs. NLVs are unique because they are obligate intracellular parasites that do not grow in food; they are antigenically and genetically diverse; they are generally found in low numbers but have a low infective dose (<100 particles); they are epidemiologically associated with propagated outbreaks, and they appear to be environmentally persistent. NLVs are able to resist chlorination (10 ppm), can persist for 2 months at 4°C with a 50% reduction in infectivity, and are not affected by quaternary ammonium salts and anionic detergents. Dr. Jaykus and her colleagues performed a study to determine whether weight applied to lettuce, surface-drying time, and use of wet vs. dry lettuce increased viral transfer from surfaces to lettuce. Increased weight applied to the lettuce appeared to have no effect on virus transfer, but viral transfer occurred more frequently when the lettuce was wet. Surfaces that were dried for 10 minutes were able to transfer NLVs to both dry and wet lettuce, whereas surfaces dried for 30 to 60 minutes did not transfer any virus to dry lettuce.

Dr. Sagar Goyal, of the University of Minnesota, discussed viral indicators and methods of detection. Human enteric viruses (HEV), such as Hepatitis or caliciviruses, can be found in feces, water used to irrigate produce, estuarine water for shellfish, and wash or rinse water, as well as being present in or on food handlers or contaminated surfaces. These viruses can occur at any stage of the processing operation, from preharvest to transport of the final product. Therefore, an indicator organism or new detection methods are needed. Characteristics of an ideal indicator organism would include being present when pathogens are present, having similar persistence and growth patterns, having similar resistance to environmental stresses or disinfectants, and being non-pathogenic. Because fecal indicator bacteria are not really effective in detection of HEVs, alternate indicators such as *Clostridium perfringens, Salmonella,* and coliphages can be used. F-RNA plaques, a heterogeneous group of RNA coliphages, are reliable indicators of HEV because they are more resistant to ultraviolet light than fecal coliforms are. In addition to viral indicators, new detection methods for preventive surveillance or outbreak situations are also needed. Currently, there are no methods for detection of viruses in foods, except for shellfish. Viral detection includes liquefaction of a food, elution or precipitation of the viruses from the food, investigation of PCR inhibitors and cytotoxicity, and percent recovery of the viruses. Because no single method is suitable for all food types, new methods applicable to groups of foods need to be developed.

Dr. Dean Cliver, of the University of California-Davis, discussed control strategies with relation to foodborne and waterborne viruses. Primary control measures include preventing contamination, through use of chemical cleaning, proper handwashing, and biodegradation of the viruses. Inactivation of the virus can be achieved by application of ultraviolet light to surfaces or by use of clean water, drying, and heat. In terms of detection, RT-PCR can be used, but only if the RNA is in good condition. If the capsid of the virus is badly damaged, the RNase will destroy the viral RNA. If the capsid is mildly damaged, protease may facilitate RNase action. To control foodborne viruses, viral or fecal contamination of food must be prevented. The best mode of prevention is still thought to be handwashing.

S03 — Development in Intervention Technologies to Enhance Produce Safety

Renee M. Raiden, Virginia Tech
and Brian Yaun, Virginia Tech

This symposium introduced many different developmental technologies that are being researched in an attempt to increase safety of produce throughout the United States. Brian C. Hampson, from California Polytechnic State University, discussed advantages of using ozone to increase produce safety. Its high oxidation potential allows it to be used as a fumigant for produce storage rooms or as an aqueous water treatment to aid in the recycling of water throughout processing plants. Howard Q. Zhang, from Ohio State University, discussed pulsed electric fields, which have been

shown to reduce microbial loads in juices. This process, which is carried out in static or continuous processing lines, ultimately causes disruption in cell membranes. Low dose irradiation also kills microorganisms, by breaking water molecules into radicals that cause disruption of cell membranes. Brendan A. Niemera, from USDA-ARS-ERRC, explained that when irradiation is used at low doses, it has no sensory impact on produce. However, once doses exceed 5 KGY, detrimental sensory characteristics are noted in foods. High pressure processing, introduced by Dallas G. Hoover, from the University of Delaware, and is best used for products that are not intact, because the pressure applied may cause collapse of structure. Hoover specifically discussed the success of using high pressure for processing oysters, whose structure would not be adversely affected by the use of such high pressures. Active packaging is another innovation discussed in this symposium. Kay Cooksey, from Clemson University, described methods to deliver antimicrobial agents to food products through packaging. Active packaging is regulated as an indirect food additive. One area of research is prevention of mold growth in strawberries through chlorine dioxide diffusion. Factors that become important in the use of active packaging include water activity, pH, temperature and polymer diffusion from the package. Finally, Bassam A. Annous, from USDA-ARS-ERRC, concluded the symposium with ideas on the development of "experiment-friendly" equipment that can utilize and control many different factors simultaneously during processing. Specific areas of concern were the uses of incremental controls and the ability to contain pathogens.

S04 — Safety of Latin-Style High Moisture Fresh Cheese

Shiao Mei Lee, University of Georgia
and Paola Sabina Contreras, Laboratorio DeAlta

Latin-style cheese is soft cheese that has a high pH and high moisture content. These characteristics do not provide sufficient barriers to limit growth of pathogens such as *Listeria monocytogenes*, which has been implicated in several outbreaks. Production of Latin-style cheeses does not utilize milk that has been pasteurized before elaboration of the cheese. Use of pasteurized milk would eliminate competitive flora and *L. monocytogenes*, but this is not the complete solution. The lack of new and modern machinery, as well as resistance to changes in cultural habits, represent major barriers to the production of safe Latin cheeses. The panel of presenters suggested providing more education to consumers and producers with regard to the need to use pasteurized milk to make cheese. An infusion of financial support in Latin America is also needed for purchasing manufacturing equipment and for providing education regarding Latin-style cheeses, which have also become desired products in the USA.

S06 — Minimizing the Risk of *Salmonella* Enteritidis in Shell Eggs

Joshua Gurtler, University of Georgia
and Kari Shoaf, University of Nebraska-Lincoln

Symposium 06, entitled "Minimizing the Risk of *Salmonella* Enteritidis in Shell Eggs," discussed current problems associated contamination of shell eggs with *Salmonella* Enteritidis (SE) and strategies to prevent the organism's transmission, contamination, and growth. Dr. Robert E. Brackett, Director, Food Safety, FDA-CFSAN in College Park, MD, presented an overview of the risks associated with SE infection in shell eggs and discussed the symptoms, duration, and disease course of SE infections in humans. Dr. Brackett emphasized the fact that the occurrence of SE infection in humans is *not* decreasing. He explained the 1999 USDA Egg Safety Action Plan implemented by the President's Council on Food Safety and first introduced by President Bill Clinton's December 10, 1999 weekly radio address (www.foodsafety.gov/~fsg/ceggs.html). Numerous programs and agencies are involved in this national prevention program designed to reduce the occurrence of SE in shell eggs. Dr. Brackett suggested numerous approaches to this problem, including increasing research to develop intervention plans and determining the mechanisms of pathogenicity. Other possible solutions involved implementing safety assurance programs, educating the public, and increasing regulatory efforts. The USDA has set the year 2010 as a deadline for the "Elimination of SE illnesses associated with egg consumption," with an interim goal set for 2005 to "reduce by 50% the number of egg-associated SE illnesses." Dr. Richard K. Gast, of the USDA, spoke of the risk factors for SE infection in laying hens. He suggested that the best time to prevent contamination of eggs is post-harvest; however, pre-harvest contamination prevention should also be considered. The risk factors involved in SE infection in laying hens include the source of bacterial introduction, the method of transmission, and the susceptibility of laying hens to the disease. Dr. Mark Walderhaug, of the FDA-CFSAN, discussed environmental testing for SE in layer houses. He elaborated on the FDA's policy and protocol while describing traceback investigations of SE outbreaks. Dr. Robert R. H. Davies, of the Veterinary Laboratories Agency in Surrey, gave an overview of the current reduction in SE contamination in shell eggs in the United Kingdom; however, no explanation of this reduction could be given. Dr. Patricia A. Curtis, of Auburn University, discussed emerging technologies for rapid cooling of shell eggs. It was pointed out that shell eggs must be kept cool from laying to consumption. She suggested that rapid cooling leads to less SE growth within shell eggs. Dr. Brian Sheldon, of North Carolina State University, discussed

the pasteurization of shell eggs, which was developed to effectively address SE and egg safety issues. He described in-shell egg pasteurization as a thermostabilization process that denatures the outer albumen to maintain interior egg quality, reduce evaporation rates, reduce bacterial contamination, and devitalize fertile eggs. Finally, Dr. Shelly McKee, from the University of Nebraska in Lincoln, made a presentation concerning HACCP for shell egg packing and processing. McKee and colleagues developed five different HACCP plans for varying egg production processes to minimize SE risk to the consumer. Two of these processes were discussed, including processes dealing with pasteurized egg products such as hard-boiled eggs and other specialty eggs. This informative symposium provided numerous explanations for current problems of *Salmonella* Enteritidis in shell eggs as well as solutions for reducing the risk of SE infections.

S07 — Microbiological Food Safety at Retail

Renee M. Raiden, Virginia Tech
and Brooke K. Seeman, Virginia Tech

This symposium discussed microbiological food safety at the retail level. Shelly Huddle, of the CDC, began the symposium by introducing statistics related to the occurrence of foodborne outbreaks in restaurants, as well as common agents involved, as reported by several surveillance systems that the CDC has in place. For the years 1973-1999, 55% of all reported outbreaks were linked to restaurants and delis. Frank Busta, from the University of Minnesota, pointed out that defining potentially hazardous foods is related to the potential for pathogens to grow in the food. In 2001, the definition "potentially hazardous food (PHF)" was replaced by "temperature controlled for safety (TCS)." This change meant that foods considered potentially hazardous were those that required temperature control to remain safe. Tim Freier, from Cargill, explained the importance of microbiological controls throughout every stage of food production. Such controls include good agricultural practices (GAPs), prerequisite programs implemented at processing plants, training, and new processing innovations through the use of irradiation and other developing processes. Sheila Cohn, from the National Restaurant Association, introduced the topic of microbial control strategies at the retail level, emphasizing the importance of employee training and food safety education throughout restaurant chains to keep food safe for consumers. The control and incidence of viruses at retail was also addressed by Susan Sumner, from Virginia Tech. She explained that, unlike bacteria, viruses do not replicate in food systems, and their incidence is usually underreported. Viruses typically come into contact with foods through point source contamination such as infected handlers or raw sewage. Finally, David Theno, of Jack-in-the-Box, Inc., ended the symposium by stressing the importance of management of food safety risks at retail. He proposed setting realistic goals and establishing a protocol and a threshold at which action would be taken. Retailers must then follow through with employee education and training as well as implementation of available technology, including a contingency system in case problems arise.

S08 — Extended Shelf Life Meat Products–Issues and Interventions

Kelley Felkey, University of Florida
and Sally Foong, Iowa State University

This session covered research on problems related to shelf life in meat products, and ready-to-eat (RTE) products, and to interventions. Dr. Bruce Tompkin, of ConAgra, introduced the session with an overview of microbiology in extended shelf life products. "Extended" is defined as being held in storage for more than is usual in normal, commercial practice. This is not applicable in all countries. Extended shelf life helps to eliminate economic loss, delivers a consistent product, improves inventory, eliminates large production and allows products to be distributed longer distances. Packaging improvements have also been made in recent years, progressing from paper wrapping to present day modified atmospheres and cooking in a bag. There have been better temperature and environmental controls with such products as sodium lactate and diacetate. Code dating on RTE assists in traceback investigation in the event of a recall. Studies have been performed on spoilage organisms for more than 90 years; more recent work has focused on *Listeria monocytogenes*.

Dorota M. Broda presented information regarding low-temperature-growing *Clostridia*. Commonly associated with vacuum-packed chilled meats, raw or cooked, the organism causes bag extension and spoilage, with a rank odor. Detection methods can be difficult and a technique utilizing Polymerase Chain Reaction (PCR) is currently being developed. Sources of *Clostridia* could be boning rooms, feces, soil and water on farm, and pelts. Controls can be implemented in pre-slaughter, dressings, post-dressing, boning, and packaging. A blown pack is often the result of bad hygiene during processing.

Dr. Richard A. Holley discussed the impact of green discoloration in cured meat products. The discoloration is often associated with spoilage that has sour, slimy, and gaseous characteristics at 4°C. His work centered on the organisms responsible for causing this discoloration. Some microflora associated with cured meats are *Lactobacillus*, *Brochothrix*, *Aerococcus*, and *Carnobacterium viridans*. The *Aerococcus* species was isolated as the probable cause of spoilage with green discoloration. Some treatments such as sodium diacetate and sodium lactate may be helpful in reducing or eliminating this spoilage.

John Luchansky presented an update on the prevalence and persistence of *L. monocytogenes* in RTE products. This presentation demonstrated the effectiveness of antimicrobials against *L. monocytogenes*. In recovering *L. monocytogenes* from frankfurters and packages, the USDA/ARS compared a package rinse technique with the current USDA/FSIS method. All packages were naturally contaminated and counts were obtained from both methods. Potassium lactate, utilized as an ingredient in batter, can be effective as an antimicrobial at low levels; however, heating at high temperatures is the best method of reducing *L. monocytogenes* populations.

Robin Kalinowski discussed intervention strategies utilized at ConAgra Foods, Inc. after problems with *Clostridia* contamination. The problems arose in their cooked beef and poultry cook-in-a-bag products. The first solution was to reduce code dates, but customers wanted a longer shelf life (at least 45 days). Other interventions included elimination of *Clostridia* from the environment, modification of the storage temperature, and addition of antimicrobial ingredients.

John Sofos discussed the topic of additives as interventions in RTE products. The studies he discussed involved frankfurters, bologna, and beef jerky. All studies were performed to control post-processing surface contamination by *L. monocytogenes*. The beef jerky studies also tested additives as inhibitors of *Salmonella* and *E. coli* O157:H7. A variety of additives were tested, among them sodium acetate, sodium diacetate, sodium lactate, potassium sorbate, potassium benzoate, acetic acid and lactic acid. Not all additives were capable of inhibiting bacterial growth.

S09 — Cooperating to Improve Foodborne Outbreak Investigations

Karol M. Gailunas, Virginia Tech
and Megan L. Hereford, Virginia Tech

Jack Guzewich, of the Food and Drug Administration, spoke about the "team" effort required during a foodborne outbreak investigation and how each of the "players" has specific roles and responsibilities. The team, made up of members from epidemiology, laboratory, and environmental areas, work together along with different levels of government, including local, state, federal and international. There must be a partnership among the government, academia, and private sectors to create the working relationships required for a successful outbreak investigation. Each player has a specific role in surveillance, detection, investigation, food association, trace back, and source investigation.

Rob Tauxe, of the Centers for Disease Control and Prevention, gave an overview of the surveillance and epidemiological activities that occur during a foodborne outbreak investigation at the CDC. He emphasized that the most important part of epidemiological investigations is the surveillance that occurs daily in county and state health departments. Of the 6 stages in an outbreak investigation, the first uses surveillance to detect an outbreak that has occurred. The next two stages involve developing possible explanations and testing the related hypotheses. Stage 4 is a reconstruction of the location and time the contamination occurred, the epidemiological trace back; if the findings of the investigation do not converge on a specific food and place, stages 2 and 3 must be reconsidered. Stage 5 occurs when it is determined how the contamination most likely occurred, and Stage 6 consists of developing a plan for long-term prevention so that this type of outbreak will not happen again.

To show examples of how epidemiological investigations of foodborne outbreaks are done, two Epidemic Intelligence Service (EIS) Officers from the CDC spoke about recent investigations in which they were involved. The first, Donita Croft, explored an outbreak of *E. coli* O157:H7 that occurred in the fall of 2001. Using the 6 stages discussed earlier, she explained how her team associated the bacteria with a pancake breakfast held at a university stock pavilion. Her team found that bacteria were transmitted by contact with cow manure in contaminated sawdust bedding on the floor of the pavilion. The second EIS officer to speak, Anita Gupta, discussed an outbreak of *Salmonella* Newport that occurred between 1998 and 2001. Her team found that there was illness among humans and dairy cattle and that the illness was passed between the humans and cattle intermittently for about 3 years.

Dr. Jeff Farrar, Chief of the Emergency Response Unit of the California Department of Health Services, spoke on the importance of environmental investigations in foodborne outbreaks. He stressed the importance of correct and proper measurement during investigations and careful documentation of these processes. Lab and epidemiological findings should be reviewed and critiqued. Farrar also emphasized the need for cooperation between agencies in these foodborne outbreak investigations. Investigations should include a review of people (employee food safety knowledge and training), equipment (maintenance and use), and economics (such as how supply vs. demand affects SOPs).

Dr. Mary Palumbo, of the California Department of Health Services, discussed the environmental investigation of a 2000 *Salmonella* outbreak associated with almonds in Canada and California, and a 2001 outbreak of *Shigella* associated with five-layer bean dip. In the almond outbreak investigation, the review process considered the process flow diagram of the almond processors, and this led to samples testing positive for *Salmonella* at one of four huller/sheller locations and at four of twenty-three farms. In the end it could not be determined how the farms were contaminated, but actions were take to prevent further outbreaks. The huller/sheller was disinfected,

and all almonds from positive fields were treated separately and processed with a kill step. After the *Shigella* outbreak, consisting of 217 cases in California and more in various other states, there was a voluntary recall of the five-layer bean dip. Following the investigation, it was concluded that the source of contamination was most likely an ill employee, although contaminated produce could not be ruled out.

Dr. Mindy Brashears, of Texas Tech University, spoke about the university perspective on recalls and outbreaks. She noted that the number of microbial associated recalls has increased compared to previous years and that not all recalls are associated with outbreaks. Universities must work with processors and regulatory agencies to provide valuable research, extension, and teaching. It is also important that the media be provided with the correct facts quickly so that they reach consumers. Dr. Brashears discussed the August 1997 Hudson Foods recall due to *Escherichia coli* O157:H7 in ground beef. The results of this recall were two-fold: more aggressive testing programs for *E. coli* O157:H7 by the USDA, and better lotting and coding adopted by processors. The number of *E. coli* O157:H7 recalls has increased since this incident.

S10 — Integrated Approaches to the Study and Control of Foodborne Pathogens in Meat and Poultry

Walairut Chantarapanont, University of Georgia
and Suphachai Nuanualsuwan, University
of California-Davis

The integration of farm-to-plate approaches to assure food safety, based on research investigating all possible routes of transmission, is becoming recognized as an effective means of reducing foodborne illness from bacterial pathogens. The need to extend the focus of intervention efforts to on-farm sources of human pathogens, food animals, is clear. The challenge presented is to design studies to determine important risk factors for sources of enteric zoonotic pathogens during production on the farm to address the human health burden.

This symposium described how studies conducted in Iceland, New Zealand, Denmark and the United States have approached the challenge of integrating the application of multiple disciplines, e.g. microbiology, molecular biology, epidemiology (using geographic information system or GIS and spatial epidemiology), statistics, and risk assessment. Topics in microbiology centered on sampling and detecting microorganisms. Molecular biology combined with statistical software was used to correlate genetic and epidemiological information among isolates. These available fields were integrated to extend the study of sources and risk factors of foodborne pathogens from the entire primary production sector (on-farm, hatchery, etc.) through exposure to consumers.

S11 — *Listeria* Research Update

James Folsom, University of Florida
and Yash Burgula, University of Minnesota

Jeffrey M. Farber spoke about a novel new approach to sub-typing *Listeria monocytogenes*, which causes about fifty or sixty cases of disease in Canada annually. The new technique, it is hoped, will be able to differentiate between *L. monocytogenes* isolates of varying pathogenicity. This new method has been named MultiLocus Sequence Typing (MLST). For more information, please see the web resource http://www.mlst.net.

Bala Swaminathan, of the CDC, replaced Sophia Kathariou at the last minute. Dr. Swaminathan spoke about efforts to differentiate Epidemic Clone II (ECII) isolates from other isolates of *L. monocytogenes*.

Martin Wiedman spoke about progress made in his lab regarding a definition of human pathogenic strains of *L. monocytogenes*. Ongoing work in his lab will help determine if there are methods that can allow the differentiation of harmful strains of *L. monocytogenes* from harmless strains. The web resource http://www.pathogentracker.net has further information.

Byron Brehme-Stecher detailed the progress made toward the use of fluorescent in situ hybridization (FISH) to detect *L. monocytogenes*. The technique has been made possible by use of peptide nucleic acid (PNA) probes. A powerful method of detecting and enumerating *L. monocytogenes* could result from the combination of PNA probes with flow cytometry.

S12 — Current Issues in Seafood Safety

Nancy DeTrana, University of Tennessee
and Rico Suhalim, University of Georgia

Approximately 26% of the foodborne outbreaks in the US involve seafood. Ciguatoxin, histamine, *Vibrio* spp., *C. botulinum*, viruses and paralytic shellfish poisoning are some of the agents identified in sea foodborne diseases. In addition, algal bloom can become a human health hazard when there is an increase in water temperature and in availability of wastes that serve as nutrients. Marine biotoxins are neurological in nature. Among bacteria, *V. parahaemolyticus* is a significant cause of foodborne disease, and a risk assessment model is currently being developed. To prevent and contain outbreaks of disease caused by *Vibrio* spp., proper education, warnings, and harvest controls (depuration, area closure, and refrigeration) are needed. Contrary to popular belief, hot sauces of any kind and/or alcohol do not inactivate the organisms.

S13 — Controlling *Clostridium perfringens* Hazards during Cooling

Suphachai Nuanualsuwan, University of California-Davis and Sally Foong, Iowa State University

Clostridium perfringens is a continuing concern to the food service industry. The abilities of this pathogen to form heat-resistant spores and to grow at a very rapid rate at relatively high temperatures are the major contributing factors leading to food poisoning. Spores of *C. perfringens*, which have a decimal reduction value at 99°C of 26 to 31 min, can be expected to survive the pasteurization temperatures and times used to cook or prepare foods in food-service operations. Although the temperature range for growth of *C. perfringens* is 6 to 52.3°C, rapid growth occurs between 35 to 48.9°C. The short generation time of the organism, 7.1 to 20 min, in the rapid-growth temperature range means that after the spore has germinated, fast cooling of foods is critical. Because of the potential health hazards associated with cooling cooked foods, the United States Department of Agriculture (USDA) requires that, during cooling of certain meat and poultry products, the relative growth of *C. perfringens* should not exceed 1.0 $\log_{10}$.

This symposium was designated to present information on ways to control the rapid growth, based on current knowledge of *C. perfringens* biology, by experimenting with various kinds of cooling system, e.g. blast freezing, blast chilling and blast cooling with different rates of success. In addition to physical methods, some chemical agents are being studied in poultry products as possible anti-clostridia agents, e.g. sodium diacetate, sodium lactate, and sodium acetate.

Risk assessments and predictive models are other alternatives to controlling the growth of *C. perfringens*. Researchers have developed predictive models that can be used to predict small to moderate amounts of relative growth of *C. perfringens* from spores during cooling of cooked cured and non-cured meat products. The predictive equations are being used in risk assessment models for cooked meats and have been incorporated into the USDA pathogen modeling computer program, which is available on the Eastern Regional Research Center Web site.

S14 — Innovation in Retail Food Safety Management Systems and Technology

Shiao Mei Lee, University of Georgia and Rico Suhalim, University of Georgia

Supermarkets are offering more foods that accommodate today's "on-the-go" lifestyle, leading to greater emphasis on home meal replacements (HMR) and their safety. HMRs offer a variety of quality prepared foods that resemble restaurant-quality food rather than traditional frozen food selections. Safety of HMRs has come under increased scrutiny. HACCP systems in many food companies ensure the production of safe food and lower the cost of "value-added" products. Companies are preparing higher standards and working closely with food suppliers to produce safe food with lower cost and high quality. The presenters also talked about using technology as a tool for training employees and for inspections. Some of the problem areas that need to be addressed are storage temperature, sanitation, personal hygiene, and pest control. Following standards and guidelines are key to producing wholesome foods that serve as HMRs.

S15 — Alternatives in Dairy Waste Management: Create New Products or Generate Power!

James Folsom, University of Georgia and Leslie Thompson, Kansas State University

This session discussed the sources of dairy waste and uses for the waste. The two sources of waste that are being targeted by the industry for further use are the milk product left in pipes and tanks during processing, and the wastes produced by cattle on dairy farms. The technologies discussed to recover milk products included reverse osmosis, TLSL, SPN project, and thermal depolymerization (TDP). These technologies recover lactose, whey protein concentrate, lactic acid, fertilizer, oil, gas, carbon, and calcium magnesium acetate, respectively. Product recovery from dairy processing allows reduction of BOD. The utilization of methane is also a promissing development. The biogas produced by modern digesters can be used to produce electricity for use on the dairy farm and more. There are presently 36 projects in California with 7.6 megawatts biogas generating capacity. The waste left after digestion can also be used as fertilizer.

S16 — Chronic Wasting Disease and Other Transmissible Spongiform Encephalopathies

Megan Herford, Virginia Tech and Angela Hartman, Virginia Tech

Dr. Dean Cliver, of the University of California-Davis, gave an overview of Transmissible Spongiform Encephalopathies (TSEs). TSEs are accumulations of abnormal prions in the brain that lead to spongiform degeneration. These low molecular weight proteins are found in the central

nervous system and are thought to be responsible for a number of diseases, including Chronic Wasting Disease (deer and elk), scrapie (sheep), bovine spongiform encephalopathy, and Creutzfeldt-Jakob disease (humans). All TSEs are fatal, and some are even contagious. The response in the United Kingdom to the occurrence of BSE in cattle was the slaughter of whole herds to eradicate the presence of the disease. It is now recognized that the TSEs can be spread between species, and its occurrence in cattle and now in humans has prompted a massive research effort. There is now concern that CWD can be spread to humans.

Dr. Katherine O'Rourke, of the USDA-ARS, spoke about the development of diagnostic tests for Chronic Wasting Disease. CWD, a disease of deer and elk, is actually a family of diseases, as it varies in species and location. Currently, live animal tests and postmortem tests are available, but the brain remains the most reliable source for diagnostic testing. To develop more reliable live animal tests, researchers are looking for ways the disease may be transmitted. Routine necropsy of farm animals is regulated by the government, and surveillance is also performed on wild herds. To develop better diagnostic testing, large numbers of animals must be tested. Currently there is a significant need for personnel and laboratories for CWD testing, lack of which delays test result availability. In the future, CWD testing is expected to be species specific, and tissue specific, and to be better designed to meet volume demands.

Dr. Suzette Priola, of the Laboratory of Persistent Viral Diseases, NIH, NIADI, discussed how TSEs such as scrapie, Creutzfeldt-Jakob disease, BSE and CWD could cross species barriers to infection. She suggested that ingestion or inoculation of the prion most likely causes infection, although the infectious agent is unclear. A study with transgenic mice suggested that conversion of the normal prion (PrP^{scn}) to the abnormal prion (PrP^{res}) might be related to the sequence of amino acids in the protein of the prion. In vitro studies also show that susceptibility to cross-species transmission is based on species-specific abnormal prion formation; therefore, the PrP sequence can control species barriers in TSEs. She discussed the relative strengths of conversion of PrP^{scn} to PrP^{res} molecules in different species. For example, BSE & CWD abnormal prions convert normal cervid PrP^{scn} better than noncervid PrP^{scn} to PrP^{res}. Therefore, BSE & CWD transmission to humans and other noncervids may be restricted.

Dr. Elizabeth Williams, of the University of Wyoming, discussed the epidemiology of CWD in wildlife. She noted that the core epidemic area of CWD occurs in free range deer, and farmed elk contribute to the commercial movement of the disease in the midwestern U.S. Currently the core endemic focus is on hunter harvest surveillance, which has contributed more than 10,000 animals to be tested from 1983-2001. The foci in free-range deer are thought to be game farm associated, but this is not confirmed. Overall, epidemiological investigation of CWD has shown that in the core endemic area, the disease has a slow geographic spread and relatively high prevalence. As more farmed animals are moved in commerce, a higher number of affected herds is likely. Recently recognized foci are game farms. As affected animals are moved in commerce or as animal agents are moved geographic expansion of the disease will occur.

Dr. Lynn Creekmore, of the National Animal Health Programs, of the USDA spoke about the challenges in controlling CWD and of the current control measures used for CWD. She noted that effective control programs for CWD in alternative livestock such as farmed elk and deer has been difficult because of multiple regulatory authorities, fragmented jurisdictional frameworks, and multiple cervid species industries. Also, the maximum incubation period and the time from infection to the shedding period is unknown, and no reliable antemortem diagnosis for elk is available. Although these factors present challenges in controlling CWD, the USDA has recently proposed a control program. This program, for farmed elk, includes fencing requirements, animal identification, herd inventory, and surveillance of deaths over the past 16 months. In response to positive herds, the program calls for depopulation or quarantine with selective depopulation. In a herd that is traced forward, removal and testing or quarantine would be required, whereas a traced back herd would require quarantine. Current responses for the control of CWD also include a CWD task force, a national program, and a declaration of emergency & CDC funds for traces, positive herds, and surveillance.

S17 — Applications of DNA Chip Technology in the Food Safety Area

Kali Kniel, University of Georgia
and Manan Sharma, University of Georgia

As an emerging area of great potential for use in food safety, this symposium spotlighted the use of micorarray technology, more commonly referred to as DNA or gene chips, and their various applications, concentrating on their use in the identification of foodborne pathogens. Microarray technology is unique in that it allows for high throughput analysis, unlike that available through other techniques. The gene chips contain an array of DNA or RNA molecules printed onto a solid or semisolid substrate. This allows for fast processing and subsequent analysis of gene expression and DNA composition. While gene chips are most common at this time, arrays composed of proteins, cells, tissues, and small molecules are also available. With all microarrays, standards must be available to allow duplicate experiments to be performed and to ensure that

standard terms are used across the industry. This is currently a problem with this technology, but it will be overcome with increased use, comfort by the users, and time.

The potential for the use of gene chips in food safety is immense, including, but not limited to, use as a diagnostic tool in food samples, comparison of virulent and nonvirulent strains, typing of strains involved in foodborne outbreaks, evaluation of the effectiveness of drug treatments, and analysis of the selection pressures that occur in different food matrices. Various industries could use this technology to analyze gene expression, evaluate antibiotic resistance, or identify differences in phenotypes observed in various food matrices. Microarray technology can be used in conjunction with PulseNet, which first demonstrated the importance of molecular subtyping for foodborne disease surveillance. Additionally, this technology can be optimized to fit specific situations, depending on the purpose and the size of the genetic sequence. To date, gene chip technology has been used to study the virulence among different strains of *Listeria monocytogenes*. This technology allows scientists to discriminate between small changes in types that occur within a single outbreak. Similar successful applications have been used in studying *Campylobacter* species, in particular looking at the high variability of gene expression correlated with phenotypic characteristics. In summary, microarray technology, in particular gene chips, have great potential for use in the food industry for identification and differentiation or organisms in foods. Multiple pathogen chips are under development as the use of this technology continues to grow.

S18 — Sanitary Design of Plants and Equipment

Rico Suhalim, University of Georgia and
Adriana Velasquez, University of Nebraska-Lincoln

Food companies are required to do their homework before designing a food plant and buying a piece of equipment. There are many factors to consider, from the choice of floor covering and location of equipment to what goes overhead. All these choices can in the long run increase the ease of plant and equipment sanitation to prevent harboring microorganisms. Food contact surfaces should be smooth and free of cracks and crevices to avoid pathogen danger zones. Equipment should be simple, smooth, accessible and easy to disassemble. Ease of cleaning could translate to faster cleaning, fewer sanitation workers, and reduction of spoilage and pathogen issues. Stainless steel with built-in antimicrobial coating is now available. Beware of microorganisms hiding in lubricants, bearings, wiring conduit, and electric switches.

S19 — Risk Assessment of Food Workers' Hygiene Practices and Intervention Strategies

Matthew Evans, North Carolina State University
and Leslie Thompson, Kansas State University

Food service workers can directly or indirectly contribute to bacterial, viral, or parasitic illness outbreaks through poor personal hygiene and sanitation practices. This symposium reviewed the identification of hazards such as cuts and sores on workers' hands, inadequate or non-functioning bathroom facilities, and multiple infections of symptomatic and asymptomatic workers. After exposure to the pathogen has occurred, the probability of illness is a complex function of factors associated with a specific disease, including several factors such as the host and the pathogen, including its survival and growth capabilities. Other factors associated with exposure, such as the environment, the food vehicle, and indigenous microbial competitors, as well as intervention measures employed to reduce or prevent microbial contamination, were discussed. An exposure assessment takes into account the likelihood of exposure by various means such as in production, or processing, by different routes and pathways, and in relation to the frequency of contamination, portion sizes consumed, consumption patterns of the population, ecology of different foods, and characteristics of the pathogen of concern. Quantitative risk assessment models of worker hand washing procedures and of the cross-contamination of raw chicken exudates containing *Salmonella* or *Campylobacter* with ready-to-eat (RTE) foods were presented to demonstrate the degree of risk to human health. The first assessment addressed hand washing procedures among food preparation workers by use of computer simulations to identify critical control points in their handwashing procedure so as to reduce the risk of bacterial contamination of food products. The second simulation used bootstrap methodology to decrease the variability of uncertainty in dose-response models. Finally, the psychological aspects of the workers' hygiene training, including factors which may determine a food handlers' behavior such as organizational climate or culture of the workplace, the attitudes and beliefs of the workers, human error analysis, and social marketing approaches, were reviewed to determine their usefulness in worker training.

S20 — Customized Approaches to Microbiological Risk Assessment

Matthew Evans, North Carolina State University
and Kimberly Stanley, University of Tennessee

Food safety has both a risk analysis and a risk assessment framework. The framework for risk analysis consists of a policy-based risk management

area and a science-based risk assessment area. The key to a successful assessment program is communication between these two areas. Ongoing work is presented to the Codex Committee on Food Hygiene, and feedback is required from risk managers to risk assessors; this now occurs only once a year. This need for greater interaction has been recognized and is being addressed. For four ongoing studies of bacterial contamination of food, various approaches were examined. For example, a quantitative risk assessment for the risk of *Listeria monocytogenes* in ready-to-eat foods from retail to consumption consisted of selecting certain ready-to-eat foods to represent various types of products, which were then modeled from retail to consumption. For an exposure assessment, the production-to-consumption approach is not always required, and often a modular approach is easier to adapt to risk assessments. For all of these assessment types, flexibility is a necessity as is interaction with risk management and a multidisciplinary approach should be taken.

Risk ranking is a very important type of quantitative risk assessment. Ranking is generally emphasized more than values because ranking gives people a frame of reference, especially if these people are not technically trained. Three levels of data exist for risk assessments: data collected specifically for risk assessment, data from research done for other purposes, and expert opinions. The main principle for risk assessment and these data is to "keep it simple, but no simpler."

Mr. Whiting identified good data as being both complete (objective) and relative to the risk assessment question. The quality of data is relative to its usage in risk assessment. This is often determined by performing sensitivity and importance analyses. Risks are ranked to determine data gaps, research needs and to show the relative relationships between these. Ranking also helps provide insight into the predominant factors responsible for circumstances when high levels of uncertainty exist.

Risk profiling is used to describe a microbiological food safety problem and its context. This type of profiling works to determine the size and nature of the problem and what actions are necessary to combat the situation, as well as whether a risk analysis should be carried out. Mr. Notermans used a hypothetical situation to describe the risk profiling of fruits and vegetables that are eaten raw. The factors that must be taken into consideration for this situation include production practices, pathogens of concern, commodities and aspects of concern, post-harvest measures, the management of risks, and consumer perceptions and wishes.

A risk profile serves to provide general background information, and these profiles are generally relatively easy to carry out. Various conclusions obtained from risk profiling may describe the source of the microbiological hazard, evaluation of the hazard's contribution to health problems, incidence data and severity of adverse effects, available intervention options, potential consequences of actions taken and the distribution of risks and benefits

Mr. Ross led a discussion regarding the usage of specialized software as a support tool for Microbiological Risk Analysis (MRA). Quantitative MRA is a rather expensive process, requiring a considerable amount of expertise along with specialized software. Mr. Ross provided a demonstration of a program in Microsoft Excel, which used "list boxes" and provided qualitative prompts and questions. Eleven questions were designed for the risk analysis, including the realm of exposure, population size, and cooking procedures.

There are limitations to this program. First, it is only an "approach" to risk analysis, not a tool or model. The performance of the tool is unproven, it does require some level of expert knowledge, it yields average values, and its sensitivity is limited. Some improvements that could be made include asking more objective questions, having more discrete steps in the model, and devising better weighing factors. According to Mr. Ross, this program is a start and there are many possible improvements. It is useful for risk screening and ranking, as well as for communicating the idea of food safety risk analysis and the factors important in establishing the analyses.

Although risk analysis can be used by governments to obtain overviews of food safety, industries may better benefit from Microbiological Risk Analysis (MRA). MRAs are of many different sizes, but the principles of a tiered approach are as follows:

1) Rough Analysis—description of the population, risks, contributing factors, worst case scenario
2) Decompose most relevant steps—progresses quantitative insight on existing data
3) Describe most relevant steps in full detail

Potential cons to MRAs include the potential of less complete and flexible cases for future development and data gaps. Deciding on rough levels could allow false confidence, and all critical factors must be included. Positive aspects include the resource efficiency of the process and the fact that it identifies the most risk-determining factors and estimates their magnitude of influence. The tiered approach is very systematic, and researchers are able to stop at any level.

The Process Risk model consists of performing risk assessments in order to establish potential risks and to gain understanding of the system. This gives direction for research, and the ideal goals are to collect and evaluate information of concern and to act as a channel of communication between groups.

There are various types of risk assessment. Hazard assessment, which is a basic first step, is done in order to simply determine whether risks exist or not. A qualitative approach consists of developing a knowledge base of the risk issue, whereas a structural qualitative approach deals more with risk profiling. A semi-quantitative approach converts the understanding of the data at hand into a "model,"

and a quantitative approach transmits data into the characterization of the system, which does not have to be complex. The process risk modeling approach is developed from the system modeling concept and is used to create a model as a tool to provide insight into the system.

S21 — Control of *Escherichia coli* O157:H7 in Cattle

Shiao M. Lee, University of Georgia
and Renee M. Raiden, Virginia Tech

This symposium introduced many different areas that are being researched in the attempt to control *Escherichia coli* O157:H7 in cattle. Francisco Diez-Gonzalez, from the University of Minnesota, discussed the effect of forage feeding and other dietary controls for reducing the prevalence of *E. coli* O157:H7. Forage feeding has been found to reduce populations, and grain feeding may increase populations by stimulating *E. coli* O157:H7 growth. Another topic, discussed by Jeffery T. Lejeune, from Ohio State University, was the association of *E. coli* O157:H7 with drinking water. It was thought that cleansing drinking water with chlorine or ozone would reduce levels of *E. coli* O157:H7 in cattle. However, it has been found that these controls have little effect on prevention of contamination in cattle. Robin Anderson, from Southern Plains Agricultural Research Center, explained that cattle are considered a natural reservoir for *E. coli* O157:H7. The use of chlorate salt preparations as feed additives may lyse bacterial cells in cattle, because the chlorate salt becomes bactericidal after 6 hours. Mindy Brashears, from Texas Tech University, introduced the concept of competitive exclusion. This incorporates probiotic bacteria such as proteus and non-pathogenic *E. coli* as well as lactic acid bacteria to control levels of *E. coli* O157:H7. It has been found that the addition of these competitive organisms reduces the time that the animals shed the *E. coli* O157:H7. The use of vaccination was another innovation discussed in this symposium. Andrew A. Potter, from the Veterinary Infectious Disease Organization, described methods to reduce populations through use of an enterhemorrhagic *E. coli* vaccine. This has been found to reduce numbers and the duration of time that *E. coli* O157:H7 is shed. Finally Denis O. Krause, from CSIRO Livestock Industries, wrapped up the symposium with an introduction to the use of dietary supplements for control of bacteria in the tropical beef production systems of Australia.

S22 — Current Practices in Produce Safety

Vivian A. Rash, University of Tennessee
and Brooke Seeman, Virginia Tech

Because fresh produce consumption has increased rapidly since 1970, the number of produce-associated outbreaks has also increased. Contamination is occurring on produce and produce is consumed mainly via salads/bars (35.4% outbreaks associated in the United States between 1990-1998). Approximately 75% of produce associated with these outbreaks are domestic products. To prevent this, Bob Gravani states that we have to stop the transmission of microorganisms and recognize their sources. Manufacturing processes such as the use of recirculated waters, failure to change this water, and improper treatment are major factors in pathogen contamination. Also, produce must be grown in areas separated from livestock areas to decrease on pathogen contamination.

As for the rise in numbers of people suffering from foodborne illness, we have an aging population, more cases of chronic illness and more immunocompromised patients who are more prone to become sick from contaminated produce. Also, we are more aware of hygiene and have a more complex food system. Microorganisms are able to adapt to different environments and stresses and strains may be more virulent.

In his talk, Trevor Suslow discussed how risks differ with varied environmental interactions. Contamination may come from unlikely places and thorough investigations must be done in order to derive the source. For example, *Salmonella* was found on mushrooms during the 2000-2001 growing season. The source was traced to gypsum, which was being used in the casings. Thus, this led to the proposal that unique risks are attached to organic farming. He said that currently there is not enough data, but with proper regulations on safety, organic farmers are no more at risk than non-organic farmers. He also addressed the issue of water filtration. If water is filtered properly, then this can remove any concerns of waters used for irrigations and surface washes, so that clean water means cleaner and pathogen free produce.

Maintaining good manufacturing practices is the key to having a reduced microorganism environment on minimally processed produce. It will take implementation steps of the actual manufacturers to achieve these higher quality foods.

S23 — Food Safety Education

Paola S. Contreas, Laboratorio De Alta
and Rico Suhalim, University of Georgia

Although overall awareness of food safety is increasing among consumers, the perception of personal risk tends is still slight. Many believe that the source of foodborne diseases is due to the food they ate within 24 hours of illness. When asked which factors keep food safe, most consumers indicate that hand washing, proper cooking, washing food, and proper refrigeration are important factors. An FDA/FSIS survey shows that 68% of consumers know when hand washing is necessary

but that 48% of those do not wash their hands. Some of the recommended practices in food safety that many consumers do not know include: maintenance of refrigerator temperature, how long to store perishables, how to wash hands, how to wash cutting boards, and how to wash produce. Failure to cook sufficiently is due to the fact that few people use thermometers and that people serve food that has not reached a safe temperature. Seniors are likely to follow recommended kitchen and personal hygiene, whereas households with young children are less likely to properly clean the kitchen. With regards to fresh produce handling, certain groups, including males, high-income households, college/post-college graduates, and persons who are 44 years of age and younger, are least likely to follow the recommended practices. Food safety messages can be effective if we can identify the seriousness of the illness, note who is at risk, describe control measures, and reinforce the message.

Lecture Topics

Ginny Moore, University of Wales Institute-Cardiff and Adriana Velasquez, University of Georgia

The ICMFS Lecture on microbiological sampling plans by Susanne Dahms analyzed different biometry plans to use in the food industry and research environments. The diverse types of sampling plans were explained thoroughly, having been divided into qualitative and quantitative categories.

These methods are widely used in the laboratory to reject/accept data obtained from experiments.

Risk assessment of microbiological hazards in foods: an international approach was discussed by Sarah Cahill (FAO) and Peter BenEmbarek (WHO). The World Health Organization and the Food and Agricultural Organization are working together on a joint project to establish common rules and guidelines to be used worldwide to control microbiological hazards on foods. Because of research done in the past and availability of information, popular awareness of these hazards has increased. Also, with time new hazards emerge, along with new risks and challenges. Because a more globalized food trade means an increased risk of cross-border transmission of pathogens, food safety is a global issue that requires global attention.

Some of the objectives of this project are:

1. Generation of scientific info
2. Elaboration of guideline documents
3. Data collection
4. Information and technology transfer
5. Use of risk assessment within a risk management framework

T01 — Meat and Poultry Microbiology

Joshua Gurtler, University of Georgia and Marcos Sánchez, University of Nebraska-Lincoln

The first four presentations, related to meat products, started with an overview of microbiological risk assessment programs in Canada. Researchers from the Ontario Ministry of Agriculture developed a program to evaluate microbiological risks on raw beef in Ontario abattoirs. An industry speaker then presented data regarding the performance standards of *Clostridium perfringens* in cured meat products. The company provided additional information to explain the behavior of this organism during several processes, including cooking, chilling and storage. A microbial intervention presented was the use of hydrodynamic pressure processing to reduce bacterial levels in ground beef with representative results. Finally, a private company introduced equipment and supporting data on the use of wet-vacuum procedures for surface testing of beef carcasses. The second segment of presentations focused on broiler operations. Researchers from the University of Nebraska presented microbial data to present a profile for broilers processed using air-chilling processes instead of the conventional water immersion. Data presented included farm and plant information. Additionally, a comparison between immersion and air-chilled broilers was presented. Two USDA speakers also presented information about the association of microbial contamination between the farm and the plant, using the pathogens *Campylobacter* spp. and *Salmonella* spp. as references. New information presented included the microbial quality of free-range chickens compared to the conventional broiler. Speakers from Auburn University explained the potential of bacteria isolated from deboning operations to inhibit the presence of *C. jejuni*. Finally, a profile of yeasts, including *Zygosaccharomyces bailii* was presented in connection with commercially processed broilers. A general conclusion from the session was that there is a need to combine farm and plant data and interventions to reduce bacterial levels in meat and poultry products, to support the farm-to-table initiative.

T02 — Microbiological Methods

Ginny Moore, University of Wales Institute-Cardiff and Kelly Stevens, North Carolina State University

This technical session presented at IAFP 2002 featured current research updates in microbiological methods. Several presenters were part of the developing scientist competition. A wide range of

methods and innovations were presented, running the gamut of methods used not only in microbiological work but also in food safety related issues, including the detection of spinal cord tissue.

Several of the presentations in this session focused on traditional microbiological methods such as microscopy and cultural procedures. The incorporation of molecular techniques was also presented. Yashodhar Burgula started off the Microbiological Methods technical session by presenting a conventional method with modification to enhance the recovery of stressed *Salmonella* from cultured dairy products. The use of TSA supplemented with ferric ammonium citrate and sodium thiosulfate improved recovery of *Salmonella* and had the potential for better exposure assessment for use in quantitative risk assessment. Walairut Chantarapanon presented research utilizing direct microscopic observation to identify sites on chicken skin that allow attachment and survival of *Campylobacter jejuni*. Geunwoo Park presented a detection method for Shiga Toxin producing *Escherichia coli*. The method takes advantage of glutamate decarboxylase genes and enzymes present only in *E. coli*. Beth Ann Crozier-Dodson used a thin agar layer method utilizing selective media to optimize recovery of air-borne microorganisms in dairy cattle facilities. Jared Gailey presented the development of a valid sampling plan for the detection and enumeration of *Salmonella* in pig pens. Lynette Kleman, from North Carolina State University, presented a rapid sample preparation and associated detection procedure for produce that yielded a 250 fold reduction in sample size and was compatible with molecular methods such as PCR. The method presented was sensitive, easy to use and inexpensive.

Eileen Cole, from Qualicon, presented technical information on comparison of the new gel-free automated BAX system with traditional culture methods. The automated BAX system is comprised of an integrated thermocycler and detector. The system uses a fluorescent DNA intercalating dye and melting curve analysis to ultimately yield comparable sensitivity and specificity as cultural methods. R. P. Betts presented development data for the detection of mold by the MicroFoss System. The procedure presented can detect the presence of mold contamination after 72 hours of incubation. Maha Hajmeer presented an overview of the detection of spinal cord tissue by use of two commercially available immunological kits. Kit sensitivity, detection level and ease of use were compared for the kits evaluated.

The use of surrogates (harmless microorganisms with slightly higher heat resistance than the target pathogens) would allow logistically easier and potentially safer testing of thermal processes and CCP validation than the use of the pathogen itself. Research in this area was presented by two authors. B. A. Annous described the use of a non-pathogenic strain of *E. coli* for use as a surrogate in place of *E. coli* O157:H7 in pilot plant challenge studies. Jeffrey Kornacki described the use of *Pediococcus* species NRRL B02354 as a thermal surrogate in place of *Salmonella* and *Listeria monocytogenes*.

T03 — GMOs and Produce

Laura Bauermeister, University of Nebraska-Lincoln
and Joshua Gurtler, University of Georgia

In the GMO session, many authors expressed general concern that there is a growing need for education concerning GMOs. Cohn discussed the impact biotechnology has had on the food service industry and concluded that to achieve consistency in GMO labeling, the FDA should establish criteria for what constitutes a biotech food in the marketplace and some sort of criteria for the voluntary labeling of foods. Harlander was concerned with the labeling issues at the retail level, indicating that there was a need for consumer education on GMOs. Blaine found that when consumers were educated about Bt sweet corn, the GM corn outsold the non-GM corn in that particular market. Gomes indicated that many education initiatives concerning biotechnology have been implemented throughout the world; however, there is no published work on the best way to distribute this information. In this study, they found that it was best to develop materials that are practical for people's needs in each situation. Bruhn discussed the attitudes of consumers towards GM foods, indicating that companies labeling foods as "No GMO" will be facing increased difficulties with a zero-tolerance policy, especially in those foods with a mix of many different ingredients. The Produce Session covered a broader scope of topics. Isaacs indicated that when a new outbreak occurs in a product, this offers an excellent opportunity to study and reassess potential risks in processing of that product. In this case, they studied the first outbreak of Salmonellosis associated with nuts. Luedtke discussed some of the problems they encountered as they were developing a HACCP-based farm management program and how they were able to work with vegetable producers to develop a more manageable program for the producers. Brashears indicated that the use of competitive inhibition with certain LAB species shows promise in the control of pathogens during the sprouting of alfalfa sprouts. Thomas showed the results of a survey done of California sprout growers to determine compliance with the FDA guidelines. Wade found that the removal of decayed or damaged tissues in tomatoes during sorting, as well as minimal processing, may decrease the chance of pathogen presence in raw tomatoes because of altered pH of the tissue, which creates a favorable environment for some pathogens. Kniel found ozone and hydrogen peroxide were effective treatments and may be an alternative to pasteuriza-

tion of fruit juices for controlling *C. parvum*. Suslow found that the location of animal farms vs. produce farms could be considered a risk when monitoring fecal indicators on some produce farms. Many valuable studies were presented in this session.

T04 — Public Health and Outbreaks

Michelle Danyluk, University of Georgia and Marcos Sanchez, University of Nebraska-Lincoln

R Lee began this technical session with a talk about the Environmental Health Network, which has collection sites in nine states. It is currently conducting a project dealing with health concerns connected to restaurants, such as the magnitude of unhealthy practices and the adherence to state and local food program policy. M. T. Destro continued with an example of staphylococcal food poisoning in Brazil. After attending a party, 180 people became sick; 16 food isolates and 43 clinical isolates of *Staphylococcus* were collected. Isolates were screened by phage typing, antibiotic resistant profiles, enterotoxin testing and RAPD genotyping, and the outbreak, which was linked to vegetables, chicken and pasta served, was found to be disseminated by four of the food handlers. J. Farber then discussed the epidemiological typing of *Campylobacter* isolates from clinical and stock cultures by PFGE. No *Campylobacter* isolates were found in 119 ready-to- eat foods sampled, or from 125 environmental samples taken in restaurants. Dose response modeling of *E. coli* O157 from food and waterborne outbreaks was addressed by N. J. C. Strachan. Using Poisson dose response distribution and the eight data points that exist from outbreaks, they suggest new *E. coli* O157 lines, closer to those of *Shigella* than to the animal model for *E. coli* O157. P. M. Tanner analyzed US cross-contamination incidents in the food industry and found 924 incidences, of which 33% led to illness or injury.

Of these, 70% were related to microbial contamination and 30% to chemical contamination. The largest outbreak involved a dairy in Chicago, and 5 states were affected by salmonellosis. Finally, the implications of flies, pathogens and public health risks were discussed by J. Buttler.

Hemolytic isolates were identified by 16s rRNA analysis. *Acinetobacter baumann*, *Bacillus puilus*, *Enterobacter sakazakii* and *Shigella flexneri* were identified for the first time. Other pathogens, such as *E. coli* O157:H7 and *Salmonella* spp., were also identified, providing information about a new potential route for contamination of foods.

T05 — General Food Microbiology

Megha R. Gandhi, Rutgers University and Ethan Solomon, Rutgers University

This technical session, held on Wednesday morning, had presentations dealing with various aspects of food safety. Presenters spoke about issues such as food contamination by terrorists, and the threats involved, and a proposed operational risk management systems approach to deal with it; and the development of a food safety network to deliver food safety information to the public and food safety in food manufacturing facilities and the financial losses involved in product quality failures. Some presentations were on topics such as microbial risk assessment of *Salmonella* Typhimurium in processed postchill broilers, thermal inactivation of milkborne organisms, and inactivation of foodborne viruses by high pressure processing. A couple of speakers talked about the microbiological levels in warewash machines used in food service establishments and water in vending machines.

T06 — Antimicrobials

Megha R. Gandhi, Rutgers University and Ethan Solomon, Rutgers University

The technical session "Antimicrobials," held on Wednesday afternoon, focused on antimicrobial treatments that can be used to deal with microbiological food safety problems in various foods and food processing environments. Presentations provided valuable information on the use of acidified sodium chlorite to extend the shelf life of produce and as an in-home antimicrobial spray, control of *Clostridium botulinum* in RTE foods, and the use of ozone for decontamination in the food industry. Other topics of interest were intervention strategies to reduce *Escherichia coli* O157:H7 on beef cuts and trimmings, *Listeria monocytogenes* contamination in a salmon smoke house and its control (comparing two sanitizing methods), biofilms and their significance to the food industry, and multiple antimicrobial resistance among *Salmonella* isolates.

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Minutes of the 89th Annual Business Meeting

July 2, 2002 • San Diego, California

President-Elect Anna Lammerding welcomed attendees and introduced President Jim Dickson.

Moment of Silence

President Jim Dickson asked those present to observe a moment of silence in memory of departed colleagues.

Call to Order

The Annual Business Meeting of the International Association for Food Protection was called to order at 4:00 p.m. at the Manchester Grand Hyatt San Diego in San Diego, California. A quorum was present as defined by the IAFP Constitution.

With the approval of the Executive Board, President Dickson appointed Randy Daggs as Parliamentarian for the Business Meeting.

Minutes

Minutes from the IAFP 88th Annual Business Meeting were approved as they appeared in the November 2001 *Dairy, Food and Environmental Sanitation*. The motion was made by Ewen Todd and seconded by Michael Brodsky.

President's Report

President Jim Dickson reported on programs and activities of IAFP over the past year. He noted we chartered two new Affiliates, the Southern California Association for Food Protection and the Brazil Association for Food Protection and an organizational meeting was held with Members from the United Kingdom interested in forming an Affiliate. The Korean Affiliate, with 32 Members attending the Annual Meeting, convened their Affiliate meeting at IAFP 2002.

President Dickson reported IAFP 2002 attendance was in excess of 1,400 attendees; the *Journal of Food Protection* in now available Online, with the July issue appearing Online June 25th; *JFP* manuscript submissions are up with 40% of those published being submitted from outside North America; *DFES* manuscript submissions are up and there is currently a backlog of manuscripts to print; and the Association's Membership numbers continue to be very stable in unstable times.

President Dickson then presented Charters to the two new Affiliates. Maria Teresa Destro and Mariza Landgraf accepted on behalf of the Brazil Association for Food Protection and Margaret Burton and Jennylynd James accepted on behalf of the Southern California Association for Food Protection.

Tellers Committee Report

President Dickson provided the Tellers report on behalf of Lloyd Bullerman, Teller. From the ballots returned, there was a narrow margin between the two candidates. He announced that Jeffrey Farber was elected as Secretary for the 2002-2003 year. A motion by Michael Brodsky and seconded by Jenny Scott to accept the report and to destroy the ballots was approved.

***JFP* Management Committee Report**

Roger Cook reported that in 2001 *JFP* increased the number of pages published from 1,800 to over 2,100 pages, the waiting time for publication after receipt of page charges, decreased from 7.44 to 2.44 months over the past year. *JFP* Online became a reality due to the work of the Sub-Committee formed last year and the IAFP staff. Roger noted that Members who add *JFP* Online to their Membership could save $24 in the US, which converts to a savings of $140 in New Zealand (Roger's home country). He also reported that a Sub-Committee was formed to investigate submitting manuscripts electronically.

Committee recommendations to the Board include to proceed with efforts to print a *JFP* supplement on the International Conference of Microbiological Risk Assessment, organized by JIFSAN; formalize the policy for Letters to the Editor and add this to the "Instructions for Authors"; and to seek legal advice with respect to current policy on the assignment of copyright.

Roger recognized Larry Beuchat for his years as Scientific Editor that ended on December 31, 2001. He noted that Joe Frank and Mike Davidson joined John Sofos this year as Scientific Editors.

***DFES* Management Committee Report**

Christine Bruhn reported that *DFES* submissions have increased during the past year, with 10 manuscripts backlogged for publication. She thanked the IAFP staff, specifically Donna Bahun, and Scientific Editor Bill LaGrange for their hard work. She noted that the Strategic Plan was reviewed and is essentially in final form, the Committee endorsed occasional reprinting of non-English language articles, and the Committee endorses a request to publish certain ILSI and other symposium abstracts in the journal.

Christine reported that the name change was revisited. She noted that the Executive Board was concerned that Applied Food Protection might be confused with *JFP*; the Committee discussed this in-depth and still preferred *Applied Food Protection*, however, a majority of the Committee was comfortable with the name *Food Protection Trends* with a byline such as "Science and News from the International Association for Food Protection."

The Committee leaves the decision to the Board noting that Bylaw changes will have to be brought before the Membership at the next Annual Business Meeting.

Foundation Fund Report

Harry Haverland reported that the programs supported by the Foundation Fund include: this year's Ivan Parkin Lecturer, Dr. Mitchell L. Cohen, the Audiovisual Library, shipment of surplus journals to FAO for distribution to developing countries, speaker travel support that enables cutting-edge speakers to attend the Meeting, and the Developing Scientist program which is well received. He noted there are currently 2 Gold and 6 Silver Sustaining Members, with more than 60 regular Sustaining Members; the Silent Auction raised nearly $3,000 this year with a total over 4 years of $11,500; and a Corporate Challenge is ongoing, headed by Paul Hall.

He offered an idea on how to donate to the Foundation Fund: take a business card, attach money, check or credit card and give to the IAFP staff at the meeting to save postage. He then noted the Foundation Fund budget is $28,900, including a $500 increase for the Audiovisual Library. He stated the new goal for the Foundation is $200,000 by the end of 2002.

The Members of the Florida Affiliate then made an entertaining presentation of $1,000 for the Foundation Fund. The "skit" also stimulated more than $100 in cash contributions.

Affiliate Council Report

Peter Hibbard reported that there are currently 39 Affiliate organizations with 25 Delegates present at the Council meeting on Sunday. He noted they had a great meeting on Sunday with the following accomplishments: Steven Murphy was elected as the new Affiliate Council Secretary, the IAFP staff will work with the newly approved Non-Compliant Affiliate Timeline to keep more Affiliates current, discussion of the Membership Award led to the formation of a committee to investigate changing the criteria. The United Kingdom may become the newest Affiliate, the possibility of a military Affiliate is in the developmental stages and David Fry was congratulated on becoming a Fellow.

Peter offered his thanks to the Council and IAFP, especially to Lucia McPhedran for her efforts with the Affiliate Newsletter. Finally, Peter congratulated Gene Frey and wished him luck in his year as Affiliate Council Chair.

Executive Director's Report

Executive Director David Tharp reported that IAFP sponsored a workshop on produce safety in Guatemala this year and also assisted with the ILSI Workshop on "Biological and Chemical Agents of Terrorism in Food" in December 2001, a 3-A entity, 3-A Standards, Inc., is being formed with IAFIS, 3-A Symbol Council, IDFA, and ADPI, and the number of Gold and Silver Sustaining Members has grown over the past year.

The General Fund Statement of Activity for the year ending August 31, 2001 was distributed showing results that added $15,006 to the General Fund balance. David reported that the Association enjoys an excellent cash flow even though the General Fund balance remained at a negative $1,500 at August 31, 2001. With the tough economic conditions this past year, David expected the Association to end the current year a little behind budget which is mostly attributable to the reduction in investment income. A nine-year trend for revenue and expense was also distributed showing revenues doubling since 1993.

David introduced staff members present and thanked them for their long hours and hard work in preparation for and during the Annual Meeting. David then asked President Dickson to come to the podium. President Dickson presented the President's Award to Assistant Director Lisa Hovey in recognition of her efforts on behalf of the Association and noted that she had recently passed her certification test to become a Certified Association Executive (CAE).

Unfinished Business

No unfinished business was brought before the Annual Business Meeting.

New Business

President Dickson requested a motion to approve two proposed amendments to the Association Bylaws as printed in the May 2002 *Dairy, Food and Environmental Sanitation*. A motion to approve was made by Bob Sanders and a second by Stan Bailey. There was some clarification requested regarding Proposal 2 that was intended to delete any reference to PDG names so that a Bylaws amendment would not be required each time a PDG was added or removed. It was noted that the actual text should have preceded the deletion. The motion passed with 1 opposed.

IAFP Members offered suggestions and presented questions for consideration by the Executive Board.

- Ewen Todd asked that PowerPoint presentations from sessions be added to the Web site. President Dickson responded that we had tried to get Dr. Detwiler's presentation last year but were unable to do so. It is hoped that we can obtain Dr. Cohen's from this year's meeting. It was noted that we need to clarify who owns the copyright to these presentations and if each speaker would need to sign a release prior to posting.
- Ewen Todd noted that NEHA had their meeting at the same time. President Dickson responded that we make a good faith effort to avoid other association meetings.
- Ewen Todd commented that with the current IAFP Committee Meeting schedule he was unable to attend two committee meetings. President Dickson responded by explaining that there are more than 20 committee meetings and although we do our best with the scheduled times, we realize some Members aren't able to attend all the committee meetings they are interested in attending.
- John Bruhn asked if the Board has considered a concurrent meeting with NEHA. President Dickson responded that in the past, logistics did not work out. He also stated that we try to work with sister organizations when possible.

Adjournment

President Dickson adjourned the meeting at 5:02 p.m.

Respectively Submitted,
Kathleen A. Glass, Secretary

Committee Minutes

IAFP 2002 • June 30, 2002

Held at the Manchester Grand Hyatt
San Diego, California

STANDING COMMITTEES

Dairy, Food and Environmental Sanitation Management Committee

Members Present: Steve Berry, Christine Bruhn (Chairperson), Al Fain, Michael Grant, Vijay K. Juneja, Bill LaGrange (Scientific Editor), Giselle LaPointe, Catherine Nnoka, John Rushing, Peter Slade, Gloria Swick-Brown, Tom Tieso, Alex Von Holy, Isabel Walls, (*JFP* Chairperson), Fred Weber, (Vice Chairperson), and Ed Wellmeyer.

Board Members/Staff Present: Jim Dickson, Anna Lammerding, Paul Hall, Kathleen Glass, Jenny Scott, David Tharp, Lisa Hovey, and Donna Bahun.

Members Absent:

Visitors: None.

Recording Secretary: John Rushing.

Reports to Committee:

- Jim Dickson, IAFP President, reported on the Executive Board meeting. The major issue affecting the *DFES* committee is the name change. There is considerable support for changing the name of *DFES*, but the Board was concerned that the title *Applied Food Protection* was too close to the title of *JFP*. He asked the committee to revisit their recommendations from last year.
- David Tharp, Executive Director, gave a report on the activities of the organization and highlighted the success of the organization over the last year.
- Scientific Editor, Bill LaGrange: Submission of papers has increased this year, and we may be able to increase the publication papers to three per issue.
- Production Editor, Donna Bahun. We can be more flexible regarding deadlines for authors because we have a backlog of papers for publication. It is difficult for authors to submit "Thoughts on Food Safety" in a timely manner. The Career Service Section is not growing as fast as we wish.

Unfinished Business:

- Fred Weber reviewed points of the *DFES* strategic plan. The plan is essentially in final form. A year passing has given time to verify that the predicted trends are on track. Still needed are a journal mission statement, a history of the publication, a personnel plan and a strategic-alliances plan. Since journal submissions have increased, a freelance writer may not be needed. Fred and Catherine Nnoka, remaining members of the subcommittee will complete the plan and send to *DFES* management committee for comment before sending to the executive Committee.
- The journal name change was revisited. The name should convey that this is the primary vehicle for communication to members, and that the journal includes peer reviewed scientific articles of interest to the general membership. Committee members strongly felt that the publication name should connect to the name of the Association. Names that included terms such as "News" or "Monthly" were not likely to attract scientific articles. The majority of the committee members still favored ***Applied Food Protection.*** If the title also contained a byline, such as "*Science and News from the International Association for Food Protection*," the dual mission of the journal would be clear. A majority of the committee was also comfortable with the title ***Food Protection Trends.*** A byline could also be use with this title. The committee strongly felt either name was preferred to the current name.
- John Rushing reported on a proposed procedure for republication of *DFES* papers in non-English language journals. The committee recommended notifying the author, crediting the original publication and author and publishing a disclaimer that neither the author or the original publisher is responsible for errors in translation.
- Thoughts on Food Safety: A committee was appointed to brainstorm about future topics and assist Donna in securing timely submission of

articles. The committee consists of Steve Berry, Fred Weber and Christine Bruhn. Catherine Nnoka will also be asked to join.

New Business:

The committee recommended that the Executive Board agree to publish selected abstracts from the ILSI symposia and other workshops and symposia that address topics of interest to the membership. This would be an excellent way to share additional information with IAFP members.

Recommendations to the Executive Board:

1. Consider the potential journal name change to ***Food Protection Trends*** if ***Applied Food Protection*** with the byline suggested is not acceptable.
2. Accept requests to republish select *DFES* papers in non-English languages with the provisions detailed.
3. Accept the request to publish certain ILSI and other symposium abstracts in the journal

Next Meeting Date: Sunday, August 10, 2003, New Orleans, LA.

Meeting Adjourned: 4:00 p.m.

Christine Bruhn, Chairperson.

JFP Management Committee

Members Present: Isabel Walls (Chairperson), Don Conner, Roger Cook (Vice Chairperson), Maria Teresa Destro, John Sofos (Scientific Editor), Joseph Frank (Scientific Editor), Michael Davidson (Scientific Editor), Alejandro Mazzotta, Christine Bruhn (*DFES* Chairperson), Gregory Siragusa, Randall Phebus, Ailsa Hocking, Elliot Ryser, and Mark Moorman.

Members Absent: Mindy Brashears, Jinru Chen, Warren Dorsa, Jeffrey Farber, J. Eric Line, Melissa Newman, Serve Notermans, E. Jeffery Rhodehamel, Marian Wachtel, and Richard Whiting.

Board Members/IAFP Staff Present: James Dickson, Anna Lammerding, Paul Hall, David Tharp, Lisa Hovey, Bev Corron, and Didi Loynachan.

Guests: James Gorny.

Meeting Called to Order: 10:05 a.m.

Recording Secretary of Minutes: Alejandro Mazzotta.

Old Business:

Minutes of 2001 meeting were reviewed and approved.

New Business:

- Amendments to agenda: added electronic submission of manuscripts (Isabel Walls), and revision of review process (James Gorny).
- James Dickson gave update on IAFP activities over past year.
- David Tharp gave update on IAFP office activities over past year.
- Report from scientific co-editors: Volume 64 (2001) contained 63 more papers than the previous volume. The average length of time involved between receipt of manuscripts and their publication has decreased dramatically, and the estimated number of issues waiting to be published is currently 2.44 compared to 7.44 in July of 2001. The Editorial Board increased to 129 members compared to 115 in 2001. John Sofos and the new co-editors Joe Frank and Mike Davidson thanked Larry Beuchat for his 8 years dedicated to the *JFP* editorial process. Additional expertise needed on the Editorial Board includes chemistry, pre-harvest biology, produce microbiology and engineering.
- Report from Administrative Editor, Bev Corron: *JFP* Online started in April 2002. *JFP* Online is expected to reduce mailing costs. International members can save $69 and US members $24 by choosing the online option, and receive the journal immediately upon release.
- International members who submit manuscripts with scientific merit, but deficiencies in English grammar are responsible to improve their manuscripts before final acceptance for publication.
- James Gorny will provide Editors with a list of experts on produce and harvest biology for consideration to serve on the Editorial Board or as ad hoc reviewers of manuscripts related to this topic.
- Changes to review forms were discussed. Member of the Editorial Board will be surveyed for whether there is a need to change the current review forms.
- Established a Subcommittee to evaluate the requirements and challenges for submitting manuscripts electronically. Members who volunteered to participate in this Subcommittee were Elliot Ryser, Randall Phebus, Gregory Siragusa, and Michael Davidson. Isabel Walls will chair the Subcommittee.

Recommendations to Executive Board:

1. To print *JFP* Supplement on the International Conference on Microbiological Risk Assessment, organized by JIFSAN (Joint Institute for Food Safety and Applied Nutrition). Additional cost is approximately $6,000 (request for help from the Board with this). Alternatively, the supplement can be published online only, provided that the editorial process is followed.

2. To formalize the current policy for Letters to the Editor and add this to the "Instructions to Authors."
3. To seek legal advice with respect to current policy on the assignment of copyright by an individual author for more than one author.

Next Meeting: Sunday, August 10, 2003, New Orleans, LA.

Meeting Adjourned: 12:05 p.m.

Isabel Walls, Chairperson.

Program Committee

Members Present: Gary Acuff (2003 Vice Chairperson), Jeff Farrar, Gordon Greer, Margaret Hardin, LeeAnne Jackson, Vickie Lewandowski, Shelagh McDonagh, Lynn McMullen (2003 Chairperson), Karen Mullery, Steven Murphy, Maria Nazarowec-White, and Frank Yiannas (2002 Chairperson).

Members Absent: Catherine Donnelly, Emilio Esteban, and Ingrid Holm.

Board Members/Staff Present: Anna Lammerding, Paul Hall, Kathy Glass, Jenny Scott, and Bev Corron.

Guests: Over 15 guests attended the meeting.

Meeting Called to Order: 4:05 p.m.

Recording Secretary of Minutes: Lynn McMullen.

Summary of Activities and Actions Taken:

The following people are leaving the committee after serving their term: Jeff Farrar, Maria Nazarowec-White, Frank Yiannas. On behalf of the Program Committee, we want to thank them for their contributions during their term on the Committee. Their efforts were, in part, responsible for the successful programs presented at Annual Meetings. We truly appreciate all their hard work and dedication. Members who are joining the committee this year are: Emilio Esteban, Vicke Lewandowski and Shelagh McDonagh. Gary Acuff has agreed to serve as Vice Chairperson for 2003 and Catherine Donnelly will serve as Vice Chairperson for 2004.

2003 Proposed Symposia:

The committee reviewed the symposia proposed for IAFP 2003. A total of 38 symposia have been submitted. We expect more to be submitted before Wednesday's Program Committee Meeting.

2003 Workshops:

Two workshops have been proposed for the 2003 meeting. Topics include Creating a Process Risk Assessment, and Assuring Confidence in Laboratory Data.

A potential off-site workshop on the "Evaluation of Good Agricultural Practices in Fresh Produce Industry Through Auditing" has been proposed for Costa Rica in February 2003.

Other Considerations:

Committee members were asked to keep their eyes and ears open for feedback on the 2002 Conference and to bring the comments to Wednesday's meeting.

With no further business, the meeting was adjourned. The Program Committee will reconvene for a meeting on Wednesday, July 3, 2002.

Recommendations to Executive Board: None.

Next Meeting: January 17, 2003, New Orleans, LA.

Lynn McMullen, Chairperson.

SPECIAL COMMITTEES

3-A Committee on Sanitary Procedures Committee

Members Present: Dan Erickson, Sherry Roberts, Steve Pierson, Ron Schmidt, and Steve Sims (FDA consultant).

Members Absent: Randy Elsberry, Michael Ely, William Fredricks, Jon Lauer, Adolf Liebe, Gary Newton, Helen Piotter, Charles Price, John Ringsrud, Stanley Welch, Lynn Wilcott, Don Wilding, and Phillip Wolff.

Board Members/Staff Present: Kathy Glass.

Guests: Randall Daggs, Harold Wainess and Joe Smucker.

Meeting Called to Order: 10:05 a.m.

Recording Secretary of Minutes: Sherry Roberts.

Old Business:

A lengthy discussion ensued about the new Third Party Verification (TPV) process and 3-A Sanitary Standards, Inc., many questions were asked and opinions voiced on the progression of this new organization and verification process.

3-A CSP and other interested 3-A representatives met, in October 2001 in Chicago during the World Wide Food Expo, to discuss the HTST Pasteurization Practice in order to expedite acceptance of the practice.

In May of 2002 3-A CSP met in Milwaukee, WI. All combined this represents over 70 hours of meetings since the last IAFP Annual Meeting.

The following standards were reviewed with recommendation forwarded to the plenary session at the May 2002 3-A Annual Meeting in Mikwaukee: T-21-00 Separators-Clarifiers, T-82- Pulsation Dampers, T-62-02 Hose assemblies, T25-03 Batch Processors, T-70-01 Cheese Cookers, T-71-01 Cheese Moulders, T-72-02 Cheese Chillers, T-40-02 Bag Collectors, T-74-02 Instrument Connections, T-46-03 Refractometers, T-05-15, T-606-05 Milk Handling Practice, T-17-10 Fillers and Sealers, T-23-04 Viscous Packaging Equipment, T-27-05 Dry Product Packaging. All of these documents and amendments were passed in Plenary Session.

The following standards and amendments were not passed by CSP: T-62-02 Hose Assemblies, T-24-03 Vat Pasteurizers, T-83-00 Closed Cheese Vats, T-72-02 Cheese Chillers, T-78-01 Spray Cleaning Devices, T-12-07 Tubular Heat Exchangers.

An important item throughout the May 2002 discussions was the testing for cleanability of equipment that has been cleaned by mechanical or clean in place methods, as opposed to only visual inspection to determine cleanliness. These testing methods are becoming more acceptable for determing the cleanablity of food contact surfaces of processing equipment after use.

New Business:

Ron Schmidt wanted to recognized Dan Erickson for receiving the Sanitarian of the Year Award for 2002.

A considerable amount of time and financial support is required of 3-A CSP committee members for attendance at standards development meetings. Most are employed by milk regulatory agencies, and have been limited by budgetary constraints of the past years. IAFP helped with travel funds for this year's 3-A annual meeting. It is our request that this not be allowed to continue, as milk regulatory agencies have an interest in the best possible acceptance of these standards. It was decided that a request letter would be drafted to ask agencies for their pledge of full support and commitment to the 3-A Sanitary Standards development process before a voting member may be accepted on the committee. Attendance to the 3-A Standards development meeting is mandatory for voting membership. IAFP provides a forum for milk regulatory agencies to participate in the standards development process. Any action that would limit involvement in this development process would jeopardize the integrity of the 3-A Sanitary Standards.

Recommendations to Executive Board:

1. This committee will draft a request letter asking agencies for their pledge of full support and commitment to the 3-A Sanitary Standards development process before a voting member may be accepted on the committee, as attendance to the development meeting is mandatory for membership. IAFP Executive Director and the 3-A CSP Chairman shall sign this letter. The letter will request a written commitment from each member's agency and shall be maintained on file at the IAFP main office.

Next Meeting Date: May 2003, Milwaukee, WI.

Meeting Adjourned: 12:15 p.m.

Dan Erickson, Chairperson.

Audiovisual Library Committee

Members Present: Judy Harrison, Bob Sanders, Alejandro Castillo, Alice Haverland, Harry Haverland, and Don Schaffner.

Board Members/Staff Present: Lucia McPhedran.

New Members: None.

Meeting Called to Order: 3:13 p.m.

Recording Secretary of Minutes: Don Schaffner.

Old Business:

The committee members present introduced themselves. Acting Chair, Judy Harrison reviewed a summary of audiovisual library services provided over the last year including new videos, highly requested titles, monthly distribution of requests, number of requests, and backlogs and problems.

Discussion turned to a slide set produced in the 1980s: Farm Bulk Milk Hauler. This item has been requested 4 times last year, but contains largely outdated information. It was moved, seconded and passed unanimously that IAFP staff should contact the producers (Penn State) and ask for updated information. If updated information is not available, staff will delete the slide set from the library. If updated materials are available, then staff will purchase these from Penn State.

It was suggested that Bob Gravani's CD ROM training materials should be added to the library. Staff will follow up with Gravani.

It was suggested that a method for tracking highly requested items be developed, so these items can be targeted for purchase of additional copies. Lucia McPhedran will follow up.

It was moved, seconded and passed unanimously to purchase more copies of the highly requested HACCP series.

A long discussion of the availability of materials in other languages followed. It was the opinion of the

committee to seek out items in Spanish and other languages to the greatest extent possible. Staff will contact the IAFP Mexican affiliate to see if they can provide leads on Spanish language materials.

Acting Chair, Judy Harrison reviewed labor and other costs associated with running the audiovisual library, including the cost of materials purchased and international postage.

A general discussion of budget followed. It was suggested that the committee be provided with the 2003 projected budget and actual expenditures against that budget at the 2003 meeting in New Orleans.

New Business:

It was suggested that an IAFP Foundation contribution solicitation and blank membership form be sent with all requested library items.

Recommendation to Executive Board: None.

Next Meeting Date: Sunday, August 10, 2003, New Orleans, LA.

Meeting Adjourned: 4:16 p.m.

Judy Harrison, Acting Chairperson.

Awards Committee

Members Present: Peter Hibbard.

Board Members/Staff Present: None.

New Members: None.

Meeting Called to Order: 3:00 p.m.

Old Business: No discussion.

New Business: None

Recommendations to Executive Board:

The following recommendations were formulated through previous correspondence.

1. The awards timeline specifies that nominations received should be reviewed in January to assure adequate quantity and in the event that the number is low, the Awards Committee Chairperson take action with the individual judging committee chairs to encourage nominations. However, award criteria are now available on the IAFP Web site rather than nominators needing to contact IAFP for nomination materials. Therefore, the Awards Committee Members are not aware of who is being considered for awards before the Feb. 18th deadline for nominations. We recommend that the timeline wording be revised to address this issue.

Next Meeting Date: Sunday, August 10, 2003, New Orleans, LA.

Meeting Adjourned: 3:00 p.m.

Peter Hibbard, Chairperson.

Communicable Diseases Affecting Man Committee

Members Present: Ewen Todd, Bert Bartleson, Dean Cliver, Judy Greig, Chris Griffith, Jack Guzewich, and Barry Michaels.

Members Absent: Dan Maxson, Pete Cook, Richard Swanson, Lori Simon, and Sagar Goyal.

Board Members/Staff Present: Didi Loynachan.

New Members: Sabah Bidawid and Faye Feldstein.

Visitors: Peter Snyder, Debbie Clayton, and Nancy Hall.

Meeting called to Order: 8:10 a.m.

Recording Secretary of Minutes: Bert Bartleson.

Old Business:

- The CCDAM is sponsoring a symposium on Risk Assessment of Food Workers' Hygiene Practices and Intervention Strategies at IAFP 2002.
- We are preparing two papers for publication in *DFES* or *JFP* "The Role of the Infected Handler in Foodborne Illness Outbreaks." Significant discussion and progress occurred during the meeting.

New Business:

- Two symposia for IAFP 2003 were proposed: Management of Food Worker Hygiene and Bovine Spongiform Enchepalopathy (BSE)
- We will be working on a risk assessment document following completion of the two articles we have initiated.
- We will be preparing non-technical guidelines for food workers following preparation of these papers.

Recommendations to Executive Board:

1. There is a need for some committee members to meet in February, 2003 to complete the first two papers and initiate discussion on the quantitative risk assessment paper. We are requesting funding from the Board. Input from Quantitative Risk Assessment PDG members for this meeting is also requested.

Next Meeting Date: Sunday, August 10, 2003, New Orleans, LA.

Meeting Adjourned: 6:10 p.m.

Ewen Todd, Chairperson.

Constitution and Bylaws Committee

Members Present: Michael Brodsky, David Fry, Robert Sanders, and Ron Case.

Members Absent: None.

Board Members/Staff Present: Jeff Farber and Didi Loynachan.

Meeting Called to Order: 3:05 p.m.

Recording Secretary of Minutes: Michael Brodsky.

Old Business:

Approved changes to Bylaws as proposed.

New Business: None.

Recommendations to Executive Board: None.

Next Meeting Date: Sunday, August 10, 2003, New Orleans, LA.

Meeting Adjourned: 3:10 p.m.

Foundation Fund Committee

Members Present: James Dickson, Anna Lammerding, Paul Hall, C. Dee Clingman, and Harry Haverland.

Board Members/Staff Present: Kathleen Glass and Lisa Hovey.

Meeting Called to Order: 1:10 p.m.

Old Business:

Discussed programs currently being supported by the Foundation Fund: Ivan Parkin Lecture, Audiovisual Library, Developing Scientist Programs, shipment of surplus journals to developing countries, speaker's travel, and Crumbine Award. Reviewed current sources of income.

New Business:

Paul Hall reviewed the Corporate Challenge program. Letters have been sent out asking for support of the Foundation Fund activities. Paul is starting the follow-up phase. He has received some verbal commitment. Dee Clingman presented a discussion on increasing the deminision of the Foundation Fund by increasing the number of members on the Committee and employing part or full time person for fundraising. Several other items to improve membership participation were explored.

Recommendations to Executive Board:

1. Expand the Foundation Fund Committee to twelve members over a two-year period.
2. Continue the Corporate Challenge Program.
3. A structured or tiered recognition program be investigated.
4. Promotional materials be developed for a targeted campaign to increase membership participation in the Foundation Fund.
5. Next Foundation Fund meeting be a working luncheon on a Monday or Tuesday.
6. Investigate a part or full-time person for fund raising.
7. The proposed budget for 2003 be approved.

Next Meeting Date: Sunday, August 10, 2003, New Orleans, LA.

Meeting Adjourned: 3:00 p.m.

Harry Haverland, Chairperson.

IAFP Foundation Fund Budget
Year Ending 8-31-03

Revenue:	
Interest Income	$ 4,500
Contributions:	
Sustaining	35,000
Other	20,000
Total Revenue	$59,500
Expense:	
Postage/Shipping	$ 1,000
Speaker Travel	8,000
Awards	5,000
Ivan Parkin Lecture	1,800
Crumbine Award Support	1,000
Lending Library	12,100
Total Expense	$ 28,900
Revenue Less Expense	$ 30,600

Nominating Committee

Members Present: John Cerveny, Sam Palumbo, Carl Custer, Catherine Nnoka, Cindy Jiang, and Peter Slade.

Board Member/Staff Present: Anna Lammerding.

Meeting called to Order: 3:30 p.m.

New Business:

The purpose of the meeting was to make a list of potential candidates for the office of IAFP Secretary for year 2003. The committee selected seventeen candidates from the industry sector that demonstrate the following qualities:

- Promotes the goals of IAFP
- Attend IAFP Annual Meeting on a regular basis
- Leadership skills
- Participation on professional development groups, on appointed committees, organizer of symposia for Annual Meetings, etc.
- Open to ideas from others

In the August, September, and October issues of *DFES*, the IAFP membership will be asked to submit potential candidates for secretary. These names will be added to our existing list.

During the week of Nov. 4-8, the Nominating Committee will conduct a conference call to select candidates for secretary.

Recording Secretary of Minutes: Sam Palumbo.

Recommendations to Executive Board: None.

Next Meeting Date: Sunday, August 10, 2003, New Orleans, LA.

Meeting Adjourned: 5:00 p.m.

John Cerveny, Chairperson.

Past Presidents' Committee

Members Present: Dee Clingman, Michael Brodsky, Henry Atherton, Robert Brackett, Jenny Scott, Dave Fry, Ron Case, Gale Prince, Jack Guzewich, Bob Gravani, Bob Sanders, and Harry Haverland.

Board Members/Staff Present: James Dickson and David Tharp.

Meeting Called to Order: 3:05 p.m.

Old Business:

Members expressed appreciation that IAFP has set aside a Retired Members room as a location for such members to meet and socialize at the Annual Meeting site.

New Business:

IAFP President Jim Dickson and Executive Director, David Tharp reported on the new member service of *JFP* Online, the status of the Foundation Fund and the association financial condition.

Dee Clingman reported on the Foundation Fund Committee meeting and new ideas to increase association member participation and overall contributions to the fund.

Recommendations to the Executive Board: None.

Next Meeting Date: Sunday, August 10, 2003, New Orleans, LA.

Meeting Adjourned: 4:30 p.m.

Robert Brackett, Chairperson.

PROFESSIONAL DEVELOPMENT GROUPS

Applied Laboratory Methods PDG

Members Present: Jeffrey Kornacki, Rajesh Nayak, Maamar Achacha, Patrice Arbault, Patricia Rule, Claire Lee, Kay Sadler, Karen Mullery, Jeff Bloom, Shelagh McDonagh, Michael Sole, Catherine Bowyer, Robert Brooks, E. James Bradford, and Michael Brodsky.

Board Members/Staff Present: Jeff Farber.

Meeting Called to Order: 10:05 a.m.

Recording Secretary of Minutes: Robert Brooks.

New Business:

The PDG elected not to sponsor a 3rd *Listeria* workshop. Instead discussion turned to essential elements in *Campylobacter* with the Meat and Poultry PDG. Culture/detection was the preferred vehicle for presenting this topic. Robert Brooks developed a symposium proposal in concert with Norman Stern of the Meat and Poultry PDG.

Many of the comments received from the *Listeria* workshop entailed environmental monitoring, surveillance, epidemiology and QA on rapid quantitative methods. Discussing these issues led to the construction of a workshop proposal for Assuring Analytical Confidence of Laboratory Data. The topics and format for this proposal dominated nearly the entire second hour of the PDG meeting. Jeff Kornacki and Patricia Rule were appointed as co-coordinators should the Program Committee accept the proposal.

Michael Brodsky forwarded a proposal from the Microbial Risk Assessment PDG for a symposium on Microbial Risk Assessment and Bioinformatics. The PDG decided that we were not sufficiently versed in bioinformatics to participate but did forward the names of two presenters from the *Listeria* workshop as more capable of addressing this issue as potential speakers.

Other topics discussed:

- The culture/detection of *Campylobacter* topic.
- Doug Bradford of AOAC International briefed the PDG on AOAC's new initiative called e-CAM, an electronic, online Compendium of Analytical Methods.

Recommendations to Executive Board: None.

Next Meeting Date: Sunday, August 10, 2003, New Orleans, LA.

Meeting Adjourned: 12:00 a.m.

Robert Brooks, Chairperson.

Dairy Quality and Safety PDG

Members Present: Don Breiner, Jeffrey Bloom, Henry Atherton, Patrick Boyle, Randall Daggs, Dan Erickson, Eugene Frey, C.R. Gilman, Brad Gronli, Steven Murphy, Stephanie Olmsted, Sherry Roberts, John Rushing, Kay Sadler, Ronald Schmidt, Gaylord Smith, Helene Uhlman and Gene Wright.

Board Members/Staff Present: None.

New Members: Linda Haywood, Patrice Arbault, Harold Wainess, and Joe Smucker.

Meeting called to Order: 1:04 p.m.

Recording Secretary of Minutes: Patrick Boyle.

Old Business: Chairperson Breiner addressed the Committee on our mission. Focus on dairy related issues. The workshop on 6/29 was discussed, focus on audience needs. Twenty-one people in attendance. One comment Breiner has heard for farm side is "nothing there for me" and "not many dairy topics" referring to IAFP.

New Business: Topics for symposia are as follows:

(1) Corrective actions;
(2) Safety of product in U.S.;
(3) Foot & mouth disease;
(4) Lab committee on micro bacteria TB/Johes Program;
(5) Disposal of infected animals;
(6) Functional food products;
(7) Community relations large farms manure disposal (Texas ozone C.I.P. return);
(8) TB issues workers infected;
(9) Waste disposal (Texas ozone C.I.P. return);
(10) Operational risk assessment B10;
(11) Securities;
(12) Allergens dairy side;
(13) Anti dairy movement "Exposing Web Myths";
(14) International Dairy regs "Global Harmonization";
(15) Advertise Dairy Sanitation Pocket Guide in *DFES* and
(16) Foot Mouth Disease (FMD)

Recommendations to Executive Board: None

Next Meeting Date: IAFP 2003.

Meeting Adjourned: 2:28 p.m.

Don Breiner, Chairperson.

Food Safety Network PDG

Members Present: Sid Camp (Chair), Gisele LaPointe, and Paul Uhler.

Board/Staff Members Present: Kathleen Glass and Donna Bahun.

New Members: Giselle Julien-Davis, Steve Bell, and Mariza Landgraf.

Meeting Called to Order: 10:05 a.m.

Sid Camp informed the members of the antitrust guidelines.

Recording Secretary of Minutes: Gisele LaPointe.

Old Business: None discussed.

New Business:

- Mission Statement Review – A revised mission statement was proposed by Giselle Julien-Davis (seconded by Steve Bell) and unanimously accepted: "To provide IAFP members with information on current trends and issues in food protection."
- Proposals for Symposia and Workshops – a workshop topic for the 2004 meeting will be discussed by E-mail over the coming months.
- Proposals for *JFP* and *DFES* Articles – Steve Bell proposed (seconded by Paul Uhler) that the FSN PDG submit to *DFES* six articles per year that will be collated by the PDG Chair from current trends and issues submitted by PDG members.

Election of Vice Chairperson – Giselle Julien-Davis was nominated by Steve Bell (seconded by Mariza Landgraf) and was unanimously elected to this position.

Summary of Activities and Action Taken:

- New members were welcomed and the focus and prior activities of the Food Safety Network PDG were briefly described by Sid Camp. The future focus of the PDG was discussed, leading to a revision of the mission statement.
- Future activities were discussed in relation to the concerns of the members present.
- The possible interaction of the FSN PDG with the Outreach Education PDG was raised, and Sid Camp attended the Outreach Education PDG to discover common issues and discuss potential collaborating activities.

The PDG chair will submit to the Staff Liaison the Internet links that are cited as references in the articles submitted to *DFES*, for posting on the IAFP Web site.

Recommendations to Executive Board: None.

Next Meeting Date: Sunday, August 10, 2003, New Orleans, LA.

Meeting Adjourned: 11:55 a.m.

Sid Camp, Chairperson.

Food Sanitation PDG

Members Present: Veny Gapud, Mark Moorman, Brian Anderson, Sid Camp, Ginny Edleman, Alice Haverland, Reuven Katain, Larry Mendes, Frank Pool, O. Peter Snyder, Fred Reimers, Gloria Swick-Brown, Frank Yiannas, Phyllis Jenkins, Crystal Nesbitt, Steve Bell, Dave Herweyer, and Tom Boufford.

Members Absent: Gerald Barnes, Myung-Woo Byun, Susan Ciani, Tim Ellis, Robert Chapleo, Sheryl DeCabrera, Dennis Edwards, Jr. Albert Espinoza, Marvin Garrick, Marty Gushwa, Harry Haverland, Dale Grinstead, LeeAnne Jackson, Patrick Killorin, Greig Warner, Brian Turner, Jong-Gyo Kim, Howard Malberg, Gordon Mowat, Tim Lawlis, Sherman McDonald, Sally Moore, Nina Parkinson, Chris Remus, Michael Sanchez, Loyce Robinson, Thomas Schwarz, Dennis Thayer, Robert Tiffin, Phil Ventresca, Donald Thayer, and Alex Von Holy.

Board Members/Staff Present: None.

New Members: Crystal Nesbitt, Steve Bell, Tom Boufford, and Phyllis Jenkins.

Meeting Called to Order: 1:03 p.m.

Recording Secretary of Minutes: Veny Gapud

Old Business:

The minutes of IAFP 2001 were read and approved.

New Business:

Proposal for a symposium on Food Plant Sanitation at the IAFP 2003 Annual Meeting. The suggested topics and speakers were as follows:

- How clean is clean? Objective standards of cleanliness – Norm Marriott.
- Allergen sanitation: Issues and concerns – NFPA representative.
- Sanitary design: How equipment design can reduce undesirable microbial growth and control for the presence of allergens and pests in food processes – AMI/NSF/Larry Mendes.
- Sanitation chemicals and methods – Tom Ford, Ecolab.
- Legal Issues Relating to Sanitation in the Food industry – Dennis Stern, Marler Clark Law Firm.

The group formed a symposium committee comprised of the following members: Veny Gapud, Mark Moorman, Brian Anderson, Ginny Edleman, Sid Camp, Larry Mendes, and Dave Herweyer.

Crystal Nesbitt informed the group that she has an article to submit for publication in the *Journal of Food Protection* or *Dairy, Food and Environmental Sanitation*.

Recommendations to Executive Board:

1. Review of pamphlet: "Before Disaster Strikes... A Guide to Food Safety in the Home." The group suggested asking other PDGs (i.e., Outreach Education PDG) and an Ad Hoc Committee to review the pamphlet for possible revisions.
2. The group also proposed writing a Spanish version of the pamphlet.
3. The topic of the pamphlet is not consistent with the Food Sanitation PDG's new mission statement. The statement is as follows: "To provide infor-mation on the developments in cleaning and sanitation in the food industry."

Next Meeting Date: Sunday, August 10, 2003, New Orleans, LA.

Meeting Adjourned: 3:00 p.m.

Veny Gapud, Chairperson.

Fruit and Vegetable PDG

Members Present: Philip Blagoyevich, Toni Hofer, Jeff Farber, Larry Beuchat, Joe Furuike, Pascal Delaquis, Donna Garren, Jim Gorny, Bob Gravani, LeeAnne Jackson, Jennylynd James, Les Lipschutz, Nancy Nagle, K. T. Rajkowski, Jena Roberts, Frances Pabrua, Joan Rosen, Mike Villaneva, Tony Valenzuela, and Randy Worobo.

New Members: Annous Bassam, Jack Guzewich, Jeff Farrar, Maria Brandl, and Franco Pagotto.

Meeting Called to Order: 1:05 p.m.

Old Business: None.

New Business:

- Recap of Produce Workshop by Donna Garren.
- Discussion of the IAFP Web site PDG pages
- Regulatory Update:
  FDA – Summary of Outbreak
  CDHS – Outbreak Summary
  USDA – AMS MDP Update
- University of Georgia advertising on methodologies
- Ancilary program looking at antibiotic resistance
- Next year's Fruit and Vegetable Workshop – Topic: G.A.P. Auditing, Date: February 2003, and Location: Costa Rica.

Symposium topics suggested for next year:

- Risk Assessment for Fresh Produce
- Parasites & Viruses
- Standarization of Detection and Inoculation Methods
- ORM (Operational Risk Management)

Motion was made and carried unamimously to submit a list of potential reviewers for produce journal submissions to *Journal of Food Protection*.

Tuesday, July 2, 2002, 6:30 p.m. to 9:00 p.m. Produce Reception on hotel terrace.

Chairperson's terms: Phil Blagoyevich 2002-2004; Mahipal Kunduru 2004-2006; and Toni Hofer 2006-2008.

Recommendations to Executive Board: None.

Next Meeting Date: Sunday, August 10, 2003, New Orleans, LA.

Meeting Adjourned: 3:00 p.m.

Phillip Blagoyevich, Chairperson.

Meat and Poultry Safety PDG

Members Present: Stan Bailey, Catherine Bowyer, Michael Bradley, Robert Brooks, John Cerveny, Don Conner, Roger Cook, Carl Custer, Jerry Erdmann, Paul Gerhardt, Margaret Hardin, Rick Holley, Mark Kreul, Ivan Linjacki, Thomas McCaskey, Shelagh McDonagh, Tom McMeekin, Lynn McMullen, Ann Marie McNamara, Rong Murphy, Dianne Peters, Mark Pratt, and Norman Stern.

Board Members/Staff Present: Jenny Scott, Kathy Glass, and David Tharp.

New Members: Richard Arsenault, Dave Beal, Michael Davis, Al Fain, Aubrey Mendonca, Vibeke Moegelmose, Payton Pruett, John Ruby, and Greg Siragusa.

Meeting Called to Order: 1:01 p.m.

Recording Secretary of Minutes: Carl Custer.

Old Business:

Have two symposia. Discussed continuing developing of food safety at what cost symposium.

New Business:

Discussed several symposia. Develop and submitting: One joint with Risk Assessment an additional three from M & P PDG.

- Cost of food safety
- Intervention for RTE
- Microbiology of M & P establishments

Discussed Web site use and Listserve vs. Batch E-mail: Opted for Batch E-mail.

Discussed co-development of *Campylobacter* workshop.

Recommendations to Executive Board: None.

Next Meeting Date: Sunday, August 10, 2003, New Orleans, LA.

Meeting Adjourned: 2:50 p.m.

Ruff Lowman, Chairperson.

Microbial Risk Analysis PDG

Members Present: Richard Whiting, Philip Blagoyevich, Michael Brodsky, Yuhuan Chen, Jennylynd James, Barry Michaels, Tom McMeekin, Maria Nazarowec-White, Serve Notermans, Dianne Peters, Don Schaffner, Leon Gorris and Ewen Todd.

New Members: Richard Arsenault, Paul Gerhardt, Bob Sanderson, Rong Murphy, Jerry Erdmann, and Hong Yang.

Meeting Called to Order: 10:08 a.m.

Recording Secretary of Minutes: Don Schaffner.

Old Business: Those present introduced themselves. There were no additions to the agenda. The current membership roster was circulated.

Election Results: Don Schaffner informed the group that Leon Gorris was unanimously elected Vice Chairman of the PDG. Gorris will succeed Dick Whiting in two years, and will chair the PDG meeting in 2004.

Quantitative Risk Assessment Document: Ewen Todd provided an update on the quantitative risk assessment document started last year. The document provides an overview of the process, and is written to assist the risk manager. Todd wrote the first draft, and has received comments from a number of PDG members. Gorris is working on the second draft. Todd suggested that a small group work together to finish the document. He also suggested that IAFP could be solicited to provide funds for this small group to meet face-to-face.

Another document (on the assessment of food worker hygiene using risk assessment) is currently in the works. The group working on this document plans to meet in February in Orlando.

PDG Web Page: Jennylynd James informed the group that our PDG Web page (hosted on the IAFP Web site) went live in May 2002. James will continue to serve as the PDG contact for the Web page.

2002 Symposia: Richard Whiting informed the group that two PDG sponsored symposia will take place at this year's Annual Meeting: "Controlling *C. perfringens* Hazards during Cooling", Tuesday p.m. (submitted by Juneja and Schaffner) and "Customized approaches to microbiological risk assessment", Wednesday p.m. (submitted by Gorris).

New Business:

Participation in PDG activities without attending the Annual Meeting: A discussion of mechanisms for getting interested IAFP members involved in the PDG followed. Suggestion included using conference calls and our Web page to share information. Richard Whiting suggested that conference call facilities into the PDG meeting at the Annual Meeting be provided.

***DFES* article:** The group discussed a call for a PDG sponsored article for *Dairy, Food and Environmental Sanitation*. Tom McMeekin and Serve Notermans will talk to Gorris about turning the contents of the symposium he organized into an article for *DFES*.

2003 Symposia: Notermans suggested a symposium on the interface between genomics and risk assessment. Michael Brodsky and McMeekin contributed ideas for topics and speakers. These three individuals will pursue the idea further after consultation with interested members of the Applied Laboratory Methods PDG.

James suggested a symposium on risk assessment applied to fruits and vegetables. She will pursue this further.

Notermans suggested a symposium on "International approaches and update on risk assessment" and Rong Murphy offered to assist.

Murphy suggested a symposium on "How risk assessment can be used the food industry". Topics might include the relationship between hygiene and risk assessment, risk assessment in slaughter, and microbial mapping and pathogen movement in the food plants. Murphy will pursue this topic further.

Symposia focusing on "lessons learned from completed risk assessments," including risk management and communication issues, and "food safety objectives" were tabled until next year.

Workshops: Whiting suggested a workshop on fitting data to models in risk assessments, data quality and selection, two-way risk assessments (where uncertainty and variability are split), sensitivity analysis, and validation of models. Schaffner suggested that the workshop be hands on, with participants providing their own laptops. Whiting and Schaffner will pursue the topic further.

Announcements of Activities of Interest:

Whiting reminded attendees about the International Conference on Microbial Risk Assessment, July 24-26, 2002, the status of various WHO/FAO microbial risk assessments and documents on hazard characterization and exposure assessment, FDA and FSIS microbial risk assessments.

Schaffner informed the group regarding a European group sharing information on risk assessment. For more details see www.cost920.com.

McMeekin informed the group about a recent publication by Ross and Sumner, in the *International Journal of Food Microbiology*. The article includes a link to an Excel-based risk calculator.

Whiting informed the group about free access to *JFP* Online until August 31. After this date, online access will cost $36/yr.

Recommendation to Executive Board:

1. Provide funding for a conference call in conjunction with the PDG meeting at the Annual Meeting for those PDG members who cannot attend the Annual Meeting but want to be involved in PDG activities.
2. Gather and share ideas for getting interested members involved with PDG activities when those members cannot attend the Annual Meeting.

Next Meeting Date: Sunday, August 10, 2003, New Orleans, LA.

Meeting Adjourned: 12:00 p.m.

Richard Whiting, Chairperson.

Retail Food Safety and Quality PDG

Members Present: Tom Schwarz, Veny Gapud, Alfred Fain, Fred Reimers, Pete Snyder, David Beal, Carl Custer, Ruth Yong, and Frank Yiannas.

Members Absent: Marie-Luise Baehr, Louise Blanchet, Eric Carre, Michael Brennan, Susan Ciani, Dean Cliver, Sandy Custer, Albert Espinoza, Custy Fernandes, Cameron Hackney, Sheryl DeCabrera, Anthony Fernandez, Kristel Hauben, Doug Holt, Michael Juhasz, Howard Malberg, Thomas McCaskey, Rebecca Montville, Joseph Iwan, Vickie Lewandowski, Norman Marriott, Larry Mendees, Kathleen O'Donnell, Irving Pflug, Keith Schneider, Susan Sumner, Stephen Posey, Loyce Robinson, John Sofos, Brian Turner, Alex Von Holy, Jintanart Wonjchawalit, and Suree Wongpiyachon.

Board Member/Staff Present: Jenny Scott.

New Members: Ernie McCullough, Malinda Fortune, Michael Ames, Joe Eifert, Ed Giera, and Jena Roberts.

Meeting Called to Order: 10:00 a.m.

Recording Secretary of Minutes: Frank Yiannas.

Old Business:

- Reviewed a symposia developed and submitted last year by PDG members – both of which were accepted for the 2002 Annual Meeting.
  - Microbiological Safety at Retail.
  - Innovations in Retail Food Safety Management Systems and Technology.
- Update on International Food Safety Icon project. Reviewed progress made by the special 10 member task force and discussed next steps.

New Business:

Develop and submitted a symposium for the IAFP 2003 entitled "Recipe for Food Safety at Retail."

Recommendations to Executive Board:

1. The Retail Food Safety and Quality PDG would like the Executive Board to consider posting electronic (e.g. Power Point®) presentations given at the Annual Meeting on the IAFP Web site. Presentations associated with a particular PDG could be posted under their unique section of the site.

Next Meeting Date: Sunday, August 10, 2003, New Orleans, LA.

Meeting Adjourned: 11:50 a.m.

Frank Yiannas, Chairperson.

Seafood Quality and Safety PDG

Members Present: Brian Himelbloom, Doug Marshall, and Peter Hibbard.

New Members: Mike Grant and Cathy Fox.

Board Members/Staff Present: Jim Dickson and David Tharp.

Meeting Called to Order: 1:15 p.m.

Recording Secretary: Doug Marshall.

Anti-trust guidelines read and discussed.

Old Business:

Minutes read from IAFP 2001 meeting in Minneapolis.

New Business:

Selection of temporary officers: B. Himelbloom, Chairperson and P. Hibbard, Vice Chairperson.

Discussion of submitted symposia ideas:

- Evaluating efficacy of instruction, inspection and industrial implementation of seafood HACCP.
- Five years after zero-tolerance of *L. monocytogenes* in ready-to-eat seafood products.
- Controls of *C. botulinum* spore germination in vacuum-packed, refrigerated seafood.
- Thermal and non-thermal processing for inactivating *C. botulinum* spores in seafood.
- Globalization of seafood: setting the trend for international cooperation for food safety.
- Antibiotics in aquacultural practices for imported seafood.
- Good aquacultural practices for imported seafood.
- Heavy metal contaminants in seafood.
- PCB contamination in seafood.

Symposia Recommended to the Program Committee:

Aquaculture I: Chemical Safety and Quality Issues – Doug Marshall organizer.

- Pestcides – Charles Santerre, Purdue University
- PCBs, etc. – TBD (recommended by Ewen Todd)
- Fresh H_2O Toxicology – John Giesy, MI State University
- Heavy Metals – Rita Schoeny, EPA
- Natural Toxins – Mike Quillam, Natl. Res. Council, Canada
- Off Flavors – Casy Grimm, USDA-ARS
- Good Aquaculture Practices to Control Hazardous Chemicals – Donn Ward, North Carolina State University

Aquaculture II: Microbial Safety and Quality Issues – Brian Himelbloom, organizer.

- Human Pathogens – Gary Roderick, University Florida
- Production Diseases – Frank Austin, Mississippi State University Vet. School
- Antibiotics – Andy DePaola, USFDA
- Intervention Strategies – Doug Marshall, Mississippi State University
- Role of HACCP in Aquaculture – Mike Moody, Louisiana State University
- International Perspective – Peter Ben Embarek, WHO/FAO

Seafood Hot Topics – Linda Andrews, organizer.

- GMO Fish – Canada
- GMO Feed – Mike Russell, Gene Scan, New Orleans or representative from Clearsprings
- New Analytical Methods – TBD
- MAP Fresh Fish Safety – Juan Silva, Mississippi State University
- CO Tuna – Tyre Lanier, North Carolina State University
- Fresh Fish Distribution Issues – Steve Otwell, University of Florida

Recommendations to Executive Board:

1. Accept the three submitted symposia for next year's meeting.
2. Supply funds to support speaker travel expenses.

Next Meeting Date: Sunday, August 10, 2003, New Orleans, LA.

Adjourned: 2:45 p.m.

Brian Himelbloom, Acting Chairperson

Student PDG

Members Present: Manan Sharma, Kali Kniel, Brooke Seeman, Gabriel Sanglay, Angela Hartman, Kristee Malah, Aaron Uesugi, Summer Smith, Brian Yaun, Adam Olson, James Folson, Valerie Ling, Robert Coge, P. Sabina Contreras, Kari Shoaf, Scott Burnett, Kimberly Lamar, Adriana Velasquez, Laura Bauermeister, Marcos Sanchez, Larry Beuchat, Lynette Kleman, Sally Foong, Shiao Mei Lei, Rico Suhalim, Ginny Moore, Moezni Osman, Jennifer McCreary, Kelly Stevens, Caris Keeling, Vicky

Grahovac, Liz Gomes, Mike Davidson, Margaret Singen, B. Lacroix, Ben Chapman, Joe Frank, Dianne Peter, Anton Tonus, Megan Hereford, Michelle Danyluk, Karol Gailunas, Wendy Wade, Walairut Chamtaragant, Renee Raiden, Steve Kenney, and Elizabeth Duffy.

Board Members/Staff Present: James Dickson, Anna Lammerding, Paul Hall, Kathy Glass, Jenny Scott, Jeffrey Farber, and Peter Hibbard.

Meeting Called to Order: 12:45 p.m.

Recording Secretary of Minutes: Renee Raiden.

Old Business: None.

New Business:

- Session monitors posted on SPDG booth board;
- Second symposium Tuesday morning;
- Introduction of new officers;
- SPDG flyers to take back to schools to promote membership;
- Speaker: James Dickson, IAFP President;
- Symposium for 2003 proposed and speakers discussed;
- Selling of t-shirts at booth; and
- Resumes to be dropped off.

Recommendations to Executive Board: None.

Next Meeting Date: Sunday, August 10, 2003, New Orleans, LA.

Meeting Adjourned: 1:15 p.m.

Manan Sharma, Chairperson.

Viral Parasitic Foodborne Disease PDG

Members Present: Dean Cliver, Charles Bartleson, Judy Greig, and Jack Guzewich.

Board Membes/Staff Present: Paul Hall and Donna Gronstal.

New Member: Sabah Bidawid.

Meeting Called to Order: 10:30 a.m.

Recording Secretary of Minutes: Dean Cliver.

Old Business: Minutes approved.

Incoming Chair: Lee-Ann Jaykus.

Incoming Vice Chair: Sabah Bidawid.

New Business:

Symposium proposal: Methods for detecting viruses and protozoa that exclude inactivated agents.

Recommendations to Executive Board:

1. Amend the symposium proposal form to include a statement of need or purpose.

Next Meeting Date: Sunday, August 10, 2003, New Orleans, LA.

Meeting Adjourned: 11:15 a.m.

Dean Cliver, Chairperson.

Water Quality & Safety PDG

Members Present: Susan McKnight, Peter Kennedy, Jim Larkin, Kelly Reynolds, Jayne Drake, Louise Fielding, Michael Grant, Kathleen T. Rajkowski, Jeanette Thurston-Enriquez, Isabel Walls, Larry Cohen, Maria Nararowec-White, Adrian Peters, Jack Guzewich, Frank Yiannas, Cathy Bowyer, Jeff Farber, Michael Brodsky, Kali Kniel, and Steve Kenney.

Meeting Called to Order: 12:30 p.m.

Recording Secretary of Minutes: Susan McKnight.

Old Business: None (new group).

New Business:

- Brief 15-minute presentation by Dr. Kelly Reynolds – Research Scientist, Environmental Microbiology, University of Arizona.
  - Overview of finished water problems – there's more than microbials to worry about in the water, viruses for example. It's not just diarrhea we should be worried about in water supplies. Surface water supplies and ground waters both have problems, even after the treatment plant. Studies show that people consuming tap water vs. using a treatment device (such as reverse osmosis) have a significant increase in illness. Multiple barriers are necessary – the treatment plant is not enough, especially for the elderly, children, or immune-compromised individuals.
- Brief 15-minute presentation by Jim Larkin, Vice President, Environmental Health Laboratory – EHL (an Underwriters Laboratories subsidiary).
  - UL's goal – Advancing the protection of public health in the area of water quality. Voluntary standards are needed by food safety industry, since some areas of oversight are unclear. Water quality and quantity greatly impact each other, especially in the western US. Water quality is not a constant – it is changing and uncertain. To control the variability of water quality as an ingredient in food, regular monitoring is needed. There may be technical issues as well as emotional

issues during a water quality crisis for a brand. Data may show there was actually no problem, but if trust has been damaged – the test results may not matter.

- After the speakers there was a discussion of areas of the food chain the attendees felt were impacted by water quality. It was agreed that water quality impacts the total food chain – from farm to table. Although the EPA drinking water standards were identified as what defined "potable" water in the Federal Food Code, the group felt the Food Code left many areas of water quality concerns from "farm-to-table" unregulated (irrigation water for example). Concerns were raised in a variety of areas such as: animal agriculture, irrigation water, biofilms in water using equipment, lack of oversight in many areas – such as irrigation water, bottled water, seafood, produce, and the attention paid to water quality in the food manufacturing process.
- The group felt since there were so many areas of concern to examine that this would be a long-term discussion within the IAFP's new PDG. The committee felt in order to raise the level of awareness of water quality concerns, an open discussion of the areas impacted was needed. Issues were identified from virtually every area of the IAFP's PDGs (seafood, produce, meat, poultry, dairy, foodservice/retail), so two symposia were recommended –
  - Water – A Food Perspective. Here the group wanted the various PDGs to raise awareness about the impact of water quality by identifying issues and concerns in the areas of: Seafood, Produce, Retail/Foodservice, Meat/Poultry, and Dairy.
  - Emerging Issues in Water Quality. Such topics as emerging contaminants risk assessment and the data gap, detection methods, re-use/irrigation, and treatment technologies/cost factors would be examined.
  - A Vice Chairperson was appointed – Ms. Kathleen Rajkowski – USDA/ARS.

Meeting Adjourned: 2:45 p.m.

Next Meeting Date: Sunday, August 10, 2003, New Orleans, LA.

Susan McKnight, Chairperson.

Affiliate Council Minutes

IAFP 2002 • June 30, 2002

Held at the Manchester Grand Hyatt San Diego, California

Affiliates Present:

Brazil	Maria Teresa Destro
British Columbia	Clive Kingsbury
California	John Bruhn
Capital	Carl Custer
Carolinas	John Rushing
Florida	Peter Hibbard
Georgia	David Fry
Kentucky	Sue Jewell
Illinois	Ken Anderson
Indiana	Helene Uhlman
Korea	Dong K. Jeong
Metropolitan	Fred Weber
Michigan	Bruce DuHamel
Missouri	Linda Haywood
Nebraska	Tom Tieso
New York	Steve Murphy
Ohio	Gloria Swick-Brown
Ontario	Robert Serapiglia
Pennsylvania	Eugene Frey
Quebec	Gisele LaPointe
Southern California	Jennylynd James
Texas	Gene Wright
Upper Midwest	Dan Erickson
Washington	Stephanie Olmstead
Wisconsin	Randy Daggs

Affiliates not Present: Alabama, Alberta, Connecticut, Idaho, Iowa, Kansas, Massachusetts, Mexico, Mississippi, North Dakota, South Dakota, Tennessee, Virginia, and Wyoming.

IAFP Board Members Present: Jim Dickson, Anna Lamerding, Paul Hall, Kathy Glass, and Jenny Scott.

IAFP Staff Present: David Tharp, Lisa Hovey, and Lucia Collison McPhedran.

Guests: Zeb Blanton (Florida), Dawn Stead (California), Melodie Wynne (Ontario), and Mariza Landgraf, (Brazil).

Call to Order: Chairperson Peter Hibbard called the meeting to order at 7:15 a.m.

Recording Secretary of Minutes: Eugene Frey, Affiliate Council Secretary.

Acceptance of Minutes:

The 2001 minutes were distributed with the agenda and accepted as written. Motion to accept made by John Bruhn, and seconded by Fred Weber.

Report from IAFP Executive Board:

IAFP President Jim Dickson reported that there is a meeting scheduled on Monday, July 1, with representatives from the United Kingdom to discuss beginning an affiliate relationship with IAFP. The Affiliate Newsletter is now available Online. Jim urged continuing support of the IAFP Foundation Fund, which helps defray costs to bring qualified speakers to the Annual Meeting. The silent auction is a good way to raise foundation support, and Jim urged the Affiliates to generously donate items. The meeting attendance is up again this year, expecting over 1,400 attendees. The conference will have over 400 topics and presentations available. The IAFP Web site now has membership renewal Online, along with many other resources. The IAFP membership numbers are stable, even with financial challenges many companies and industries are experiencing. The Student Professional Group is having their third annual luncheon this year.

Report from IAFP Staff:

Executive Director David Tharp welcomed the Affiliate members and welcomed two new affiliates, Southern California and Brazil. *JFP* went Online in April 2002. David recommended this service because the publications will be available much sooner. The fee will be $36 annually. Last year there were over 500 papers submitted to *JFP*. David reported that IAFP assisted the ILSI organization with a two-day workshop titled "Workshop on Biological and Chemical Agents of Terrorism in Food" in December 2001, with very interesting topics and discussion following the events of September 11. IAFP also helped sponsor a produce conference in Guatemala in 2001. The four Friday and Saturday workshops preceding the conference were well attended this year. Sustaining memberships were up this year, helping to provide an additional $9,000 for speaker travel support. Kraft Foods is supporting a new award this year, the International Leadership Award

at the Awards Banquet. The success of this year's conference should help IAFP to end its fiscal operating deficit, and lead to future positive fund balances.

Election of Affiliate Council Secretary:

Chairperson Peter Hibbard reported that Steve Murphy of the New York State Affiliate was selected by the nominating committee to serve as the incoming Affiliate Council Secretary. Peter then called for nominations from the floor. No further nominations were made and a motion was made to close nominations, by Helene Uhlman and seconded by David Fry. Steve Murphy was elected by unanimous vote. Steve accepted and asked for our support as he begins his new responsibility.

Affiliate Reception:

The Affiliate Educational Reception held on Saturday night was well received, with many Affiliate Delegates expressing their support and approval to continue this function. This was the third year for this event and it provided an excellent time for fellowship. Dr. Nate Booth, a motivational speaker, presented a dynamic interactive program to present skills that Affiliates could utilize to grow the leadership in their own organizations. Peter mentioned this was a great reception and asked all members to give their suggestions for next year's Affiliate Reception. Steve Murphy reported the presentations and ideas of Frank Yiannas, Florida Affiliate, and Randy Daggs, Wisconson Affiliate, following Dr. Booth were very helpful in providing ideas that Affiliates can use. Sponsorship is important for this Affiliate event. Peter thanked Weber Scientific – Fred Weber and Ecolab, Inc. for their support this year. Peter asked for all members to look at providing sponsorship money for next year's event.

Unfinished Business:

There were several items of unfinished business, from last year's meeting. The issue of Non-Compliant Affiliates, and discontinuation of the Affiliate Membership Award ("Greatest percentage increase" and "Greatest numerical increase"). Due to meeting time constraints, Peter asked for a limit of 10 minutes time discussion of each issue. A motion was presented to limit discussion time to 10 minutes, by Randy Daggs, and seconded by Carl Custer. Motion passed by affirmative vote.

The Non-compliant Affiliates list has decreased by diligent action and contacts with several Affiliates. Discussion followed about the cost of lost membership, and the suggestion each Affiliate have a permanent address, such as a P.O. Box number. That could help prevent mail getting "lost" and ease contacting the responsible persons in the Affiliate. Time ran out and another motion was presented by Randy Daggs and seconded by Fred Weber, with affirmative vote, to extend discussion time on this issue. At this time, David Tharp and Fred Weber reviewed the reasons for this discussion and explained benefits of IAFP to individual Affiliates.

After much discussion, a motion was presented to accept the non-compliant Affiliate timeline by Randy Daggs and seconded by Stephanie Olmstead. Motion carried with one "no" vote. Peter Hibbard, Steve Murphy and Fred Weber complemented Lucia for her work with trying to keep the Affiliates current.

The Affiliate Membership Award was discussed. Previously, the award was presented to the Affiliate that had the greatest increase in IAFP members the previous year. Some years, depending on the Affiliate hosting the Annual Meeting, that Affiliate would have a greater number of "new" IAFP members. And some Affiliates had a larger base to build membership upon. The true growth wanted, is to grow the Affiliates from within, and not necessarily to get them all to become members of IAFP. After much discussion, John Bruhn asked for a committee to gather facts and present a guideline for this award, if continued, to next year's Affiliate meeting. A motion was made to form a committee by John Bruhn and seconded by Helene Uhlman. The committee members named are John Bruhn, David Fry, Dan Erickson, Helene Uhlman, Peter Hibbard, and Eugene Frey. The chair will be named during the first meeting.

New Business:

Peter congratulated David Fry for receiving the IAFP Fellowship Award this year. David mentioned he was humbled to receive it, and thanked all persons who have helped and supported him throughout his successful career. Peter then mentioned that Affiliate organizations can submit nominations for potential "Fellow" candidates to the Fellows Selection Committee.

Affiliate Awards:

Peter recognized the following Affiliates: Shogren – Florida; Best Annual Affiliate Meeting – Washington State; Best Educational Affiliate Meeting – Wisconsin; Best Affiliate Communication Meeting – New York State; Highest Percentage Membership – Upper Midwest. Peter said the selection process is getting more complicated each year, due to the excellent activities and reports of the Affiliates. All of the submitted Affiliate annual reports are on display in the lobby. Randy Daggs urged all Affiliates to access each others Web sites, as these are important useful resources for all members. Maria Teresa Destro from Brazil asked that with non-English speaking countries becoming Affiliates, how could IAFP better communicate with their members? Lucia reported IAFP would handle these on a one-by-one basis.

Affiliate Reports:

Each Affiliate gave a two-minute report highlighting their past year's activities.

Other Business:

Peter mentioned he was working on the development of a military Affiliate, and asked for suggestions on help with contacts and support to accomplish this. He also mentioned that the Affiliates should utilize the IAFP speaker program to enhance their own annual meeting and to build the relationship between the Affiliates and IAFP. Anna Lammerding urged the Council to recommend deserving candidates for the Certificate of Merit Award. Information about this is available on the IAFP Web site. Peter also made special mention of Lucia Collison McPhedran and her untiring professional support that has resulted in a newsletter that just gets better and better.

Passing of Gavel:

Chairperson Peter Hibbard expressed his appreciation and support to the IAFP Board, the IAFP staff and the entire Affiliate Council for their support this past year and stated how educational and rewarding he found this experience. He then passed the gavel to Eugene Frey, signifying the beginning of his term as Chairperson of the Affiliate Council.

The meeting was adjourned at 10:15 a.m.

Peter Hibbard, Affiliate Council Chairperson

Hot Links for Educators

Educators, this CDC Web page is one of the most useful you'll ever find: http://www.cdc.gov/foodsafety/edu.htm.

The page provides direct links to educational resources from a variety of federal agencies, state agencies, and associations.

You'll find links to the newest food safety education publications. You'll also be able to access key training resources including:

- Epidemiological information and software;
- Foodborne disease outbreak investigation case studies;
- Public Health Training Network; and
- USDA/FDA Foodborne Illness Education Information Center

Congratulations!

In June 2002, IAFP provided a door prize drawing for students at the Institute of Food Technologists' Annual Meeting in Anaheim, CA. The drawing was for a one-year Membership with our Association. We are pleased to announce the following winner of the drawing:

Ramya Raghavan
Illinois Institute
of Technology

Committee and Professional Development Group

Recommendations to the Executive Board
as Taken from Committee Minutes
of Meetings Held in San Diego, California

Executive Board Response
as Discussed at the Executive Board Meeting
San Diego, California
July 4, 2002

STANDING COMMITTEES

Dairy, Food and Environmental Sanitation

Recommendations to the Executive Board:

1. Consider the potential journal name change to ***Food Protection Trends*** if ***Applied Food Protection*** with the byline suggested is not acceptable.
   Board Response: Accept *Food Protection Trends* with the use of a byline "Science and News from the International Association for Food Protection."

2. Accept requests to republish select *DFES* papers in non-English languages with the provisions detailed.
   Board Response: Agree, Board to review each case.

3. Accept the request to publish certain ILSI and other symposium abstracts in the journal.
   Board Response: Agree.

JFP Management Committee

Recommendations to Executive Board:

1. To print *JFP* Supplement on the International Conference on Microbiological Risk Assessment, organized by JIFSAN (Joint Institute for Food Safety and Applied Nutrition). Additional cost is approximately $6,000.00 (request for help from the Board with this). Alternatively, the supplement can be published online only, provided that the editorial process is followed.
   Board Response: Staff to continue working with JIFSAN to publish these papers as a supplement to *JFP*.

2. To formalize the current policy for Letters to the Editor and add this to the "Instructions to Authors."
   Board Response: Staff to coordinate with the Scientific Editors and the Committee Chair and Vice Chair to develop a policy for Board approval.

3. To seek legal advice with respect to current policy on the assignment of copyright by an individual author for more than one author.
   Board Response: Agree.

Program Committee

Recommendation to Executive Board: None.

SPECIAL COMMITTEES

3-A Committee on Sanitary Procedures

Recommendations to Executive Board:

1. This committee will draft a request letter asking agencies for their pledge of full support and commitment to the 3-A Sanitary Standards development process before a voting member may be accepted on the committee, as attendance to the development meeting is mandatory for membership. IAFP Executive Director and the 3-A CSP Chairman shall sign this letter. The letter will request a written commitment from each member's agency and shall be maintained on file at the IAFP main office.
   Board Response: Agree.

Audiovisual Library Committee

Recommendation to Executive Board: None.

Awards Committee

Recommendations to Executive Board:

1. The awards timeline specifies that nominations received should be reviewed in January to assure adequate quantity and in the event that the number is low, the Awards Committee Chairperson take action with the individual judging committee chairs to encourage nominations. However, award criteria are now available on the IAFP Web site rather than nominators needing to contact IAFP for nomination materials. Therefore, the Awards Committee Members are not aware of who is being considered for awards before the Feb. 18th deadline for nominations. We recommend that the timeline wording be revised to address this issue.
   Board Response: Agree.

Communicable Diseases Affecting Man Committee

Recommendations to Executive Board:

1. There is a need for some committee members to meet in February 2003 to complete the first two papers and initiate discussion on the quantitative risk assessment paper. We are requesting funding from the Board. Input from Quantitative Risk Assessment PDG members for this meeting is also requested.
   Board Response: IAFP is willing to support this type of Committee work. A budget of estimated expense must be submitted for Board approval a minimum of 60 days in advance of such meeting.

Constitution and Bylaws Committee

Recommendations to Executive Board: None.

Foundation Fund Committee

Recommendations to Executive Board:

1. Expand the Foundation Fund Committee to 12 members over a two-year period.
   Board Response: Agree.

2. Continue the Corporate Challenge Program
   Board Response: Agree.

3. A structured or tiered recognition program be investigated.
   Board Response: Agree.

4. Promotional materials be developed for a targeted campaign to increase membership participation in the Foundation Fund.
   Board Response: Agree.

5. Next Foundation Fund meeting be a working luncheon on a Monday or Tuesday.
   Board Response: Agree.

6. Investigate a part or full-time person for fund raising.
   Board Response: Wait to see what effects are gained by adding new Members to the Foundation Fund Committee.

7. The proposed budget for 2003 be approved.
   Board Response: Agree.

Nominating Committee

Recommendations to Executive Board: None.

Past Presidents' Committee

Recommendations to the Executive Board: None.

PROFESSIONAL DEVELOPMENT GROUPS

Applied Laboratory Methods PDG

Recommendations to Executive Board: None.

Dairy Quality and Safety PDG

Recommendations to Executive Board: None.

Food Safety Network PDG

Recommendations to Executive Board: None.

Food Sanitation PDG

Recommendations to Executive Board:

1. Review of pamphlet: "Before Disaster Strikes…A Guide to Food Safety in the Home." The group suggested asking other PDGs (i.e., Outreach Education PDG) and an Ad Hoc Committee to review the pamphlet for possible revisions.
   Board Response: Agree. Kathy Glass to coordinate efforts.

2. The group also proposed writing a Spanish version of the pamphlet.
   Board Response: Agree. After revising the pamphlet, translation should be possible.

3. The topic of the pamphlet is not consistent with the Food Sanitation PDG's new mission statement. The statement is as follows: To provide information on the developments in cleaning and sanitation in the food industry.
   Board Response: Board approves of new mission statement.

Fruit and Vegetable Safety and Quality PDG

Recommendations to Executive Board: None.

Meat and Poultry Safety and Quality PDG

Recommendations to Executive Board: None.

Microbial Risk Analysis PDG

Recommendation to Executive Board:

1. Provide funding for a conference call in conjunction with the PDG meeting at the annual meeting for those PDG members who cannot attend the annual meeting but want to be involved in PDG activities.
   Board Response: Distribution of agenda in advance of the meeting should allow non-attending Members to provide input. To add conference calling abilities to meetings is not cost-justified at this time.

2. Gather and share ideas for getting interested members involved with PDG activities when those members cannot attend the Annual Meeting.
   Board Response: Agree and encourage use of E-mail and the Internet to communicate throughout the year.

Retail Food Safety and Quality PDG

Recommendations to Executive Board:

1. The Retail Food Safety and Quality PDG would like the Executive Board to consider posting electronic presentations (e.g. PowerPoint®) given at the Annual Meeting on the IAFP Web site. Presentations associated with a particular PDG could be posted under their unique section of the site.
   Board Response: Due to copyright restrictions, this is not feasible at the present time.

Seafood Safety and Quality PDG

Recommendations to Executive Board:

1. Accept the three submitted symposia for next year's meeting.

Board Response: The Program Committee will review all submitted symposia and determine acceptance status,

2. Supply funds to support speaker travel expenses.
   Board Response: Speaker support funding comes through the Foundation Fund and our Sustaining Members.

Student PDG

Recommendations to Executive Board: None.

Viral and Parasitic Foodborne Disease PDG

Recommendations to Executive Board:

1. Amend the symposium proposal form to include a statement of need or purpose.
   Board Response: Agree.

Water Quality and Safety PDG

Recommendations to Executive Board: None.

Affiliate Council

Recommendations to Executive Board: None.

Exhibitors of IAFP 2002

★ IAFP Sustaining Member

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In memory of...

Franklin W. Barber

Joseph C. Olson, Jr.

IAFP would like to extend our deepest sympathy to the families and friends of the above IAFP members who recently passed away. IAFP will always have sincere gratitude for their contribution to the association and the profession.

The Food Safety Training and Education Alliance (FSTEA): http://www.fstea.org

FSTEA is an alliance of government, industry, and academicians working to improve food safety training at the retail level.

The Web site offers training materials and links to national and local rules and regulations, directories, and information on food safety funding.

International Association for Food Protection®

Call for Nominations 2003 Secretary

A representative from industry will be elected in March of 2003 to serve as IAFP Secretary for the year 2003-2004.

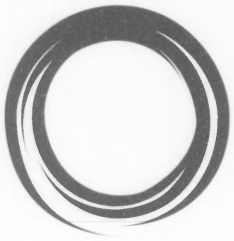
Send letters of nomination along with a biographical sketch to the Nominations Chairperson:

John Cerveny
17 Ridgeview Ct., No. 7
Madison, WI 53704
Phone: 608.242.0760
Fax: 608.245.8895
E-mail: jcerveny@itis.com

The Secretary-Elect is determined by a majority of votes cast through a mail vote taken in March of 2003. Official Secretary duties begin at the conclusion of IAFP 2003. The elected Secretary serves as a Member of the Executive Board for a total of five years, succeeding to President, then serving as Past President.

For information regarding requirements of the position, contact David Tharp, Executive Director, at 800.369.6337 or 515.276.3344; Fax: 515.276.8655; E-mail: dtharp@foodprotection.org.

Nominations close November 1, 2002.



International Association for
Food Protection®

Award Nominations

The International Association for Food Protection welcomes your nominations for our Association Awards. Nominate your colleagues for one of the Awards listed below. You do not have to be an IAFP Member to nominate a deserving professional. To request nomination criteria, contact:

International Association for Food Protection
6200 Aurora Ave., Suite 200W
Des Moines, Iowa 50322-2864
Phone: 800.369.6337; 515.276.3344
Fax: 515.276.8655
Web site: www.foodprotection.org
E-mail: info@foodprotection.org

Nominations deadline is March 17, 2003. You may make multiple nominations. All nominations must be received at the IAFP office by March 17, 2003.

- Persons nominated for individual awards must be current IAFP Members. Black Pearl Award nominees must be companies employing current IAFP Members. NFPA Food Safety Award nominees do not have to be IAFP Members.
- Previous award winners are not eligible for the same award.
- Executive Board Members and Awards Committee Members are not eligible for nomination.
- Presentation of awards will be during the Awards Banquet at IAFP 2003 - the Association's 90th Annual Meeting in New Orleans, Louisiana on August 13, 2003.

Nominations will be accepted for the following Awards:

Black Pearl Award – Award Showcasing the Black Pearl

Presented in recognition of a company's outstanding achievement in corporate excellence in food safety and quality.

Sponsored by Wilbur Feagan and F&H Food Equipment Company.

Fellow Award – Distinguished Plaque

Presented to Member(s) who have contributed to IAFP and its Affiliates with quiet distinction over an extended period of time.

Honorary Life Membership Award – Plaque and Lifetime Membership in IAFP

Presented to Member(s) for their devotion to the high ideals and objectives of IAFP and for their service to the Association.

Harry Haverland Citation Award – Plaque and $1,000 Honorarium

Presented to an individual for years of devotion to the ideals and objectives of IAFP.

Sponsored by Silliker Inc.

Harold Barnum Industry Award – Plaque and $1,000 Honorarium

Presented to an individual for outstanding service to the public, IAFP and the food industry.

Sponsored by NASCO International, Inc.

Educator Award – Plaque and $1,000 Honorarium

Presented to an individual for outstanding service to the public, IAFP and the arena of education in food safety and food protection.

Sponsored by Nelson-Jameson, Inc.

Sanitarian Award – Plaque and $1,000 Honorarium

Presented to an individual for outstanding service to the public, IAFP and the profession of the Sanitarian.

Sponsored by Ecolab, Inc., Food and Beverage Division.

Maurice Weber Laboratorian Award – Plaque and $1,000 Honorarium

Presented to an individual for outstanding contributions in the laboratory, recognizing a commitment to the development of innovative and practical analytical approches in support of food safety.

Sponsored by Weber Scientific.

International Leadership Award – Plaque, $1,000 Honorarium and Reimbursement to attend IAFP 2003

Presented to an individual for dedication to the high ideals and objectives of IAFP and for promotion of the mission of the Association in countries outside of the United States and Canada.

Sponsored by Kraft Foods.

NFPA Food Safety Award – Plaque and $3,000 Honorarium

Presented to an individual, group, or organization in recognition of a long history of outstanding contribution to food safety research and education.

Sponsored by National Food Processors Association.

Call for Abstracts

IAFP 2003
The Association's 90th Annual Meeting
August 10-13, 2003
New Orleans, Louisiana

General Information

1. Membership in the Association is not required for presenting a paper at IAFP 2003.
2. All presenters must register for the Annual Meeting and assume responsibility for their own transportation, lodging, and registration fees.
3. There is no limit on the number of abstracts registrants may submit. However, presenters must present their presentations.
4. Accepted abstracts will be published in the Program and Abstract Book. Editorial changes may be made to accepted abstracts at the discretion of the Program Committee.
5. Abstracts must be submitted Online or via E-mail.

Presentation Format

1. Technical — Oral presentations will be scheduled with a maximum of 15 minutes, including a two to four minute discussion. LCD projectors will be available. Other equipment may be used at the presenter's expense. Prior authorization from the office must be obtained. Overhead projectors will not be allowed.
2. Poster — Freestanding boards will be provided for presenting posters. Poster presentation surface area is 4′ high by 8′ wide. Handouts may be used, but audiovisual equipment will not be available. The presenter will be responsible for bringing pins and velcro.

Instructions for Preparing Abstracts

1. Title — The title should be short but descriptive. The first letter in each word in the title and proper nouns should be capitalized.
2. Authors — List all authors using the following style: first name followed by the surname.
3. Presenter Name & Title — List the full name and title of the person who will present the paper.
4. Presenter Address — List the name of the department, institution and full postal address (including zip/postal code and country).
5. Phone Number — List the phone number, including area, country, and city codes of the presenter.
6. Fax Number — List the fax number, including area, country, and city codes of the presenter.
7. E-mail — List the E-mail address for the presenter.
8. Format preferred — Check the box to indicate oral or poster format. The Program Committee makes the final decision on the format of the abstract.
9. Developing Scientist Awards Competitions — Check the box to indicate if the paper is to be presented by a student in this competition. A signature and date is required from the major professor or department head. See "Call for Entrants in the Developing Scientist Awards Competitions."
10. Abstract — Type abstract, double-spaced, in the space provided or on a separate sheet of paper, using a 12-point font size. Use no more than 250 words.

Abstract Submission

Abstracts submitted for IAFP 2003 will be evaluated for acceptance by the Program Committee. Be sure to include all ten (10) items requested in the "Instructions for Preparing Abstracts" above; failure to do so may result in rejection. Information in the abstract data must not have been previously published in a copyrighted journal.

Abstracts must be received no later than January 6, 2003. Submit abstracts through one of the following methods:

1. Online: Use the online abstract submission form located at www.foodprotection.org. You will receive an E-mail confirming receipt of your submission.
2. E-mail: Submit via E-mail as an attached text or MS Word™ document to abstracts@foodprotection.org.

Selection Criteria

1. Abstracts must accurately and briefly describe:
   (a) the problem studied and/or objectives;
   (b) methodology;
   (c) essential results; and
   (d) conclusions and/or significant implications.
2. Abstracts must report the results of original research pertinent to the subject matter. Papers should report the results of applied research on: food, dairy and environmental sanitation; foodborne pathogens; food and dairy microbiology; food and dairy engineering; food and dairy chemistry; food additives and residues; food and dairy technology; food service and food administration; quality assurance/control; mastitis; environmental health; waste management and water quality. Papers may also report subject matter of an educational and/or nontechnical nature.
3. Research must be based on accepted scientific practices.
4. Research should not have been previously presented nor intended for presentation at another scientific meeting. Papers should not appear in print prior to the Annual Meeting.
5. Results should be summarized. Do not use tables or graphs.

Rejection Reasons

1. Abstract was not prepared according to the "Instructions for Preparing Abstracts."
2. Abstract does not contain essential elements as described in "Selection Criteria."
3. Abstract reports inappropriate or unacceptable subject matter or is not based on accepted scientific practices, or the quality of the research or scientific approach is inadequate.
4. Work reported appears to be incomplete and/or data are not presented. Indication that data will be presented is not acceptable.
5. Abstract was poorly written or prepared. This includes spelling and grammatical errors.
6. Results have been presented/published previously.
7. Abstract was received after the deadline for submission.
8. Abstract contains information that is in violation of the International Association for Food Protection Policy on Commercialism for Annual Meeting Presentations.

Projected Deadlines/Notification

Abstract Submission Deadline: January 6, 2003. Submission Confirmations: On or before January 7, 2003. Acceptance/Rejection Notification: February 14, 2003.

Contact Information

Questions regarding abstract submission may be directed to Bev Corron, 515.276.3344 or 800.369.6337; E-mail: bcorron@foodprotection.org.

Program Chairperson

Lynn McMullen
University of Alberta
Agricultural, Food and Nutritional Science
4-10 Agriculture/Forestry Center
Edmonton, Alberta T6G 2P5 Canada
Phone: 780.492.6015
Fax: 780.492.8914
E-mail: lynn.mcmullen@ualberta.ca

Abstract Form

DEADLINE: Must be Received by January 6, 2003

(1) Title of Paper _____

_____

(2) Authors _____

_____

(3) Full Name and Title of Presenter _____

_____

(4) Institution and Address of Presenter _____

_____

(5) Phone Number _____

(6) Fax Number _____

(7) E-mail _____

(8) Format preferred: ☐ Oral ☐ Poster ☐ No Preference

The Program Committee will make the final decision on presentation format.

(9) Developing Scientist Awards Competition ☐ Yes Graduation date _____

Major Professor/Department Head approval (signature and date) _____

(10) TYPE abstract, DOUBLE-SPACED, in the space provided or on a separate sheet of paper, using a 12-point font size. Use no more than 250 words.

Call for Entrants in the Developing Scientist Awards Competitions

Supported by the International Association for Food Protection Foundation

The International Association for Food Protection is pleased to announce the continuation of its program to encourage and recognize the work of students and recent graduates in the field of food safety research. Qualified individuals may enter either the oral or poster competition.

Purpose

1. To encourage students and recent graduates to present their original research at the Annual Meeting.
2. To foster professionalism in students and recent graduates through contact with peers and professional Members of the Association.
3. To encourage participation by students and recent graduates in the Association and the Annual Meeting.

Presentation Format

Oral Competition — The Developing Scientist Oral Awards Competition is open to graduate students (enrolled or recent graduates) from M.S. or Ph.D. programs or undergraduate students at accredited universities or colleges. Presentations are limited to 15 minutes, which includes two to four minutes for discussion.

Poster Competition — The Developing Scientist Poster Awards Competition is open to students (enrolled or recent graduates) from undergraduate or graduate programs at accredited universities or colleges. The presenter must be present to answer questions for a specified time (approximately two hours) during the assigned session. Specific requirements for presentations will be provided at a later date.

General Information

1. Competition entrants cannot have graduated more than a year prior to the deadline for submitting abstracts.
2. Accredited universities or colleges must deal with environmental, food or dairy sanitation, protection or safety research.
3. The work must represent original research completed and presented by the entrant.
4. Entrants may enter only one paper in either the oral or poster competition.
5. All entrants must register for the Annual Meeting and assume responsibility for their own transportation, lodging, and registration fees.
6. Acceptance of your abstract for presentation is independent of acceptance as a competition finalist. Competition entrants who are chosen as finalists will be notified of their status by the chairperson by May 30, 2003.
7. All entrants with accepted abstracts will receive complimentary, one-year Association Membership, which includes their choice of *Dairy, Food and Environmental Sanitation* or *Journal of Food Protection*.
8. In addition to adhering to the instruction in the "Call for Abstracts," competition entrants must check the box to indicate if the paper is to be presented by a student in this competition. A signature and date is required from the major professor or department head.

Judging Criteria

A panel of judges will evaluate abstracts and presentations. Selection of up to five finalists for each competition will be based on evaluations of the abstracts and the scientific quality of the work. All entrants will be advised of the results by May 30, 2003. Only competition finalists will be judged at the Annual Meeting and will be eligible for the awards.

All other entrants with accepted abstracts will be expected to be present as part of the regular Annual Meeting. Their presentations will not be judged and they will not be eligible for the awards.

Judging criteria will be based on the following:

1. Abstract – clarity, comprehensiveness and conciseness.
2. Scientific Quality – Adequacy of experimental design (methodology, replication, controls), extent to which objectives were met, difficulty and thoroughness of research, validity of conclusions based upon data, technical merit and contribution to science.
3. Presentation – Organization (clarity of introduction, objectives, methods, results and conclusions), quality of visuals, quality and poise of presentation, answering questions, and knowledge of subject.

Finalists

Awards will be presented at the International Association for Food Protection Annual Meeting Awards Banquet to the top three presenters (first, second and third places) in both the oral and poster competitions. All finalists must be present at the banquet where the awards winners will be announced and recognized.

Awards

First Place – $500 and an engraved plaque
Second Place – $300 and a framed certificate
Third Place – $100 and a framed certificate

Award winners will also receive a complimentary, one-year Membership including *Dairy, Food and Environmental Sanitation* and *Journal of Food Protection*.

Policy on Commercialism

for Annual Meeting Presentations

1. INTRODUCTION

No printed media, technical sessions, symposia, posters, seminars, short courses, and/or other related types of forums and discussions offered under the auspices of the International Association for Food Protection (hereafter referred to as to Association forums) are to be used as platforms for commercial sales or presentations by authors and/or presenters (hereafter referred to as authors) without the express permission of the staff or Executive Board. The Association enforces this policy in order to restrict commercialism in technical manuscripts, graphics, oral presentations, poster presentations, panel discussions, symposia papers, and all other type submissions and presentations (hereafter referred to as submissions and presentations), so that scientific merit is not diluted by proprietary secrecy.

Excessive use of brand names, product names or logos, failure to substantiate performance claims, and failure to objectively discuss alternative methods, processes, and equipment are indicators of sales pitches. Restricting commercialism benefits both the authors and recipients of submissions and presentations.

This policy has been written to serve as the basis for identifying commercialism in submissions and presentations prepared for the Association forums.

2. TECHNICAL CONTENT OF SUBMISSIONS AND PRESENTATIONS

2.1 Original Work

The presentation of new technical information is to be encouraged. In addition to the commercialism evaluation, all submissions and presentations will be individually evaluated by the Program Committee chairperson, technical reviewers selected by the Program Committee chairperson, session convenor, and/or staff on the basis of originality before inclusion in the program.

2.2 Substantiating Data

Submissions and presentations should present technical conclusions derived from technical data. If products or services are described, all reported capabilities, features or benefits, and performance parameters must be substantiated by data or by an acceptable explanation as to why the data are unavailable (e.g., incomplete, not collected, etc.) and, if it will become available, when. The explanation for unavailable data will be considered by the Program Committee chairperson and/or technical reviewers selected by the Program Committee chairperson to ascertain if the presentation is acceptable without the data. Serious consideration should be given to withholding submissions and presentations until the data are available, as only those conclusions that might be reasonably drawn from the data may be presented. Claims of benefit and/or technical conclusions not supported by the presented data are prohibited.

2.3 Trade Names

Excessive use of brand names, product names, trade names, and/or trademarks is forbidden. A general guideline is to use proprietary names once and thereafter to use generic descriptors or neutral designations. Where this would make the submission or presentation significantly more difficult to understand, the Program Committee chairperson, technical reviewers selected by the Program Committee chairperson, session convenor, and/or staff, will judge whether the use of trade names, etc., is necessary and acceptable.

2.4 "Industry Practice" Statements

It may be useful to report the extent of application of technologies, products, or services; however, such statements should review the extent of application of all generically similar technologies, products, or services in the field. Specific commercial installations may be cited to the extent that their data are discussed in the submission or presentation.

2.5 Ranking

Although general comparisons of products and services are prohibited, specific generic comparisons that are substantiated by the reported data are allowed.

2.6 Proprietary Information (See also 2.2.)

Some information about products or services may not be publishable because it is proprietary to the author's agency or company or to the user. However, the scientific principles and validation of performance parameters must be described for such products or services. Conclusions and/or comparisons may be made only on the basis of reported data.

2.7 Capabilities

Discussion of corporate capabilities or experiences are prohibited unless they pertain to the specific presented data.

3. GRAPHICS

3.1 Purpose

Slides, photographs, videos, illustrations, art work, and any other type visual aids appearing with the printed text in submissions or used in presentations (hereafter referred to as graphics) should be included only to clarify technical points. Graphics which primarily promote a product or service will not be allowed. (See also 4.6.)

3.2 Source

Graphics should relate specifically to the technical presentation. General graphics regularly shown in, or intended for, sales presentations cannot be used.

3.3 Company Identification

Names or logos of agencies or companies supplying goods or services must not be the focal point of the slide. Names or logos may be shown on each slide so long as they are not distracting from the overall presentation.

3.4 Copies

Graphics that are not included in the preprint may be shown during the presentation only if they have been reviewed in advance by the Program Committee chairperson, session convenor, and/or staff, and have been determined to comply with this policy. Copies of these additional graphics must be available from the author on request by individual attendees. It is the responsibility of the session convenor to verify that all graphics to be shown have been cleared by Program Committee chairperson, session convenor, staff, or other reviewers designated by the Program Committee chairperson.

4. INTERPRETATION AND ENFORCEMENT

4.1 Distribution

This policy will be sent to all authors of submissions and presentations in the Association forums.

4.2 Assessment Process

Reviewers of submissions and presentations will accept only those that comply with this policy. Drafts of submissions and presentations will be reviewed for commercialism concurrently by both staff and technical reviewers selected by the Program Committee chairperson. All reviewer comments shall be sent to and coordinated by either the Program Committee chairperson or the designated staff. If any submissions are found to violate this policy, authors will be informed and invited to resubmit their materials in revised form before the designated deadline.

4.3 Author Awareness

In addition to receiving a printed copy of this policy, all authors presenting in a forum will be reminded of this policy by the Program Committee chairperson, their session convenor, or the staff, whichever is appropriate.

4.4 Monitoring

Session convenors are responsible for ensuring that presentations comply with this policy. If it is determined by the session convenor that a violation or violations have occurred or are occurring, he or she will publicly request that the author immediately discontinue any and all presentations (oral, visual, audio, etc.) and will notify the Program Committee chairperson and staff of the action taken.

4.5 Enforcement

While technical reviewers, session convenors, and/or staff may all check submissions and presentations for commercialism, ultimately it is the responsibility of the Program Committee chairperson to enforce this policy through the session convenors and staff.

4.6 Penalties

If the author of a submission or presentation violates this policy, the Program Committee chairperson will notify the author and the author's agency or company of the violation in writing. If an additional violation or violations occur after a written warning has been issued to an author and his agency or company, the Association reserves the right to ban the author and the author's agency or company from making presentations in the Association forums for a period of up to two (2) years following the violation or violations.

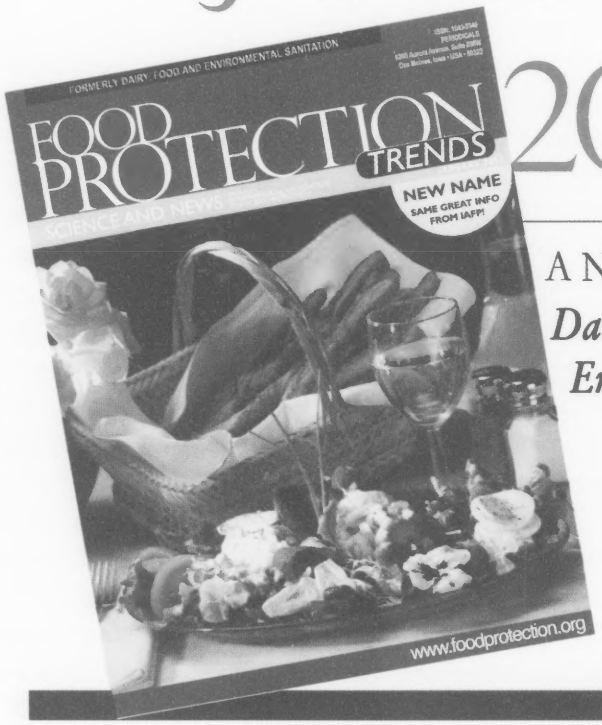
IAFP Foundation Fund Silent Auction Results

Item	Sponsor	Highest Bidder
1970 Children's Microscope Textbook	Anonymous	Henry Atherton
1999 Catacula Napa Valley Zinfandel Wine	California Affiliate	LeeAnne Jackson
1999 Diablo Grande Chardonnay Wine	California Affiliate	LeeAnne Jackson
1999 Handley Pinot Noir Anderson Valley Wine	California Affiliate	Fred Weber
Two Clubhouse Passes for Tiger Woods' Williams World Challenge	Dole Food Company, Inc.	Dawn Stead
2000 Bandiera Zinfandel Wine	California Affiliate	LeeAnne Jackson
2000 Barrel Select Chardonnay Wine	California Affiliate	Brooke Sumner
2000 Christopher Creek Zinfandel	California Affiliate	Fred Weber
2000 Field Stone Gewurztraminer Wine	California Affiliate	Ron Weiss
2000 Turning Leaf North Coast Pinot Noir	California Affiliate	Pat Johnson
2001 Bel Arbor White Zinfandel Wine	California Affiliate	Jerry Hickey
2001 Buehler Vineyards White Zinfandel	California Affiliate	Gaylord Smith
2001 Edna Valley Sauvignon Blanc	California Affiliate	Gaylord Smith
2001 Redwood Valley Merlot Wine	California Affiliate	LeeAnne Jackson
2001 United States Congressional Ornament	Jenny Scott	Renee Raiden
2003 IAFP Registration	IAFP	Jenny Scott
2003 IAFP Registration	IAFP	Pete Snyder
Amish Cookbook	Alice Haverland	Tom Schwarz
Amish Handcarved Winter Plaque	Harry and Helen Haverland	Ewen Todd
Amish Handcarved Wooden Blocks	Alice Haverland	Brian Himelbloom
Black Tahitian Pearl Necklace	David and Connie Tharp	Art Davis
Chicken Wall Hanging	Southern California Affiliate	Lynn McMullen
Cougar Gold Cheese	Washington Affiliate	Mark Bates
Cougar Gold Cheese	Washington Affiliate	Steve Bell
Detroit Red Wing Jersey	Michigan Affiliate	Paul Cray
Dole Memorobilia	Jennylynd James	Karen Killings Mann
Double Pewter Candle Stick	Korea Affiliate	Brian Himelbloom
FAFP Shirt	Florida Affiliate	Barb Beckman
FAFP Shirt	Florida Affiliate	Jennifer Johnson
FAFP Shirt	Florida Affiliate	Jenny Scott
FAFP Shirt	Florida Affiliate	Michael Sole
Food Microbiology: Fundamentals and Frontiers	American Society for Microbiology	Ewen Todd
Food Safety Information Handbook	Cindy Roberts	Ewen Todd
Foodborne/Waterborne Booklets	IAFP	Michael Lee

Item	Sponsor	Highest Bidder
Foodborne/Waterborne Booklets	IAFP	Rob Smith
Hand Crocheted Table Coverings	Harry and Helen Haverland	K. Rajkowski
Hand Crocheted Table Coverings	Harry and Helen Haverland	K. Rajkowski
Handcarved Limestone Bookends	Indiana Affiliate	Bob Delmore
Homedics Zen Garden	Ohio Affiliate	Katherine O'Rourke
IAFP Polo Shirt	IAFP	Bob Strong
IAFP Polo Shirt	IAFP	Lynn McMullen
IAMFES Shirt	Karla Jordan	Carmine Cappuccio
IAMFES Shirt	Karla Jordan	Carmine Cappuccio
Kitchen Towels with IAFP logo	Southern California Affiliate	Gordon Hayburn
Kitchen Towels with Zoo Animals	Southern California Affiliate	Bob Strong
Lionel Electric Train	Zep Manufacturing	Henry Atherton
Magnotta Wine/Trius Ice Wine	Schneider Foods	Jim Larken
Milky the Marvelous Milking Cow	Fred Weber	Mike Horwath
Missouri Ham	Missouri Affiliate	Dawn Stead
Oscar Mayer Remote Controlled Wiener Mobile	Paul Hall	Donna Garren
Oscar Mayer Remote Controlled Wiener Mobile	Paul Hall	Mark Kreul
Southern California Association Shirts	Southern California Affiliate	Bob Strong
Stadium Blanket with IAFP logo	Southern California Affiliate	Ewen Todd
Stadium Blanket with IAFP logo	Southern California Affiliate	Jenny Scott
Stars and Stripes Christa Bear	Jenny Scott	Derrick Blunden
Taste of Chicago Mini Pack	Illinois Affiliate	Lisa Weddig
Taste of Chicago Mini Pack	Illinois Affiliate	Sue Snider
Texas Central Market Gift Basket	Texas Affiliate	Sheila McDonagh
The ISO 9000 Quality System	Debby Newslow	Gordon Hayburn
The Sopranos – The Complete First Season – DVD Box Set	Metropolitan Affiliate	Renee Raiden
"Thinking Mickey" Statue	Walt Disney World Company	Donna Bahun
United States Flag from Capital	Capital Area Affiliate	Paul Hall
Waterford Crystal Vase	ISU Food Safety Research Lab	Harry Haverland
Wisconsin Master Cheesemakers Selection	Wisconsin Affiliate	Fred Weber
Wisconsin Master Cheesemakers Selection	Wisconsin Affiliate	Kathy Glass
Wooden Amish Scene	Kathy Jones	Ewen Todd
Zoo Wall Hanging	Southern California Affiliate	Brian Himelbloom

$2,945 Raised

COMING JANUARY 2003



A New Name for
Dairy, Food and Environmental Sanitation

New Members

CANADA

Bonnie Faukenberg
Epsilon Chemicals Ltd.
Edmonton, Alberta

Marie-Claude Lamontagne
Schneider Foods
St. Anselme, Quebec

Carl J. Pietraszko
Schneider Foods
St. Anselme, Quebec

Ralf Schnurbusch
Tiffany Gate Foods Inc.
Toronto, Ontario

George M. Znoj
Saputo Inc.
St. Leonard, Quebec

GREECE

Konstantinos Papageorgiou
Hellenic Army
Kalamaria, Thessaloniki

ITALY

Paola Battilani
Universita Cattolica Sacro Cuore
Piacenza

SPAIN

Rosa Capita
University of Leon
Ponferrada, Leon

TAIWAN

Jinn Chyi Wang
Tajen Institution of Technology
Yen-Pu, Ping-Tung

UNITED STATES

California

Brian J. Burnish
Hilmar Cheese Co.
Hilmar

Lisa A. Gorski
USDA-ARS
Albany

Sherman L. Mah
Certified Laboratories
Anaheim

Michael A. Tyndale
Oxoid Inc.
Escondido

Colorado

Steven D. Bengtson
USDA-FSIS
Boulder

Illinois

Ramya Raghavan
Illinois Institute of Technology
Summit-Argo

Kansas

Kelly J. K. Getty
Kansas State University
Manhattan

Minnesota

Tamara L. Wood
General Mills
St. Paul

Missouri

Beverly E. Pell
Bunge Foods Group
Mexico

North Carolina

Jarwin D. Hester
NC Division of Water Quality
Hillsborough

Tennessee

Jeffrey S. Boland
University of Tennessee
Knoxville

Washington

Charles D. Treser
University of Washington
Seattle

Crystal Verellen
WA State Dept. of Agriculture
Olympia

Wisconsin

Susan Hough
The Masterson Co.
Milwaukee

Eric P. Thomsen
Schoep's Ice Cream
Madison

UpDates

McKee Named New FSIS Administrator

FSIS has named Dr. Garry McKee its new administrator. Effective next month, McKee will take over from acting administrator William Hudnall, who has held the post for the past three months. McKee hails from the Wyoming Department of Health, where he has served as director and cabinet secretary for the last two years.

"Dr. McKee brings more than 30 years of public health experience to the administrator position," USDA Secretary Ann Veneman said. McKee served as chief of Oklahoma State Department of Health's Public Health Laboratory for 18 years. He also served as director of sanitary bacteriology for the department for two years. McKee has been a Lt. Commander in the US Public Health Reserve for the past ten years. He serves as a member of the National Public Health Anti-Terrorism Preparedness Task Force with the Association of State and Territorial Health Officials. Additionally, McKee has provided consulting to the Pan American Health Organization on development of laboratory training in Mexico and Guatemala.

McKee's experience is complemented by his extensive education in science and public health. McKee holds a Ph.D. in Microbiology from the University of Oklahoma. In addition, he earned M.S. degrees in public health and environmental science and a B.S. in biology from Southwestern Oklahoma State University. "His experience, combined with a solid record in managing public health programs and personnel will be a tremendous asset as USDA continues to protect the public health by strengthening food safety programs," said Veneman. "Dr. McKee will play an important and active leadership role at USDA as it strives to improve management, efficiency, accountability and responsiveness within FSIS," said Dr. Elsa Murano.

In its quest for improved efficacy, FSIS has made personnel changes as well as additions. Linda Swacina, former assistant administrator and director of the Congressional and Public Affairs Office, now serves as FSIS' associate administrator. Bill Smith, former field-based assistant deputy administrator, executive director and regional director, now serves as deputy administrator of FSIS' office of field operations. Dr. Karen Hulebak, former FSIS senior advisor for scientific affairs and chief scientist now serves as deputy administrator of the office of public health and science.

Hudnall will return to his former position with APHIS.

Burkholder Joins Steril-Aire, Inc. as Food Industry Sales Manager

Steril-Aire®, Inc., a manufacturer of UVC devices for microbial control in HVAC and food processing systems, has appointed Charles Burkholder to the newly created position of food industry sales manager.

Burkholder brings more than 20 years of food industry management experience to the company. He spent five years as corporate controller for Health Valley Company (now part of Hain Celestial Group), the country's leading natural foods company. Burkholder also served as general manager and controller for a major processor and distributor of honey products and other sweeteners. His capabilities range from financial and operations management to sales and customer service.

In his new post at Steril-Aire, Burkholder will be involved in sales, marketing, product and application development, and other activities targeting the food industry. Steril-Aire has created this new position to meet the growing demand for its UVC devices, which are used for mold and microbial control in food and beverage processing lines, air handling systems and other locations. The devices have earned numerous awards and patents for their proven abilities to improve product quality and yield, extend shelf life, improve indoor air quality, and reduce energy and maintenance costs.

Hollingsworth Named IFT President-Elect

C. Ann Hollingsworth, Ph.D., president of Better Built Foods of Carrollton, GA, has been elected president-elect of the Institute of Food Technologists as determined by a vote of its members.

Prior to her post with Better Built Foods, Hollingsworth served as vice president of food safety at Keystone Foods. Before that, she was director of research and development at Bil Mar Foods, after having served as research and development manager. Hollingsworth's career began as a research scientist at Armour Food Co.

Hollingsworth received a bachelor's degree in food science

from Auburn University in 1979, a master's degree from University of Nebraska in 1981, and a doctorate from University of Nebraska in 1984.

Silliker, Inc. Announces New Posts for Ainsworth and Hendrickson

Silliker, Inc., Homewood, IL, recently announced the appointments of Keith Ainsworth as director of its Minnetonka, MN, laboratory and Andrea Hendrickson as technical sales manager of its Cedar Rapids, IA, testing facility.

Prior to their new positions, Ainsworth served as Minnetonka chemistry operations manager and Hendrickson was a business development manager for Allied Starch & Chemical Inc. in Keokuk, IA. Both bring years of extensive industry experience to their posts.

Phillips, Soper Join the Impaxx, Inc. Senior Management Team

Effective immediately, Impaxx, Inc. has announced the appointment of Kenneth Phillips as vice president, chief financial officer and Thomas Soper III as vice president, chief growth officer.

Ken Phillips, as chief financial officer, will direct the financial operations of Impaxx, Inc. and its business units. He joins Impaxx from Intercontinental Art Inc., where he had served successively as chief financial officer, chief operating officer and chief executive officer since 1997. Phillips is a graduate of Dartmouth College with an MBA in finance from the University of Michigan.

Soper's responsibility will be to drive the growth of Impaxx by developing innovative new products, taking the company into new markets and ensuring that Impaxx has the requisite human capital to fulfill the growth and profit mission of the company. Corporate marketing, human resources and communications will report to him. Soper joins Impaxx from Schwinn/GT Corporation, where he had been senior vice president, corporate relations since 1998. He is an honors graduate of Widener University, founded in 1996.

Teresa Schulenberg Joins Fristam Pumps, Inc.

Fristam Pumps, Inc. is pleased to announce Teresa Schulenberg has joined the company as a customer service representative. In her new assignment, Teresa is responsible for aiding customers with technical support and customer service.

Consumer and Health Groups Call for Better Labeling of Common Food Allergens

"Plain Talk" labels will help save lives, according to health advocacy groups, which has called on Members of Congress to pass legislation requiring food manufacturers to label ingredients using simple, straightforward, and common sense wording that consumers can understand. The groups, which include the Food Allergy Initiative (FAI), Food Allergy & Anaphylaxis Network (FAAN) and the Center for Science in the Public Interest (CSPI), say that the bill recently introduced by Senators Edward M. Kennedy (D-MA) and Hillary Clinton (D-NY) would make it easier for those who suffer from life-threatening food allergies to avoid the most common allergens because ingredient labels are written for scientists, not consumers.

"Food manufacturers need to notify food allergic consumers in plain English if one or more of the eight most prevalent food allergens – eggs, milk, peanuts, nuts from trees, fish, shellfish, soy, and wheat – is in a food product so that the allergen can be avoided," said Todd J. Slotkin, Chairman of the Food Allergy Initiative and father of twins with peanut and tree nut allergies. "Improving ingredient labels is a necessary first step to prevent deaths and serious illness from allergic reactions to foods."

More than seven million Americans suffer from food allergies. Over 30,000 Americans are treated in emergency rooms around the country each year for ingesting allergenic food, and 200 people die as a result. Food allergies are extremely serious because even a minuscule amount of the wrong food can result in anaphylaxis, a rapid reaction to allergens that may result in brain damage or death.

Under current labeling rules, arcane words like "whey" and "sodium caseinate" can be used to indicate the presence of milk in a product, and "semolina" can be used to indicate wheat. Those who are allergic to milk, peanuts, tree nuts, fish, shellfish, eggs, soy, or wheat should be able to find those very words on food labels, say health advocates, and not have to hunt for one of a great number of technical terms now used by manufacturers.

A recent study at Mount Sinai School of Medicine demonstrated that after reading a series of labels only 7% of parents of children with milk allergy were able to correctly identify products that contained milk and 22% of parents of children with soy allergy were able to correctly identify products that contain soy. This is because over thirty different terms refer to milk and over fourteen terms refer to soy, like "miso" or "textured vegetable protein."

"I try very hard to eat only foods that I know are safe," said 11-year-old Sarah Gitlin, who is allergic to peanuts, tree nuts, and fish. "If a food might contain anything that I am allergic to, I avoid it. But who would guess that a common popcorn would use the words 'natural flavors' to mean peanuts?"

"It's now clear that the voluntary guidelines preferred by the food industry are insufficient to protect those Americans who suffer from common food allergens," said CSPI executive director Michael F. Jacobson. "If enacted, the Food Allergen Consumer Protection Act would go a long way to preventing needless hospitalizations and deaths each year."

Seeing the Light in Killing Bacteria and Viruses

Scientists have known for years that ultraviolet (UV) light is extremely potent in destroying harmful contaminants. Hospitals have long used it to sterilize surgical instruments and the air in operating rooms, and UV disinfection systems have been proven a safe alternative to hazardous chemicals such as chlorine in treating drinking water.

However, existing UV sources are expensive to operate, have limited power output, and are inefficient at producing light at the proper wavelength to be effective. Dr. Joseph Ametepe, assistant professor and chair of the physics department at Hollins University, believes he and other researchers have found a better way to deliver UV light.

"We have demonstrated that microwave-driven excimer sources consistently produce stable, uniform UV light over the useful wavelength range," says Ametepe. "These sources could be a simple, robust, and low-cost alternative to the UV lamps that are now available commercially."

Ametepe is expanding an existing small-scale UV lamp development project at Hollins. "With a microwave lamp system at Hollins," he says, "we are able to establish a broader base of work." Ametepe plans to further explore how excimer discharges of UV light can be applied to treating drinking water, food pasteurization (including its impact on *E. coli* bacteria), and

destroying airborne viruses and bacteria. He also hopes to expand his studies to examine the treatment of hazardous wastes and pollution with UV rays.

Edible Film Controls Growth of Bacteria on Chicken

An edible film consisting of two protein-based substances can prevent growth of *Listeria monocytogenes* bacteria on ready-to-eat chicken, creating a safer product for consumers, according to a University of Arkansas study. Using this method, food scientists Marlene Janes and Mike Johnson were able to reduce bacterial counts below detectable levels for 24 days. Their research will be published in an upcoming issue of the *Journal of Food Science*.

"Food production occurs in several stages, each of which provides potential opportunities for bacterial contamination," says Johnson. Chickens grown for commercial food production live in crowded conditions that are ideal for the spread of bacteria. Thorough cooking will kill most dangerous bacteria that evade safety measures in the food production chain. But pre-cooked foods may become re-contaminated between the cooking and final packaging steps. Ready-to-eat meals, kept in the refrigerator until needed, provide a niche for bacteria that thrive at low temperatures. *Listeria* bacteria, which can survive refrigeration and can contaminate foods such as deli meat and hot dogs, pose a special risk to children, the elderly, and pregnant women, often causing serious illness and miscarriage.

Along with Janes (now an assistant professor at Louisiana State University), Johnson explored a method that involves coating the food with an edible protein substance called zein, along with nisin, a natural biopreservative protein substance that kills bacteria. Johnson and Janes found that the resulting combination, which is harmless to humans, effectively kills *Listeria* bacteria that may re-contaminate foods between the cooking and packaging steps.

Johnson and Janes purchased chicken breast tenders from a local supermarket, cut them into 5-gram pieces, froze the pieces, and had them irradiated to eliminate bacteria. The researchers then cooked and cooled the chicken pieces, immersed them in *Listeria* cultures, and dipped them in solutions containing edible zein films with and without nisin. The researchers refrigerated their samples and determined bacterial counts after 0, 4, 8, 16 and 24 days. They found that the samples treated with zein and nisin showed significantly reduced bacterial counts compared to non-treated samples. The combination of zein with nisin and calcium propionate was the most effective, resulting in non-detectable levels of *Listeria* within 24 days when refrigerated at 4°C (40°F).

Johnson, coordinator for research programs at the Center for Food Safety and Quality in the University of Arkansas' Institute for Food Science and Engineering, sees food safety research as one of the primary purposes of a modern land-grant institution: to improve continuously the microbial safety of food production and processing practices from farm to fork. Americans enjoy one of the safest and most abundant food supplies in the world. Food production is mostly automated and large-scale. This incredible system delivers the ample quantity, staggering variety, and year-round availability that we have come to expect. Problems are rare, but when they do occur, the nature of mass production means that repercussions are widespread or even national in scope. Bacterial contamination anywhere in the production chain can cause serious human disease outbreaks, often scattered over a large geographical area.

The CDC estimates that foodborne disease causes 76 million illnesses, over 300,000 hospitalizations, and 5,000 deaths each year in the United States alone. Although most victims suffer only minor inconvenience, some of these diseases can be quite dramatic and even fatal. Changing consumer preferences for more fresh and ready-to-eat foods that are distributed refrigerated rather than frozen has coincided with an increase in cases of foodborne listeriosis. Between July 1998 and January 1999, *Listeria* outbreaks forced four companies to recall millions of pounds of ready-to-eat meat products. Innovative measures are needed to control this pathogen, minimizing the health risks and economic losses that can result from foodborne disease. Johnson and Janes' method should prove useful in reaching this goal.

What are some things consumers can do to protect themselves from the pathogenic bacteria that may inadvertently make their way through the food production process? Above all, raw poultry and raw ground meats should be thoroughly cooked, and utensils that have been in contact with raw meat should not be reused for raw salads, vegetables, or any other foods that are consumed without a cooking step. Refrigerated leftovers should be consumed within one or two days or frozen. Checking labels and storage

instructions is a commonsense practice worth turning into a habit: Johnson and his family pay special attention to expiration dates, especially those on deli meats and other pre-cooked foods. For Johnson and other food scientists, food safety is a matter of minimizing risks as much as possible, risks that will never completely go away.

Cooperation and openness among food producers, scientists, and consumers are the best ways to achieve the balance that will help us reduce the risks as much as we can and respond quickly and effectively to any problems that may arise. Pathogenic bacteria, tiny but formidable adversaries, demand eternal vigilance. "Even with our continued best efforts, we likely will be able to keep up with them, but maybe never get ahead of them," Johnson says.

National Grocery Retailer to Introduce First Fully Sanitized Ready-to-Eat Fresh Produce

In a decision that may revolutionize how we eat, the Houston-based Suntex Group, Ltd., announced that The Kroger Co. has agreed to offer Suntex Clean™ fully sanitized, ready-to-eat fresh produce in all 125 Houston-area Kroger stores. The Suntex Safety Wash System™ uses an FDA-approved process that hand sorts freshly harvested premium produce, then washes, brushes and sanitizes the produce without leaving a chemical residue. Finally, it is sealed in special protective packaging, so that consumers can literally eat the produce right off the shelf without any washing or cleaning at home.

Currently the Suntex Clean™ produce line includes potatoes, Fuji apples, Gala apples, tomatoes, oranges, peaches and nectarines. Other fresh produce items will be available soon including cantaloupe, grapefruit and red potatoes.

"The goal of Suntex Clean™ was to find a way to clean and protect our product all the way to the consumer's home without altering the flavor, nutritional value or integrity of the produce," said Blake La Grange, founder of the Suntex Group, Ltd.

Kroger decided to offer the Suntex Clean™ produce after a three-month pilot program and extensive market research in select Houston-area Kroger stores. "The customer response was enthusiastic," said La Grange. This follows a decision in January 2002 by the Food Safety Division of the United States military to offer Suntex Clean™ produce in its San Antonio commissaries as a pilot program. "The pilot program is leading Suntex Clean™ produce into 10 additional commissaries serviced out of Dallas this year with the potential of nationwide distribution thereafter," says La Grange.

Fresh Fruit Gets a New Protective Coat

Apples and citrus are about to get a uniform new coat. But it's not to keep the fruit warm on cold orchard nights. Instead, these coatings act as biofungicides that keep fruit fresh longer during storage. Agricultural Research Service (ARS) scientists have been working to improve earlier biofungicides aimed at controlling decay of fruits and vegetables after harvest. Such fungal decay can destroy more than 25 percent of the world's harvested fruit.

Biological products, such as friendly yeasts, are used for environmentally safe pest control and to reduce dependence on synthetic chemicals. They work by consuming nutrients on fruit and vegetable skins that otherwise would allow rot-causing fungi to grow. Charles L. Wilson, a plant pathologist with the ARS Appalachian Fruit Research Station, Kearneysville, WV, and Ahmed El Ghaouth, a postharvest plant pathologist employed by Micro Flo Co. of Memphis, TN, conducted research leading to two patents issued this year.

One of the two new patents discloses how chitosan, a natural fungicide, can be compatibly combined with an antagonistic yeast named *Candida saitoana* by adding a softener. Antagonistic yeast organisms are normally found on fruit and vegetable skins, but are benign to people. The other patent approved this year discloses a mixture of *C. saitoana* with lysozyme, an antifungal enzyme.

Development of postharvest biological products based on technology described in the patents is being furthered by Micro Flo, a subsidiary of the international chemical company BASF, through a cooperative research and development agreement. Micro Flo is pursuing the lysozyme and *C. saitoana* mixture to create a product named Biocure.

The annual worldwide market for postharvest treatments is currently more than 18 million for citrus and more than $8 million for apples, according to El Ghaouth.

Consumers Can Take Food Safety into Their Own Hands

With the potentially deadly foodborne *E. coli* bacteria back in the news, Washington State

University food safety experts say consumers can significantly reduce the risk of infection by taking food safety into their own hands. "The first step is to wash those hands thoroughly and often when preparing and cooking food," says Elaine Mayes, WSU Cooperative Extension agent in Spokane.

Last week ConAgra Beef recalled nearly 19 million pounds of ground beef suspected of being contaminated with *E. coli* O157:H7, the second largest ground beef recall in history. U.S. Department of Agriculture Undersecretary Elsa Murano has said, "We have no way of knowing for sure how much (recalled beef) is in consumers' hands." A recent *E. coli* outbreak that sickened dozens at Eastern Washington University in Cheney, WA appears to be unrelated to the ConAgra recall, according to a report in the Seattle Times.

"By following some basic food safety rules, including hand washing, consumers can significantly reduce their risk of *E. coli* and other foodborne infections," Mayes says. Hands should be washed with soap in warm running water for at least 20 seconds before handling any food and especially after handling raw meats, according to Mayes. In addition to personal hygiene, cooking meats to an internal temperature of at least 160°F will help assure that it's safe by killing any bacterial contamination, she said. "Using a meat thermometer is the best way to ensure that your meats are cooked adequately," she said. "The old rule of thumb that says if a hamburger is no longer pink in the middle it's thoroughly cooked doesn't work."

Research by USDA has shown that hamburgers may appear brown throughout before reaching 160 degrees, or remain pink after reaching 160 degrees. For hamburger and thin cuts of meat Mayes recommends a digital fast-read thermometer and inserting it from the side rather than the top to get an accurate reading. The reading should be taken in the middle of the thickest part of what you're cooking.

"If you get a temperature reading below 160 degrees, clean the thermometer before using it again," Mayes said. "That way you avoid the potential of reintroducing or spreading any bacteria that may be in the meat." Susan Adams, WSU King County Cooperative Extension nutritionist emphasizes the importance of kitchen cleanliness in addition to personal hygiene.

"In addition to washing your hands, always prepare food on clean surfaces and use clean utensils. Clean your utensils with hot, soapy water between uses, especially if you're using them with more than one food," Adams says. To quickly disinfect food preparation surfaces, use a solution of one teaspoon of chlorine bleach to a quart of water, and wipe or spray cutting boards and other surfaces with the solution. Leave it on the surface for at least two minutes, then rinse and air dry. Or use a commercial kitchen-sanitizing product.

Adams also warns about cross contamination of foods. "Avoid contact between raw meat or meat juices and other foods, and never prepare foods on cutting boards or other surfaces where raw meat has been that have not been thoroughly cleaned," she said. "Otherwise you risk transferring bacteria from one food to another."

Meat isn't the only vehicle for *E. coli* and other foodborne pathogens, according to Adams. "That's why it is important to rinse all fresh fruits and vegetables thoroughly before preparing or eating them. That significantly reduces any microorganisms that may be on the surface. Removing skins and rinds from fruits such as cantaloupe also reduces the possibility of carrying pathogens from the skin into the fruit when slicing it," Adams said.

Another major factor in reducing the risk of bacterial contamination of foods is to keep hot foods hot and cold foods cold, according to both Adams and Mayes. "Foods left at temperatures between 60 and 125°F are an ideal medium for bacteria, and they can multiply very rapidly. You should keep all perishable foods chilled below 40 degrees until you're ready to use them. If you have leftovers, refrigerate them as soon as possible," Mayes said."

Special precautions should be taken for certain people who are particularly susceptible to foodborne illnesses, specifically the very young, the elderly, pregnant women and people with compromised immune systems. More detailed information is available in the Cooperative Extension bulletin, "You Can Prevent Foodborne Illness" (Bulletin PNW 250) available through the WSU Cooperative Extension Bulletins Office for $1, plus $1 for shipping. To order, call toll-free at (800)723-1763 and request Bulletin PNW 250, or order online by visiting www.pubs.wsu.edu. An abbreviated version of the information contained in the bulletin also can be viewed at the Web site www.foodsafety.wsu.edu.

First Case of Enteritis Caused by *Yersinia Enterocolitica* Serogroup O:8, Biovar 1B in Germany

Constant vigilance is necessary to detect emerging pathogens and to find unknown reservoirs and routes of transmission, as illustrated by a severe case of Enteritis

in a small child reported in Germany's surveillance bulletin. On October 21, 2001 a 4 1/2 year old boy was admitted to the emergency department of the pediatric hospital in Bautzen-Bischofswerda in the German state of Saxony with a high fever (which he had had for three days). According to his mother, the child had been ill with diarrhea since about October 15; the family doctor had suspected a gastrointestinal infection, but symptomatic treatment had not resulted in any improvement.

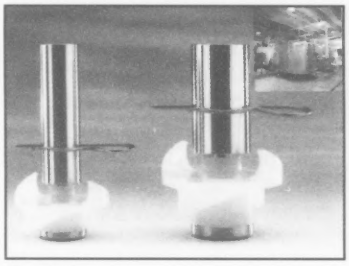
On admission the boy had a temperature of 40°C, which lasted for about four days. His abdomen was soft and intermittently sensitive to pressure. The child excreted large volumes of thin, slimy stools that had a strong smell. The other physical examination did not show anything of note. Laboratory investigations showed an accelerated blood sedimentation rate, leucocytosis and increased C-reactive protein during the first 4 days. Stool investigations performed on October 22 and 24 in the hospital laboratory found *Yersinia enterocolitica*; no salmonellas or shigellas were found. Antibody testing for the somatic (O) antigens O3 and O9 of *Y. enterocolitica* and a mixed antigen against *Y. pseudotuberculosis* were negative. Because of the continuing fever and copious diarrhea, intravenous treatment with a third generation cephalosporin was started, which resulted in the fever subsiding after only one day, and return to normal stools by October 26. On October 28 treatment was changed to an oral cephalosporin. Bacteriogical testing on October 29 was negative. The patient was discharged on November 1 well.

The *Yersinia* strain was sent for further testing to the laboratory of the state health authority in Dresden and *Y. enterocolitica* was confirmed. Further testing was undertaken in the national reference center for *Salmonella* and other enteric bacteria (Hygiene-Institute Hamburg) and found to be serotype O:8, biovar 1B, which had not been identified in Germany before. Molecular typing by amplification with polymerase chain reaction showed a virulence plasmid (high pathogenicity island, HPI) normally found in *Y. pestis*, and the strain proved highly virulent in mice. Immunoblotting identified antibodies YopD and V-antigen as well as immunoglobulin G antibodies against the proteins YopM, -H, -D, -E, and V-antigen in the patient's serum.

This strain is endemic in the United States and is identified on a regular basis as the causative agent of intestinal yersinioses. It has been isolated from sporadic cases in Japan. Strains belonging to serogroup O:8 have been identified in Europe, but they did not possess the virulence plasmid and were thus regarded as non-pathogenic. These strains can be confused with the pathogenic *Y. enterocolitica* O:8 serogroup if biotyping and testing for virulence factors are not undertaken. *Y. enterocolitica* O:8 has been reported occasionally from the Netherlands, but no isolates have been available. Isolates from Italy failed to show lethality on mice and the virulence plasmid.

The German case was the first in Europe to show the virulence and associated antibody response in the patient and may well be the first documented case of infection with the American strain of *Y. enterocolitica* O:8 biovar 1B in Europe. The patient's history did not reveal any travel abroad or obvious sources of infection. In clinical cases of infection with unusual serogroups of *Y. enterocolitica*—that is, those not belonging to the following sero/biovar groups (O:3, biovar 4; O:9, biovar 2; and O:5, 27, biovar 2 or 3), the isolates should be sent for confirmation and further typing to a national reference center.

Industry Products



Chemdet Inc.

Chemdet Inc. Sanitary Tank Washer Delivers Powerful Cleaning Action

Clipdisc clean-in-place (CIP) sanitary tank washers from advanced cleaning equipment resource Chemdet, Inc. feature an ultra hygienic, patented design that delivers a vigorous cleaning action in a high density 360° wash pattern at low flow rates to ensure the complete removal of cheese, whey and other byproducts from deep and enclosed make vats, finish vats and conveyors after manufacturing.

Engineered to meet rigorous USDA, FDA and 3-A material and designs standards for sanitary food and dairy processing, the maintenance-free Clipdiscs eliminate screw threads, ball bearing and other debris-entrapping orifices, boasting only one moving part, a chemically inert, food grade polyvinylidene fluoride (PVDF) disc that rotates on a 316 stainless steel shaft. The unique Clipdisc design utilizes the cleaning fluid to drive, hydraulically balance and lubricate the precision-shaped, food grade disc, eliminating ball bearings, reducing the potential for wear and extending operating life. By enabling the cleaning fluid to perform as the lubricant, the sanitary Clipdisc tank washers eliminate the need for grease or oil lubricants, delivering important safeguards against possible contamination and further reductions in maintenance costs.

The sanitary Clipdiscs channel the cleaning fluid through an internal water vane onto the disc, which instantly rotates, dispensing a sphere of heavy, fast moving droplets onto the entire internal surface of the vat simultaneously, including the inlet tube and connection. The Clipdiscs operate at pressures ranging from 20 to 60 psi and flow rates from 22 to 67 gpm with a cleaning radius from 6.5 to 7.5 feet and a wetting radius from 9.5 to 11 feet at operating temperatures up to 203°F and ambient temperatures up to 284°F.

Chemdet Inc., Port Washington, NY

Reader Service No. 277

Silver Lake Research Utilizes Proprietary Technology to Help Producers Combat Antibiotic Residue Violations

Close to half of all antibiotics used in the United States are used in agriculture. The growing fear that antibiotic use in animals is leading to increased antimicrobial resistance in bacteria and other health risks is causing consumers to increasingly question antibiotic use in meat animals. In 1997 alone, 12,400 head of cattle tested positive for antibiotic residues. Because of the random nature of the testing, it is possible that the actual number of undetected violations is much higher. Due to this growing concern about antibiotic use, Silver Lake Research is leveraging proprietary technology to develop MeatSafe®, a product line of antibiotic residue detection kits to assist beef and dairy producers in preventing residue violations in their animals

The MeatSafe® kits are simple, onsite, pre-slaughter urine tests that detect antibiotic residues in live animals. The 10-minute tests are designed for use in conjunction with antibiotic administration protocols, used by dairies and producers.

According to Tom Round, director of sales and marketing at Silver Lake Research, "Due to increasingly stringent FDA residue regulations, producers are now required to dispose of an entire beef carcass if it tests positive for antibiotic residue after slaughter. This can be a heavy financial loss for producers in an industry with increasingly thin profit margins." Round adds, "Our tests are designed as quick, easy- to-use, pre-slaughter preventative measures that can be easily incorporated into existing antibiotic administration protocols."

MeatSafe® includes tests for the two most common antibiotics: gentamicin, responsible for 38% of residue violations, and penicil-

lin, responsible for 20%. The product line also includes tests for other common antibiotics including ampicillin, amoxicillin, cloxacillin, and hetacillin.

Round notes that in today's marketplace, a pro-active approach to antibiotic residue is vital, "With scientific evidence linking drug residues in meat to allergic reactions and possible illness in humans, producers need to ensure that their animals are clean. We're seeing large fines and jail sentences for repeat offenders."

Silver Lake Research, Monrovia, CA

Reader Service No. 278

Eriez Magnetics' Metal Detector Protects Equipment from Large Damaging Tramp Metal

Eriez' Megatec™ Model 1220 metal detector is a rugged, lightweight and compact unit designed for coal, coke, aggregate plants and many other processing facilities where larger pieces of metal must be detected. The Megatec™ fits on most standard CEMA conveyors with belt widths of 24 to 48 inches (609 to 1,219 mm) and has an adjustable aperture height of 22 inches (559 mm) accommodating a maximum burden depth of 18 inches (457 mm).

Most coal, coke and aggregate type plants need to protect downstream equipment (e.g. crushers, grinders) from large damaging tramp metal. This detection system operates by measuring the change in the received electromagnetic signal of material being conveyed through the opening in the metal detector. If the signal is larger than the detector threshold of the metal detector, a detection will occur. Smaller metal pieces will pass, undetected ensuring nuisance interruptions to the operation.

The coils, encased in high-strength fiberglass, are supported by fiberglass vertical uprights. The Megatec™ Detector features a 25-foot (7.62 m) long cable, all solid-state integrated circuits, has uniform sensitivity and is immune to the effects of ambient temperature and humidity. It accommodates conveyor speeds from 60 to 1,000 fpm.

Eriez Magnetics, Erie, PA

Reader Service No. 279

GrayWolf Sensing Solutions

DirectSense TOX from GrayWolf Sensing Solutions

GrayWolf Sensing Solutions introduces an innovative new toxic gas monitor that utilizes the power of pocket PC and handheld PC computers.

Mix or match up to 5 gas sensors (plus temperature) from a choice of nitrogen fioxide, mitric oxide, sulfur dioxide, hydrogen sulfide, hydrogen cyanide, ethylene oxide, oxygen, ammonia, chlorine, carbon monoxide and more.

GrayWolf's WolfSense™ application software allows for a clear real-time display of up to 7 simultaneous measurements on a mobile computer, plus instantaneous data-logging and long-term trending. In addition, data file association of text, graphic, audio, photo, CAD/CAM and calibration notes results in efficient and detailed documentation of surveys. Sensor tips are available at the tap of the tactile screen, and industry/application relevant Word documents and web links are also included.

Additional probes are available for thermal comfort and indoor air quality applications.

GrayWolf Sensing Solutions, Trumbull, CT

Reader Service No. 280

Sensotec Clamp-on Torque Sensor Converts Your Shaft into a Rotary Torque Sensor in Fifteen Minutes

The new Model 1650B Rotary Torque Sensor literally clamps onto the drive train and, within 15 minutes, converts the shaft into a rotary torque transducer ready to take measurement data.

This unique 16508 System avoids the need to break into the drive train to install an in-line torque cell; it eliminates the need for skilled personnel to cement strain gauges onto the shaft, and does not require the installation of maintenance-intensive slip rings.

The 16508 clamp on sensor assembly comes pre-calibrated. Installation only requires the user to clamp on the two halves of the sensor shell, position the antenna and connect the wireless receiver. There is nothing to wear out, maintenance is virtually eliminated.

This rotary torque transducer is ideal for proving trials or commissioning of driver/driven transmission trains to ensure design criteria are met or that drive trains are not overloaded. The 16508 Rotary Torque Sensor can be used for temporary or permanent installations. It is immune to oil, dirt and water, making it ideal for most industrial applications. The unit is available for shaft diameters from 2.5 inches to 15 inches and can be used at shaft speeds up to 2,500 rpm.

Sensotec Company, Columbus, OH

Reader Service No. 281

New Label-Aire® Model 3125 Labeler is Built for Speed, Accuracy and Nonstop Productivity

The new Model 3125 wipe-on labeler from Label-Aire applies pressure-sensitive labels at speeds of up to 2,500 inches (6,350 cm) of web per minute. Even at top speed, the labeler's advanced Automatic Speed Following (ASF) feature automatically matches its speed to varying product input speed to ensure accurate labeling up to 1/64 inch (0.4 mm).

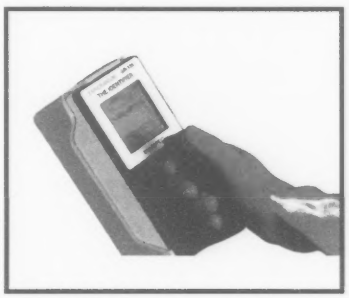
Label-Aire designed the Model 3125 to be operator-friendly as well as productive, providing it with such advanced features as automatic label set-up, zero downtime labeling and a large R3 digital controller display that is easily readable, rotates for operator viewing from any position, and can be set up for remote viewing.

Automatic labeling set-up enables operators to pre-program Model 3125 for multiple label sizes and configurations for quick production changeover. The R3 digital display offers five user-selectable languages (English, French, German, Spanish, and Italian) as well as the choice of domestic or CE (European) configurations and standard or metric units, equipping the new labeler for global use.

The Model 3125 requires a small footprint, making it convenient to install into existing lines: height 34 inches (86.4 cm); length (36.5 inches (92.7 cm); width 23 inches (58.4 cm). The unit weights 160 pounds and operates on 115 volts AC power.

Label-Aire, Fullerton, CA

Reader Service No. 282



Nuclear Associates, Inc.

The "Identifier" Multi-Channel Analyzer from Nuclear Associates

The Identifier Multi-Channel Analyzer from Nuclear Associates is ideal for situations where ease of use and simplicity are desirable for field operations. The Identifier provides a simple "in the hand, one thumb" operation for determining the source of radiation contamination.

According to Frank Talbot, nuclear medicine product manager, "As medical facilities and emergency service providers struggle in today's multi-threat environment, the Identifier fills the need for a convenient, easy-to-operate, search tool, dose meter and multi-channel analyzer. We see this as not only being used in the Nuclear Medicine Lab but in emergency rooms, hospital rooms or any public area where radiation contamination is an issue."

The Identifier fulfills all gamma/neutron radiation detection requirements for a multitude of industries: emergency response teams, customs security organizations, first responders, fire brigades, police, military forces, health care institutions, federal and state regulators, nuclear power facilities and the list goes on and on.

The Identifier (Models 07-109-2000, -3000, -4000) comes equipped with a docking station. While resting on the docking station, continuous automatic system stabilization and internal battery recharging takes place. An LED display, located at the base of the station, keeps you informed of its status.

Housed in the docking station of the Identifier (Models 07-109-2000, -3000, -4000) is a convenient internal RS-232 communication support for automatic download of stored dose, survey and sample spectrum to PC IdentiVIEW software.

Nuclear Associates, Hicksville, NY

Reader Service No. 283

Columbus Instruments' Pegas 4000MF Gas Mixer

New Pegas 4000MF Gas Mixer allows precision mixing of up to 4 gases utilizing precision mass flow controllers, which make gas mixture independent of temperature or gas pressure. Gas Mixer operates under control of an internal microprocessor. To set up the gas mixture, user has to enter total mixed gas flow and concentration for each gas component utilizing a four-buttoned keypad and LCD front panel display. Alternatively, the mixer can operate under control of a PC communicating with the mixer via RS-232 COM port.

Gas flow ranges for mass flow controllers are available in the range 100 ml to 20 L/min.

Flow controllers accuracy is 1% with repeatability 0.2% full scale and require input gas pressures at 30 psi. Front panel gas flow meter (rotameter) confirms level of out put gas mixture flow.

Pegas 4000MF gas mixer is intended for a variety of industrial and research application where precision mixture of gases are required and where remote computer control of mixed gas is desirable. Gas mixer dimensions are 33 cm × 29 cm × 19 cm and weighs 14lbs (6.4 kg).

Columbus Instruments, Columbus, OH

Reader Service No. 284

Silliker Expands GMO Testing Offer with DuPont Qualicon BAX® System

Silliker, Inc. and DuPont Qualicon Inc. announced the establishment of a global licensing agreement for Silliker to become the exclusive independent laboratory provider of Qualicon BAX® System PCR Assay for Genetically Modified Organisms (GMO).

The agreement gives Silliker rights to provide food and feed industry companies with Qualicon's unparalleled technological expertise for the screening and quantification of GMOs. Exact terms of the agreement were not disclosed.

Qualicon's BAX system is the leading technology for detection of GMO in raw commodities and minimally processed foods like flour and protein concentrate. Starting in July 2002, Silliker will add the BAX PCR for GMO system to its new state-of-the-art GMO laboratories in Cedar Rapids, IA and Cergy, France, a suburb of Paris, with the potential to offer the tests in other international Silliker labs.

The BAX® technology detects: general qualitative (targets the 35S promoter gene), crop specific qualitative (Cry9C and GA-21), and quantification for corn and soy (also targets 35S).

Silliker will continue to offer real time PCR GMO testing using an extraction technique licensed from the Danone Group, a European food company. Danone's former biotechnology lab developed the sensitive extraction protocol, which is valued for use on highly processed food products.

Silliker, Inc., Homewood, IL

Reader Service No. 285

Simplified Color Measurement of Food Products from HunterLab

HunterLab introduces the new ColorQuest® XE-Touch, the self-contained transmittance/reflectance spectrophotometer. It measures the transmitted and reflected color of food products. In addition to L,a,b color, metrics such as APHA (Hazen), Saybolt, Gardner Scale, ASTM D 1500, Yellowness Index, Whiteness Index, and Transmission Haze can be quantitated.

ColorQuest XE-Touch uses a large LCD display that is back-lit and can be read in any lighting environment. The display has a touch screen that facilitates ease of operation and saves bench space. An alphanumeric keypad displayed on the touch screen simplifies sample ID and data entry. The instrument has a large sample compartment that is open on three sides for easy access. ColorQuest XE-Touch can also be used with a PC and HunterLab's Universal® color quality control software or its data can be output directly to a printer.

Hunter Associates Laboratory, Inc., Reston, VA

Reader Service No. 286

Keep Food Safe From Bacteria®

FIGHT BAC!®

Why Participate?

The FIGHT BAC!® campaign is one of the most far-reaching and ambitious public education efforts ever to focus on safe food handling. It was created by the Partnership for Food Safety Education, a unique coalition of industry, government and consumer groups. FIGHT BAC!® will help consumers who have poor knowledge of basic sanitation and food preparation take steps to greatly reduce their risks of foodborne illness. Join this effort and you can help close the gap! For information on joining the FIGHT BAC!® campaign, contact: The Partnership for Food Safety Education, Phone: 202.544.5927; E-mail: info@fightbac.org; Web site: www.fightbac.org.

Coming Events

NOVEMBER

·4-5, GMP Workshop for Packaging Supplier, Manhattan, KS. For additional information, call A1B at 785.537.4750.

·4-6, Basic HACCP, University of California-Davis, Davis, CA. For additional information, contact Jennifer Epstein at 202.637.4818; E-mail: jepstein@nfpa-food.org.

·4-7, Better Process Control School, Rutgers, The State University of New Jersey, New Brunswick, NJ. For additional information, call 732.932.9271.

·7-8, Advanced HACCP, University of California-Davis, Davis, CA. For additional information, contact Jennifer Epstein at 202.637.4818; E-mail: jepstein@nfpa-food.org.

·8-9, Mexico Association for Food Protection Annual Fall Meeting, Mission Carlton Hotel, Guadalajara, Mexico. For more information, contact Lydia Mota De La Garza at 01.5794.0526.

·9-13, American Public Health Association's 130th Annual Meeting, Philadelphia, PA. For more information, call 514.228.3009.

·18-19, HACCP I: Documentating your HACCP Prerequisite Program, Guelph, Ontario, Canada. For more information, contact Marlene Inglis at 519.821.1246; E-mail: gftc@gftc.ca.

·18-20, HACCP: A Basic Concept for Food Protection, Rutgers, The State University of New Jersey, New Brunswick, NJ. For additional information, call 732.932.9271.

·20-21, Alabama Association for Food Protection Annual Meeting, Holiday Inn-Homewood, Birmingham, AL. For more information, contact G. M. Gallaspy at 334.206.5375.

·20-22, HACCP II: Development of Your HACCP Plan, Guelph Food Technology Centre, Guelph, Ontario, Canada. For more information, call Marlene Inglisat 519.821.1246; E-mail: minglis@gftc.ca.

DECEMBER

·9-11, SQF HACCP/Quality Code Extension, Guelph Food Technology Centre, Guelph, Ontario, Canada. For more information, call Marlene Inglis at 519.821.1246; E-mail: minglis@gftc.ca.

·16-18, Microbiology III: Foodborne Pathogens. Guelph Food Technology Centre, Guelph, Ontario, Canada. For more information, call Marlene Inglis at 519.821.1246; E-mail: minglis@gftc.ca.

JANUARY

·26-29, National Mastitis Council 42nd Annual Meeting, Fort Worth, TX. For more information, call 608.224.0622.

ADVERTISING INDEX

Career Services Section

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Assistant Professor – Food Science and Human Nutrition (# 023161)

Area of interest: Consumer Food Safety

Qualifications: Ph.D. in food science or closely related area. Demonstrated interest and skill in developing an applied research program. Must have excellent verbal/written communication skills. Prior experience in government, industry or education in food safety, local food systems, micro-enterprise food processing, or new product development preferred.

Send application to: Dr. Lester A. Wilson, c/o Andrew Hug, 220 MacKay Hall, ISU, Ames, IA 50011-1120. 515-294-6507.

Assistant/Associate Professor — Hotel, Restaurant and Institution Management (#023421)

Area of interest: Foodservice Management

Additional Responsibilities: Maintain/update the food safety websites

Qualifications: Ph.D. (one degree in foodservice/hospitality management); foodservice experience; written and oral communication skills. Rank dependent on teaching, research, and publications. Experience in Extension and website development preferred.

Send application to: Dr. Janice Dana, 1055 LeBaron Hall, ISU, Ames, IA 50011-1120. 515-294-7474.

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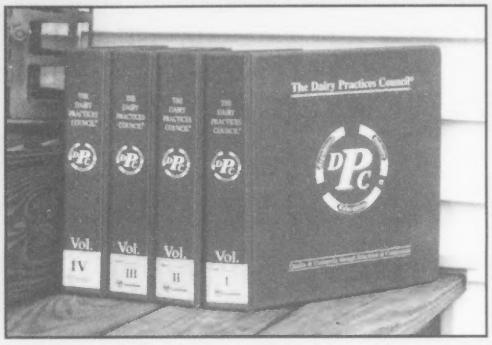

IAFP Offers "Guidelines for the Dairy Industry" from The Dairy Practices Council®

This newly expanded Four-volume set consists of 66 guidelines.

1 Planning Dairy Freestall Barns
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3 Selected Personnel in Milk Sanitation
4 Installation, Cleaning, & Sanitizing of Large Parlor Milking Systems
5 Directory of Dairy Farm Building & Milking System Resource People
6 Natural Ventilation for Dairy Tie Stall Barns
7 Sampling Fluid Milk
8 Good Manufacturing Practices for Dairy Processing Plants
9 Fundamentals of Cleaning & Sanitizing Farm Milk Handling Equipment
10 Maintaining & Testing Fluid Milk Shelf-Life
11 Sediment Testing & Producing Clean Milk
12 Tunnel Ventilation for Dairy Tie Stall Barns
13 Environmental Air Control and Quality for Dairy Food Plants
14 Clean Room Technology
15 Milking Center Wastewater
16 Handling Dairy Products from Processing to Consumption
17 Prevention of & Testing for Added Water in Milk
18 Fieldperson's Guide to High Somatic Cell Counts
21 Raw Milk Quality Tests
22 Control of Antibacterial Drugs & Growth Inhibitors in Milk and Milk Products
23 Preventing Rancid Flavors in Milk
24 Troubleshooting High Bacteria Counts of Raw Milk
25 Cleaning & Sanitation Responsibilities for Bulk Pickup & Transport Tankers
27 Dairy Manure Management From Barn to Storage
28 Troubleshooting Residual Films on Dairy Farm Milk Handling Equipment
29 Cleaning & Sanitizing in Fluid Milk Processing Plants
30 Potable Water on Dairy Farms
31 Composition & Nutritive Value of Dairy Products
32 Fat Test Variations in Raw Milk
33 Brucellosis & Some Other Milkborne Diseases
34 Butterfat Determinations of Various Dairy Products
35 Dairy Plant Waste Management
36 Dairy Farm Inspection
37 Planning Dairy Stall Barns
38 Preventing Off-Flavors in Milk
39 Grade A Fluid Milk Plant Inspection
40 Controlling Fluid Milk Volume and Fat Losses
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53 Vitamin Fortification of Fluid Milk Products
54 Selection of Elevated Milking Parlors
55 Hazard Analysis Critical Control Point System - HACCP For The Dairy Industry
56 Dairy Product Safety (Pathogenic Bacteria) for Fluid Milk and Frozen Dessert Plants
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58 Sizing Dairy Farm Water Heater Systems
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72 Farmers Guide To Somatic Cell Counts In Goats
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80 Food Allergen Awareness In Dairy Plant Operations
83 Bottling Water in Fluid Milk Plants

IAFP has agreed with The Dairy Practices Council to distribute their guidelines. DPC is a non-profit organization of education, industry and regulatory personnel concerned with milk quality and sanitation throughout the United States. In addition, its membership roster lists individuals and organizations throughout the world.

For the past 32 years, DPC's primary mission has been the development and distribution of educational guidelines directed to proper and improved sanitation practices in the production, processing, and distribution of high quality milk and milk products.

The DPC Guidelines are written by professionals who comprise six permanent task forces. Prior to distribution, every guideline is submitted for approval to the state regulatory agencies in each member state. Should any official have an exception to a section of a proposed guideline, that exception is noted in the final document.

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