VOL. 23, NO. 5
ISSN: 1541-9576
PERIODICALS
6200 Aurora Avenue•Suite 200W
Des Moines, Iowa•USA•50322-2864

FOOD PROTECTION TRENDS

SCIENCE AND NEWS FROM THE INTERNATIONAL ASSOCIATION FOR FOOD PROTECTION

MAY 2003

www.foodprotection.org

IAFP 2003

Together we are

Advancing Food Safety Worldwide!

The Leading Food Safety Conference!

Food safety is critical in today's world. Join your colleagues at IAFP 2003 to expand your knowledge and see the latest developments in food safety and technology.

Visit the IAFP Web site for online registration and program details.

www.foodprotection.org

ABOUT THE COVER...

Photo courtesy of New Orleans Metropolitan Convention and Visitors Bureau, Inc.

Use of this photo does not imply endorsement of any product by the International Association for Food Protection.

International Association for Food Protection

FOOD PROTECTION TRENDS

VOLUME 23, NO. 5

ARTICLES

ASSOCIATION NEWS

DEPARTMENTS

EXTRAS

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

FOOD PROTECTION TRENDS
SCIENCE AND NEWS FROM THE INTERNATIONAL ASSOCIATION FOR FOOD PROTECTION

Food Protection Trends (ISSN-1541-9576) is published monthly beginning with the January number by the International Association for Food Protection, 6200 Aurora Avenue, Suite 200W, Des Moines, Iowa 50322-2864, USA. Each volume comprises 12 numbers. Printed by Heuss Printing, Inc., 911 N. Second Street, Ames, Iowa 50010, USA. Periodical Postage paid at Des Moines, Iowa 50318 and additional entry offices.

Manuscripts: Correspondence regarding manuscripts should be addressed to Donna A. Bahun, Production Editor, International Association for Food Protection.

News Releases, Updates, Coming Events and Cover Photos: Correspondence for these materials should be sent to Donna A. Bahun, Production Editor, International Association for Food Protection.

"Instructions for Authors" may be obtained from our Web site at www.foodprotection.org or from Donna A. Bahun, Production Editor, International Association for Food Protection.

Orders for Reprints: All orders should be sent to *Food Protection Trends*, International Association for Food Protection. Note: Single copies of reprints are not available from this address; address single copy reprint requests to principal author.

Reprint Permission: Questions regarding permission to reprint any portion of ***Food Protection Trends*** should be addressed to: Donna A. Bahun, Production Editor, International Association for Food Protection.

Business Matters: Correspondence regarding business matters should be addressed to Lisa K. Hovey, Managing Editor, International Association for Food Protection.

Membership Dues: Membership in the Association is available to individuals. Dues include a 12-month subscription to ***Food Protection Trends*** at a rate of $95.00 US, $105.00 Canada/Mexico, and $120.00 International. Dues including ***Food Protection Trends*** and the ***Journal of Food Protection*** are $165.00 US, $190.00 Canada/Mexico, and $235.00 International. Student memberships are available with verification of student status. Student rates are $47.50 US, $57.50 Canada/Mexico, and $72.50 International for ***Food Protection Trends***; $47.50 US, $62.50 Canada/Mexico, and $92.50 International for ***Journal of Food Protection***; and $82.50 US, $107.50 Canada/Mexico, and $152.50 International for ***Food Protection Trends*** and ***Journal of Food Protection***. All membership dues include shipping and handling. No cancellations accepted. Correspondence regarding changes of address and dues must be sent to Julie A. Cattanach, Membership Services, International Association for Food Protection.

Sustaining Membership: Three levels of sustaining membership are available to organizations. For more information, contact Julie A. Cattanach, Membership Services, International Association for Food Protection.

Subscription Rates: ***Food Protection Trends*** is available by subscription for $210.00 US, $220.00 Canada/Mexico, and $235.00 International. Single issues are available for $26.00 US and $35.00 all other countries. All rates include shipping and handling. No cancellations accepted. For more information contact Julie A. Cattanach, Membership Services, International Association for Food Protection.

Claims: Notice of failure to receive copies must be reported within 30 days domestic, 90 days outside US.

Postmaster: Send address changes to ***Food Protection Trends***, 6200 Aurora Avenue, Suite 200W, Des Moines, Iowa 50322-2864, USA.

Food Protection Trends is printed on paper that meets the requirements of ANSI/NISO 239.48-1992.

Future Annual Meetings

IAFP 2003

AUGUST 10-13

Hilton New Orleans Riverside
New Orleans, Louisiana

IAFP 2004

AUGUST 8-11

JW Marriott Desert
Ridge Resort
Phoenix, Arizona

IAFP 2005

AUGUST 14-17

Baltimore Marriott
Waterfront Hotel
Baltimore, Maryland

IAFP 2006

AUGUST 13-16

Telus Convention Centre
Calgary, Alberta, Canada

International Association for Food Protection

FOOD PROTECTION TRENDS

"The mission of the Association is to provide food safety professionals worldwide with a forum to exchange information on protecting the food supply."

Associations Make A Better World

FPT EDITORIAL BOARD

SUSTAINING MEMBERS

Sustaining Membership provides organizations and corporations the opportunity to ally themselves with the International Association for Food Protection in pursuit of Advancing Food Safety Worldwide. This partnership entitles companies to become Members of the leading food safety organization in the world while supporting various educational programs that might not otherwise be possible. Organizations who lead the way in new technology and development join IAFP as Sustaining Members.

GOLD

DuPont Qualicon
Wilmington, DE
302.695.5300

Kraft Foods North America
Glenview, IL
847.646.3678

SILVER

bioMérieux, Inc.
Hazelwood, MO
800.638.4835

F & H Food Equipment Co.
Springfield, MO
417.881.6114

MATRIX MicroScience, Inc.
Golden, CO
303.277.9613

Quality Flow Inc.
Northbrook, IL
847.291.7674

Silliker, Inc.
Homewood, IL
708.957.7878

Weber Scientific
Hamilton, NJ
609.584.7677

SUSTAINING

3-A Symbol Council, Lawrenceville, GA; 770.554.8923

3M Microbiology Products, St. Paul, MN; 612.733.9558

ABC Research Corporation, Gainesville, FL; 352.372.0436

AgriLink Foods, Inc., Green Bay, WI; 920.435.5301

ASI Food Safety Consultants, Inc., St. Louis, MO; 800.477.0778

BD Diagnostic Systems, Sparks, MD; 410.316.4467

Bentley Instruments, Inc., Chaska, MN; 952.448.7600

BioControl Systems, Inc., Bellevue, WA; 425.603.1123

Biolog, Inc., Hayward, CA; 510.785.2564

SUSTAINING MEMBERS

Bio-Rad Laboratories, Hercules, CA; 510.741.5653

Capitol Vial, Inc., Tucson, AZ; 800.688.9515

Capitol Wholesale Meats, Chicago, IL; 773.890.0600

DARDEN Restaurants, Inc., Orlando, FL; 407.245.5330

Decagon Devices, Inc., Pullman, WA; 509.332.2756

Deibel Laboratories, Inc., Lincolnwood, IL; 847.329.9900

DonLevy & Associates, Inc., Merrillville, IN; 219.736.0472

Dynal Biotech, Inc., Lafayette Hill, PA; 866.DYNALTT

DSM Food Specialties, Menomonee Falls, WI; 262.255.7955

DQCI Services, Inc., Mounds View, MN; 763.785.0484

EMD Chemicals Inc., Gibbstown, NJ; 856.423.6300

Ecolab, Inc., St. Paul, MN; 612.293.2364

Electrol Specialties Co., South Beloit, IL; 815.389.2359

Evergreen Packaging, Division of International Paper, Cedar Rapids, IA; 319.399.3236

FoodHandler, Inc., Westbury, NY; 800.338.4433

Food Processors Institute, Washington, D.C.; 800.355.0983

Food Safety Net Services, Ltd., San Antonio, TX; 210.384.3424

Foss North America, Inc., Eden Prairie, MN; 952.974.9892

Georgia-Pacific Technology Center, Palatka, FL; 386.312.1184

IBA, Inc., Millbury, MA; 508.865.6911

International BioProducts, Inc., Bothell, WA; 425.398.7993

International Dairy Foods Association, Washington, D.C.; 202.737.4332

International Fresh-cut Produce Association, Alexandria, VA; 703.299.6282

Iowa State University Food Microbiology Group, Ames, IA; 515.294.4733

JohnsonDiversey, Sharonville, OH; 513.956.4889

LABPLAS Inc., Ste-Julie, Quebec, Canada; 450.649.7343

Marine BioProducts International, Delta, British Columbia, Canada; 604.523.2400

Michelson Laboratories, Inc., Commerce, CA; 562.928.0553

Nasco International, Inc., Fort Atkinson, WI; 920.568.5536

The National Food Laboratory, Inc., Dublin, CA; 925.551.4231

National Food Processors Association, Washington, D.C.; 202.639.5985

Nelson-Jameson, Inc., Marshfield, WI; 715.387.1151

Neogen Corporation, Lansing, MI; 517.372.9200

Nestlé USA, Inc., Glendale, CA; 818.549.5799

NSF International, Ann Arbor, MI; 734.769.8010

Oxoid, Inc., Nepean, Ontario, Canada; 800.267.6391

Penn State University, University Park, PA; 814.865.7535

The Procter & Gamble Co., Cincinnati, OH; 513.983.8349

Purification Research Technologies Inc., Guelph, Ontario, Canada, 519.766.4169

REMEL, Inc., Lenexa, KS; 800.255.6730

Rhodia Inc., Madison, WI; 800.356.9393

Ross Products, Columbus, OH; 614.624.7040

rtech™ laboratories, St. Paul, MN; 800.328.9687

Seiberling Associates, Inc., Dublin, OH; 614.764.2817

Strategic Diagnostics Inc., Newark, DE; 302.456.6789

United Fresh Fruit & Vegetable Association, Alexandria, VA; 703.836.3410

Warren Analytical Laboratory, Greeley, CO; 800.945.6669

West Agro, Inc., Kansas City, MO; 816.891.1558

WestFarm Foods, Seattle, WA; 206.286.6772

Zep Manufacturing Company, Atlanta, GA; 404.352.1680

"THOUGHTS FROM THE PRESIDENT

By ANNA M. LAMMERDING
PRESIDENT

"There is no one person nor just one event that is entirely responsible for compromising the safety of the food we eat"

Life sometimes presents ridiculous, but very apt, analogies.

I realize I will now be admitting some lapses in my housekeeping qualifications, but I suspect I am not alone in the crowd (addressing both male and female readers!).

The saga starts with the house I recently moved into. Given a clean bill of health by the house inspector, this 27-year old home has some charm not found in newer townhouses and condos. Nevertheless, as time goes by, one finds the minor faults that were not initially apparent.

Another hectic month had gone by. Aren't they all? I was facing a busy week. To minimize the effort, I filled the kitchen sink with soap and water, and dropped dishes in to soak. Ok, ok, they soaked for a week or so. Went off to Ottawa for a meeting over a couple of days. Arriving home late Friday evening, I noticed little puddles on the kitchen floor. Now what? The previous owners had installed a newer type of flooring material, a cushioned wood veneer in 8-inch wide and 3-foot long sections.

To make a long story short, the sink I had filled with water (and dishes) apparently has a slow leak. Not necessarily a big problem in itself, but doesn't help if the sink is kept filled with water for a long period of time. However, in the cabinet under the sink, where the water was dripping, I had stored something, not important, but it was in a cardboard sleeve. The cardboard sleeve soaked up the drips, and, because it was angled over a joint in the bottom of the cabinet, the water dripped into that seam. From there the water seeped into the sub-floor, which then flowed under the flooring, leaving it all very squishy and producing puddles from between the seams when one walked on them…

As this was a very slow leak, gradual changes were indeed occurring, but nothing happened all at once, nor was apparent (sink didn't drain, no flooding). Just drip-drip, seep-seep. If I had been astute, maybe I would have investigated a couple of days earlier, to determine why the edges of the flooring seemed to be lifting. Did notice, but simply thought it was a bad job of installation. Something I would deal with later.

Where is the analogy?

It was close to midnight, I had just arrived home, and now was weighting down the kitchen flooring, sopping up whatever water came up, thinking what to do next…?

So, I mused, if I hadn't left the sink full of water sitting for so long, nothing would have happened (although the slow leak would still be there). And if the cardboard sleeve wasn't there to soak up the drips, maybe I would have seen the water under the sink. If the house construction didn't leave that seam open under the sink, maybe the water would still be there, instead of under my kitchen floorboards. Now, whom should I be angry with? Whom should I sue? Me?

When it struck me. Dr. Morrie Potter, formerly of the Centers for Disease Control and Prevention and now with the US FDA's Center for Food Safety and Nutrition (CFSAN), noted in his 1994 IAFP Annual Meeting Ivan Parkin lecture that foodborne outbreaks are rarely attributed to just one mistake. Typically, outbreaks can be traced to combination of factors, i.e., a contamination event, compounded by one or more subsequent mishandling and/or temperature abuse events. The point being that, in many cases, there is neither one person nor just one event that is entirely responsible for compromising the safety of the food we eat. Everyone in the

"production-to-consumption" food chain has a role in food safety, and we all have to pay attention.

Ivan Parkin Award recipients like Morrie Potter always provide insightful and intriguing lectures for the Sunday evening opening session. We are delighted that this year's award will go to Dr. Donald Zink, Senior Food Scientist at FDA/CFSAN, who will kick-start what promises to be a great Annual Meeting in New Orleans.

I look forward to seeing you all there, at which time I will let you know how I corrected my dripping sink and wet floor.

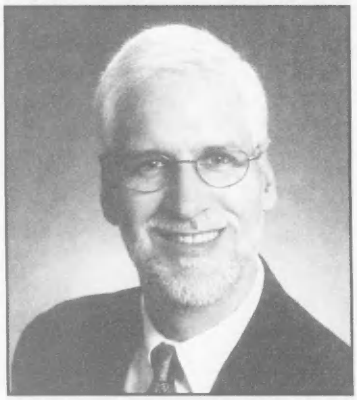
However, just some words of advice: wash your dishes before you leave home. Or put them in the bathtub…

"COMMENTARY"
FROM THE EXECUTIVE DIRECTOR

Now that May has arrived, August is just around the corner and of course that means it is time for the IAFP Annual Meeting! This year, IAFP 2003 will be held in New Orleans, Louisiana August 10 through 13. It will be our 90th Annual Meeting and will be the first time in our history that we have met in New Orleans. We hope you are planning to be with us as we have some really nice events planned in addition to the excellent program content.

We have heard reports that it gets warm in New Orleans in August, but that has not slowed our enthusiasm. You might remember a few other times when we have had meetings during the heat of summer: Orlando in 1997, Atlanta in 2000 and even Minneapolis in 2001! One thing is for sure; the temperature inside the Hilton New Orleans Riverside Hotel will remain nice and cool.

This issue of *Food Protection Trends* is our pre-Annual Meeting issue and contains all the information you need to plan your trip to New Orleans. If you are bringing your spouse, family or even a friend with you, you will want to review the daytime tours we are offering this year. There are four truly unique tours including a New Orleans city tour, a swamp and bayou tour, a tour to Oak Alley and San Francisco plantations and a New Orleans school of cooking tour. Each will provide you with a glimpse of the exceptional history and customs of New Orleans.



By DAVID W. THARP, CAE
EXECUTIVE DIRECTOR

"There are a number of ways to become an active component of the program at IAFP's Annual Meeting"

We also have an extraordinary evening planned for our Monday Night Social. This year we will travel across the Mississippi River (by air conditioned bus) to Mardi Gras World, the birthplace of Mardi Gras. You will see actual floats used in the world famous Mardi Gras parades and you will learn the "behind the scenes" construction techniques used. Don't wait to get your ticket for this event! Our Tuesday evening event is planned as a smaller group activity and will include a river cruise with jazz music on the Creole Queen. Your purchase of a ticket for this event helps support the IAFP Foundation. Both Monday's and Tuesday's events include dinner.

Now that we have covered the extracurricular events, let's look more at the program. This year to save on pages, we are printing only the session titles in *FPT* and we have the full program detail available at www.food-protection.org. Simply click on the Annual Meeting button and then on the preliminary program link for the complete schedule including speaker names, times and presentation titles. There are close to 500 presentations on food science and food safety to be given at IAFP 2003.

We are also offering two workshops planned for Friday and Saturday, August 8 and 9 prior to IAFP 2003. They are "A Hands-on Course in Quantitative Microbial Risk Assessment" and "Assuring Confidence in Laboratory Data". More information is available on pages 434, and 435.

On page 422, a letter from Kathy Glass, Vice President is shown. It invites your participation in our Professional Development Groups (PDGs) and Committees. This is an easy way to contribute to the success of IAFP through your involvement in PDGs or Committees. Our PDGs undertake a variety of projects and provide suggestions for symposia to be presented at Annual Meetings. Committees provide guidance for various functions

relating to the efficient operations of the Association. Just let us know if you are interested in participating in a PDG or serving on a Committee.

Other items of interest relating to IAFP 2003 are the listing of sponsors (see page 437) and exhibitors (see page 438). The special relationship between IAFP and our sponsors and exhibitors has enabled IAFP to sustain Annual Meeting growth and allowed us to add new features to the meeting that we would not have been able to do without this type of support. When you have contact with our exhibitors and sponsors, please let them know that you appreciate their support of IAFP!

Lastly for this month, we want to call your attention to page 401 where it is announced that Frank Yiannas will be our Executive Board Secretary for 2003-2004. We look forward to Frank beginning his five-year term on the Executive Board at the conclusion of IAFP 2003 in New Orleans. We want to thank Donna Garren for standing as a candidate for Secretary this year. Donna is very active in IAFP and we know that we can count on her to continue her involvement. Thanks to both Donna and Frank for their willingness to serve IAFP in this capacity. It is Members like them who made IAFP what it is today!

IT'S A FACT

You're invited to become involved in a Professional Development Group today!

Contact the PDG Chairperson listed on page 423 in this issue.

For a complete Committee Member Listing visit our web site at

www.foodprotection.org

ARTICLES

Food Protection Trends, Vol. 23, No. 5 Pages 382-386

6200 Aurora Ave., Suite 200W, Des Moines, IA 50322-2864

International Association for Food Protection

The Microbiological Composition and Related Hygiene Practices Associated with a South African Primary School Feeding Program

PIERRE VENTER,* RYK J. F. LUES, JUGEN M. MANYATSA, BOITUMELO M. MOALUSI, and HERBERT M. NOE
School of Environmental Development and Agriculture, P/Bag X20539,
Technikon Free State, Bloemfontein,9300, South Africa

SUMMARY

Samples were collected from 46 schools participating in the PSNP (Primary Schools Nutrition Program) in the Free State Province, South Africa, and analyzed for total counts, Gram distribution, presumptive *Salmonella, Escherichia coli, Staphylococcus aureus*, aerobic and anaerobic spore forming bacteria. A survey was also conducted on the premises, among food handlers and pupils, regarding facility design, food handling practices and personal hygiene. The average total mesophilic counts from children's and food handlers' hands were respectively, 19.5 and 21.8 CFU/surface, while counts for working surfaces and utensils ranged between 3 and 6 CFU/cm^2. The prevalence of *Escherichia coli* (51.64% occurrence among the Gram-negative colonies) on food handlers' hands and *Staphylococcus aureus* (50.83% representation among Gram-positive colonies) on table surfaces were relatively high. Numbers of *Salmonella* and aerobic and anaerobic spore-forming bacteria were relatively low in all samples. The facilities and practices were sufficient in some schools, whereas in a small number of rural schools, basic infrastructure such as toilet facilities were lacking. In particular, hand wash facilities, cleanable working surfaces and rodent proofing were inadequate. In all samples the total aerobic plate counts were relatively low compared with the national standard for working surfaces (100 CFU/cm^2) as guideline; however, the distinct composition of the population in terms of pathogens was noteworthy. Implementing some measures and providing at least the minimum of facilities should go a long way toward improving the general microbiological quality. Recommended improvements include: (1) Use of appropriate detergents containing disinfectant, inorganic washable surfaces, gloves and plastic aprons; (2) discontinuation of the practice of using school desks for the purpose of education and for serving food; and (3) education of children and food handlers on aspects of food hygiene and personal hygiene.

A peer-reviewed article.

*Author for correspondence: Phone 27.51.507.3426;
Fax: 27.51.507.3355; E-mail: drventer@tofs.ac.za

INTRODUCTION

The Primary School Nutrition Program (PSNP), a school-feeding scheme, was introduced nationwide in South Africa in 1994, following President Nelson Mandela's announcement in his State of the Nation Address on 24 May 1994 that such a scheme would be implemented in every primary school where a need was identified *(12)*. Currently, an estimated 15,000 schools and 4.9 million learners between the ages of 7 and 15 years partake in the school-feeding program. In the Free State Province the number of schools is estimated at 610 and the number of learners about 134,500 *(11)*.

The food items are delivered to schools by private contractors and further prepared on the school premises by volunteers from the local community. The items vary from province to province and include, among others, products such as fortified biscuits and protein-enriched drinks *(11)*. Several of the food items presented to the children through the PSNP necessitate substantial handling and preparation. With metro, urban, peri-urban and rural schools participating, community volunteers apply food preparation practices primarily dictated by facility design, available financial resources and self-acquired food preparation skills. However, catering for large numbers requires additional skills, as the foodstuffs are exposed to mesophilic environments for longer periods because of volume. Quality control of the products is therefore more difficult and such problems as do occur have an augmented effect. Hence, a degree of understanding of good manufacturing practices, other than those applied in the domestic environment, is necessary, and this is often lacking in volunteer food handlers.

Recently a form of food poisoning associated with the PSNP originated from peanut butter fed to the majority of children participating in this scheme, which contained Aflatoxin B1 (Group 1 carcinogen) at levels exceeding 30 times the South African legislative limit of 5µg/kg *(15)*. This incident along with the fact that a number of small-scale infections connected with bacterial foodborne pathogens such as *Escherichia coli*, *Clostridium* sp., *Bacillus cereus*, *Staphylococcus aureus* and various *Salmonella* sp. have been reported from time to time in children participating in feeding programs *(1, 10, 20)*, as well as reports on food poisoning associated with similar feeding schemes in Africa *(16)*, raised questions as to the microbiological quality of food served through the PSNP. Yusufzai and Bhutta *(21)* reported on the increased susceptibility of undernourished children to foodborne disease, assigning new understanding to the concepts of opportunistic foodborne pathogens and minimal infectious dose.

Few data are available regarding microbial hazard identification in the literature reporting studies previously conducted on primary school feeding schemes in Southern Africa and the African continent. This study was therefore aimed at investigating the presence of potential foodborne pathogens associated with the PSNP. In addition, a survey of the facility design and housekeeping practices was performed, and conclusions were drawn as to the relationships between these and the predominant microbiota.

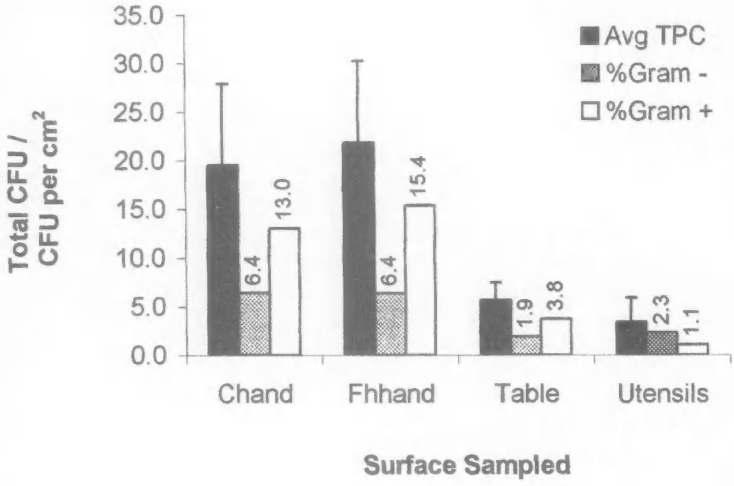
METHODS

From a total of 610 schools in the Free State Province, a stratified sample of 46 (7.54%) schools was drawn. Schools from urban, peri-urban and rural areas were included. In each stratum, random samples were collected from the following: (A) children's hands (index finger of dominant hand) prior to eating, (B) community volunteer's (food handlers') hands (index finger of dominant hand) while food was being served and prepared, (C) working surfaces where food is prepared, and (D) food preparation and eating utensils after being washed. A total of 460 samples were collected for analysis.

Surface samples were collected with 55mm Rodac surface contact plates (Nunc, Denmark) filled with ntrient agar (Biolab, SA) *(4, 17)*. Information on facility design and serving practices was obtained through visual inspection (using categorized tick-off charts) and formal interviews with both food handlers and children. The interviews utilized formal questionnaires addressing a total of 14 issues pertaining to facility design, food handling practices and personal / facility hygiene.

All samples were incubated at 30°C for 24 to 48 hours and counted with the aid of a colony counter (Gerber). Individual colonies from the total mesophilic plates were further purified (streak out method) on Nutrient Agar (Biolab-SA) *(2, 5, 7)* and Gram stained. For isolation of Gram-positive spore forming bacteria, all the Gram-positive colonies were transferred to saline buffer, exposed to a temperature of 80°C for 10 min to destroy the vegetative cells and incubated on Plate Count Agar (PCA)(Biolab-SA) plates *(8, 9)*. For isolation of anaerobic spore-forming organisms, the same procedure was used, that the plates were incubated in anaerobic flasks with Anaerocult A and Anaerotest (MERCK - SA). For the selective cultivation and enumeration of *E. coli* and presumptive *Salmonella* sp., purified Gram-negative colonies were transferred to

FIGURE 1. The total plate counts with the concomitant distribution of Gram-positive and Gram-negative bacteria from surfaces at schools participating in the PSNP. Chand – children's hands before eating unit: (CFU/total surface); Fhhand — community volunteer's (food handlers) hands while serving and preparing food (unit: CFU/total surface); Table — working surfaces where food is prepared (unit: CFU/cm^2); Utensils - food preparation and eating utensils after washing (unit: CFU/cm^2)



Chromocult Coliform Agar™ (Merck-SA) *(6)*. For identification and enumeration of presumptive *Staphylococcus aureus*, Gram-positive colonies were incubated on Baird Parker medium (Biolab-SA) and identified as characteristic black colonies with transparent halos *(3, 19)*. Positive (*S. aureus* ATCC 33862, *Bacillus cereus* ATCC 1178, *Escherichia coli* ATCC 25922 and *Salmonella* Enteritidis ATCC 13076) and negative controls were included, and all experiments were performed at least in duplicate.

RESULTS AND DISCUSSION

With regard to mean total mesophilic counts, little difference was seen between samples from hands of children (19.5 CFU/surface) and of food handlers (19.5 CFU/surface) or between working surfaces and utensils (*circa* 3-6 CFU/cm^2) (Fig. 1). Based on the national standard for working surfaces (100 CFU/cm^2), as a guideline, the samples conformed without exception. The counts noted on working surfaces can probably be ascribed to the fact that in both peri-urban and rural schools, these surfaces are used for food preparation as well as for educational purposes, without proper cleaning or sanitation. Considering the fact that eating utensils were cleaned to an extent after use, the relatively low counts found on these was expected. However, this cleaning process, in the majority of cases, merely involved rinsing with water.

Figure 1 further illustrates the distribution of Gram-positive and Gram-negative bacteria and their relative contributions to the total mesophilic counts. The children's and food handlers' hands again yielded quite similar results, and the numbers of Gram-positive bacteria exceed those of Gram-negative by about 50%, as was the case for the working surfaces. Utensils, on the other hand, showed the opposite trend, again, in all probability, because utensils are rinsed after use.

Gram-negative colonies isolated from children's hands comprised 36.64% *E. coli*, while *Salmonella* were 1.05% (Table 1). This scenario is similar to that of the food handlers' hands in that about 5% of the Gram-negative colonies were *Salmonella* and 24% *E. coli*. No *Salmonella* were detected on working surfaces or on utensils, although the former had an *E. coli* prevalence of 51.64%. Fifty percent of the Gram-positive colonies isolated from food handlers' hands were found to be *Staphylococcus aureus*. The *S. aureus* and concomitant *Salmonella* counts on the hands of food handlers at the time of food preparation supports the previously made supposition that food handlers generally lack the specialized understanding of good food handling practices required in catering for larger numbers. Levels of contamination with aerobic and anaerobic spore-forming bacteria were generally low. The aerobic spore formers ranged from 4-8% throughout, with no anaerobic spore formers detected.

The results presented in Fig. 1 are compatible with data in Table 2. Lower average counts on utensils could be related to availability of dishwashing facilities at 58% of the schools sampled, at least 75% of which boasted hot water (Table 2). Likewise, the numbers of bacteria on the hands of both children and food handlers may be attributed to the fact that only 8.33% of the schools had dedicated handwashing facilities available, while only 16% of the schools have soap and drying towels. Only 8.35% of the schools prepared their food on cleanable working surfaces, with 16% of the schools equipped with cleaning material for this purpose.

The bacterial distribution thus showed a marked association with the results obtained by visual inspection (Table 2). Microbial counts on the food preparation tables indicate

TABLE 1. Distribution of specific genera, species and groups of bacteria

	Presumptive *Salmonella* (%)	*Escherichia coli* (%)	*Staphylococcus* (%)	Aerobic spore formers (%)	Anaerobic spore formers (%)
Chand[b]	1.05	36.64	29.46	8.01	0.0
Fhhand[c]	4.80	24.00	50.83	3.99	0.0
Table[d]	0.0	51.64	25.00	5.00	0.0
Utensils[e]	0.0	21.43	15.38	7.69	0.0

[a]Percentages calculated relative to the total Gram positive or Gram negative prevalence; [b]Children's hands before eating; [c]Community volunteers' (food handlers) hands while serving and preparing food; [d]Working surfaces where food is prepared; [e]Food preparation and eating utensils after washing

TABLE 2. Facility design and practices of schools participating in the PSNP

Facility Design and Practices	% Occurrence
Facility Design	
Dishwashing facilities	58.3
Hand washing facilities	8.3
Cleanable working surfaces	8.4
Store room	41.6
Store room rodent proof	16.7
Food preparation area rodent proof	41.7
Toilet facilities	83.3
Food Handling Practice	
Utensils in good condition	0
Protective clothing	25
Potable water	91.7
Cleaning material	16.7
Personal / Facility Hygiene	
Hand wash soap and drying towel	16.7
Hot water where washing facilities are available	75
Food handlers' hands visually clean and injury free	83.3

fecal contamination, which, considering the numbers of these organisms on the hands of children and food handlers, is the likely source of these organisms. Unclean hands, however, appear to result from a lack of hand washing (8.3% provision) rather than a lack of toilet facilities (83.3%). With rodent droppings often observed during the inspections, it was deemed another contributing factor towards fecal contamination *(14)* — only 16.67% of all storerooms and 41.67% of the food preparation areas inspected had some kind of rodent proving. The prevalence of *S. aureus* on the hands of food handlers was relatively high. Food handlers have often been labelled potential carriers of this organism with cross contamination limited by practices such as supervision, health monitoring and protective clothing *(13)*. Under the PSNP, only 25% of the food handlers inspected wore protective clothing. However, 83.3% presented hands that were neither bruised nor visually unclean. Potable water was available in 91.7% of the schools, although the majority of the rural schools participating in the PSNP have to manage with un-chlorinated ground, river or stagnant water.

CONCLUSIONS

Based on the relatively low values of total aerobic plate counts, measured against national legal standards, one may be led to believe that the general contamination levels of the food served under the PSNP are negligible. However, the composition of this population in terms of the genera and species enumerated in this study might present some concern. Risks could be reduced through provision of minimum, low cost facilities and equipment, such as detergents containing some disinfectant, inorganic washable surfaces, gloves, plastic aprons, etc., which would provide a degree of protection against microbial proliferation and cross contamination. The practice of using school desks both for the purpose of education and for serving food should, furthermore, be discouraged. As classes change during the normal school periods, the surfaces of desks come into contact with the hands, books, stationery, etc. of numerous pupils. When these desks are used for food preparation purposes without cleaning beforehand, the likelihood of cross contamination is considerable. Although 41.6% of the schools had storerooms for the food, these were, in most cases, merely an area or room adjacent to the classroom where the food was served, which was normally used for storing of educational equipment and stationery. Again, providing basic inexpensive infrastructure such as shelving, using gauze to cover vents, and sealing doors could go far toward preventing spoilage. Finally, educating both the community volunteers (food handlers) and the children being fed through this feeding program on aspects of safe food handling and general hygiene should be a priority.

ACKNOWLEDGMENTS

The authors would like to acknowledge the financial support of the Free State Department of Health obtained through Hygiene Sure South Africa.

REFERENCES

1. Andersson, A. M., N. Weiss, F. Rainey, and M. S. Salkinoja-Salonen. 1999. Dust-borne bacteria in animal sheds, schools and children's day care centers. J. Appl. Microbiol. 86: 622–34.
2. Atlas, R. M., and L. C. Parks. 1993. Handbook of microbiological media. CRC Press, Inc., London.
3. Baird-Parker, A. C. 1962. An improved diagnostic and selective medium for isolating coagulase positive Staphylococci. J. Appl. Bact. 25:12–19.
4. Brown, J., L. Wannamaker, L. and P. Ferrieri. 1975, Enumerarion of β-haemolytic streptococci on normal skin by direct agar contact. J. Med. Microbiol. 8:503.
5. Forsythe, S. J. (2000) The microbiology of safe food. Blackwell Science Ltd., London.
6. Frampton, E. W., L. Restaino, and L. Blaszko. 1988. Evaluation of β-glucuronidase substrate 5-bromo-4-chloro-3-indol-β-D-glucuronide (X-GLUC) in a 24 hour direct plating method for *Escherichia coli*. J. Food. Prot. 51:402–404.
7. Gray, M. L., H. J. Stafseth, and F. Thorp. 1950. The use of potassium tellurite, sodiumazide, and acetic acid in a selective medium for the isolation of *Listeria monocytogenes*. J. Bact. 59:443–444.
8. Houghtby, G. A., L. J. Maturin, and E. K. Koenig. 1993. Microbial count methods, p. 213–246. *In* standard methods for the examination of dairy products (R. T. Marshall, ed.). American Public Health Association, Washington.
9. Jay, J. M. 2000. *Bacillus cereus*, p 477. *In* modern food microbiology (D. R. Heldman, ed.). Aspen Publishers, Inc., Maryland.
10. Kobayashi, M., T. Sasaki, N. Saito, K. Tamura, K., Suzuki, H. Watanabe, and N. Agui. 1999. Houseflies: not simple mechanical vectors of enterohemorrhagic *Escherichia coli* O157:H7. Am. J. Trop. Med. Hyg. 61: 625–29.
11. Louw, R. 23 May 2001, "South Africa school feeding programme" Entire Business Solutions CC, [Internet, WWW], ADDRESS: www. schoolfeeding. co. za/new_page_1. htm.
12. Mandela, N., 24 May 1994, "State of the nation address" South Africa, [Internet, WWW], ADDRESS: www.polity.org.za/govdocs/speeches/1994 /sp940524.html.
13. Marriott, N. G. 1989a. Health and personal hygiene, pp. 59–65. *In* principles of food sanitation (N. G. Marriott, ed.), Van Nostrand Reinhold, New York.
14. Marriott, N. G. 1989. Rodent infestation, pp. 187–194. *In* principles of food sanitation (N. G. Marriott, ed.). Van Nostrand Reinhold, New York.
15. Medical Research Council, 3 May 2001, "Aflatoxin in peanut butter" PROMEC Unit, Tygerberg, South Africa, [Internet, WWW], ADDRESS: www.mrc.ac.za/policybriefs/polbrief3.htm.
16. Musetha, Ndivhuwo, 26 May 2000, "Hundreds of children poisoned at school" Zoutnet, [Internet, WWW], ADDRESS: http://www.emirror.co.za/archive/2000/may/26th/newsmay26.asp?StoNum=23.
17. Raahave, D. 1973. Agar contact plates in evaluation of skin-disinfection. Dan. Med. Bull. 20:204.
18. South Africa (Republic). 1997. Regulations governing standards for foodstuffs and related matters, pp. 1–32. *In* Government Gazette, No. 23340 (Department of health ed.), Pretoria: Government printer.
19. Vanderzant, C., and D. F. Splittstoesser. 1992. Compendium of methods for the microbiological examination of foods. American Public Health Assoc., Washington.
20. Weaver, L. T., J. B. Eccles, M. P. Eccles, and F. J. Foord. 1989. *Salmonella typhi* infection associated with a school feeding program. Trop. Pediatr. 35:331–32.
21. Yusufzai, M., and Z. A. Bhutta. 2000. Contemporary issues in childhood diarrhea and malnutrition. Oxford University Press. Karachi.

Food Protection Trends, Vol. 23, No. 5 Pages 387-392

6200 Aurora Ave., Suite 200W, Des Moines, IA 50322-2864

Survey of Mayonnaise-based Salads for Microbial Safety and Quality

VANESSA L. BORNEMEIER,[1] JULIE A. ALBRECHT,[1]* and SUSAN S. SUMNER[2]

[1]Department of Nutritional Science & Dietetics, University of Nebraska, Lincoln, NE 68583-0807,

[2]Department of Food Science, Virginia Polytechnical Institute and State University, Blacksburg, VA 24061, USA

ABSTRACT

The objective of this study was to survey the safety of mayonnaise-based salads available in grocery store delis for potential contamination with *Staphylococcus aureus* and *Listeria monocytogenes*. Three mayonnaise-based salads (potato, macaroni, and krab [surimi processed fish]) purchased from three grocery-store deli operations in Lincoln, Nebraska were analyzed for total aerobic plate count, *L. monocytogenes*, and *S. aureus*. The temperature of the salads was measured upon purchase, and pH measurements were made within one-half hour after purchase. The salads were assessed visually and food handling practices of deli personnel were observed. The temperatures of the salads ranged from 37.9°F to 46.4°F (3.3 to 8.0°C). The pH ranges for the salads were: potato, 4.13 to 4.56; macaroni, 3.99 to 4.53; krab, 4.48 to 5.79. Total aerobic plate counts expressed as $\log_{10}$ units ranged from 2.97 to 3.79. Most Probable Number expressed as $\log_{10}$ units for *S. aureus* ranged from 1.36 to 2.47 for the salads. Three krab salad samples and one macaroni salad sample were found to have coagulase positive *S. aureus*. *L. monocytogenes* was not found in any samples. Garnishes were found on 86% of the salads surveyed, and gloves and hairnets were not worn by any of the foodservice personnel at the deli operations surveyed. Visual assessment of the salads at the time of purchase revealed crust on the surface of salads, discolored ingredients, and watery consistency. Results of this survey indicate that temperature conditions for all three salads and the pH range for krab salad could support growth of pathogenic microorganisms. Food handling and storage practices indicate that HACCP procedures are necessary to ensure the safety of salad bar operations.

A peer-reviewed article.

*Author for correspondence: Phone 402.472.8884;
Fax: 402.472.1587; E-mail: jalbrecht1@unl.edu

INTRODUCTION

Foodborne illness outbreaks have been reported from starch-based salads contaminated with pathogenic microorganisms *(14)*. One outbreak of foodborne illness was attributed to the consumption of potato salad contaminated with *Shigella flexneri (25)*. Khatib et al. *(22)* described an outbreak of gastroenteritis that implicated a tuna salad contaminated with *Clostridium perfringens* as the vehicle of transmission. In another incident, eating tuna salad prepared by a central hospital kitchen was significantly associated with an outbreak of small round structure virus (SRSV) gastroenteritis *(26)*. Other outbreaks have been attributed to contaminated tossed salad prepared at a central commissary *(17)*, deli salads cross-contaminated with undercooked roast beef *(30)*, and a contaminated mayonnaise-based legume salad from a smorgasbord *(23)*. The outbreaks involved *Shigella flexneri*, *Escherichia coli* O157:H7, and *Aeromonas hydrophila*, respectively. A serious foodborne outbreak was linked to the consumption of coleslaw contaminated with *Listeria monocytogenes (33)*. Donnelly *(16)* reported an outbreak of foodborne listeriosis linked to prepared vegetable salads.

Staphylococcus has been traditionally associated with outbreaks that involved mayonnaise-based salads. Several of these outbreaks have occurred from potato salad and various types of meat salads *(15)*. One of the largest outbreaks involved over 600 high school girls who had eaten ham salad sandwiches. Sandwiches made from salads of egg, tuna, chicken and other meats have frequently been implicated in staphylococcal food poisoning *(15)*.

Listeria has been isolated from deli salads *(34)*. The Food and Drug Administration has completed several Class I recalls of various mayonnaise-based salads because of contamination with *L. monocytogenes*. These salads include potato salad *(3, 5, 6, 7, 8, 9, 11, 12)*, ham salad *(5)*, chicken salad *(4)*, vegetable salad mix *(2)*, pasta salad *(9)*, cole slaw *(9)*, and crab salad *(10)*.

The potential for mayonnaise-based salads to become contaminated with pathogenic microorganisms can be high because of extensive handling during preparation and service by foodservice personnel. Also, salad ingredients may be held for long periods of time under improper temperatures, giving microorganisms appropriate conditions for growth *(1)*.

Both *S. aureus* and *L. monocytogenes* are widely distributed in the environment. Staphylococcal bacteria live in the mucous membranes of the skin of humans; therefore, extensive food handling allows these organisms to be transferred from humans to food *(20)*. Sources of *Listeria* contamination include soil, dust, sewage and water, which mainly affect food sources of meat, poultry, dairy products and vegetables commonly used as ingredients in foodservice deli salads *(20)*. Zottola and Smith *(35)* stated that the major contributing factor causing foodborne disease is the mishandling of food at the time it is prepared for final consumption.

Consumption of refrigerated ready-to-eat foods, salads and minimally processed food products has increased markedly in recent years *(31)*. These products are potential sources of pathogenic microorganisms, and their microbial safety is a concern. The objective of this study was to survey the safety of mayonnaise-based salads available in grocery store delis for potential contamination of *S. aureus* and *L. monocytogenes*.

MATERIALS AND METHODS

Sample collection

Three grocery store/supermarket deli operations located in Lincoln, NE were selected, based on sample availability. Samples were collected from the delis in the morning and transported to the lab, with analysis beginning within one-half hour. Three mayonnaise-based salads, potato, macaroni, and krab (surimi processed fish), were purchased from each grocery store deli operation. The delis were surveyed three times based upon a random sampling schedule, for a total of nine trials.

Sample analysis

At the time the foods were purchased, food handling practices of deli personnel were observed and recorded. Immediately following purchase of the salads, their temperatures were taken. Salads were placed in an insulated container to maintain the temperature of the salads during transport. Upon arrival in the laboratory, salads were visually assessed and given a score of 1 through 4, 1 being excellent quality and 4 being poor quality. A preliminary study was conducted to develop visual assessment ratings. Table 1 lists the visual characteristics that correspond to each numerical score. To obtain a pH measurement, a 1:4 salad: distilled water sample was blended for 2 minutes and the pH was recorded 2 minutes afterward, using an Accument pH meter (Fisher Scientific, Pittsburgh, PA).

Eleven g of each salad sample was added to 99 ml of peptone buffer (Difco, Detroit, MI) and blended for two minutes in sterile pint jars. From each sample, serial dilutions were assayed for total aerobic plate count on plate count agar (PCA) (Difco, Detroit, MI). Plates were incubated for 48 hours at 37°C.

TABLE 1. Guidelines for visual assessment scale

Score	Characteristics
1. Excellent Quality	- creamy consistency
	- absence of surface crust layer
	- characteristic color and texture of ingredients
	- looks freshly made
2. Good Quality	- creamy consistency
	- slight discoloring of surface
	- characteristic color and texture of ingredients
3. Fair Quality	- slightly dry or watery consistency
	- presence of surface crust layer
	- discoloration of some ingredients
	- characteristic texture of most ingredients
4. Poor Quality (deemed inedible)	- very dry or watery consistency
	- presence of surface crust layer
	- dull coloration of all ingredients
	- uncharacteristic texture of all ingredients

Assay for *Staphylococcus aureus*

Three tubes of trypticase soy broth (Difco, Detroit, MI) containing 10% NaCl were inoculated at each test dilution with 1 ml aliquots of sample. Tubes of broth were incubated 48 hours at 37°C. Using a 3 mm inoculating loop, one loopful from each growth-positive tube was transferred to Baird-Parker agar plates (Becton Dickinson, Cockeysville, MD) containing EY Tellurite (Becton Dickinson, Cockeysville, MD) and streaked to obtain isolated colonies. Plates were incubated for 48 h at 35°C. Positive growth in the trypticase soy broth was determined by turbidity measurement, using a spectrometer (Spectrometer 20, Milton Roy Company). According to growth results, the Most Probable Number (MPN) of *S. aureus* from MPN tables *(13)* was recorded. Tubes of broth were vortex-mixed (Fisher Vortex Genie 2, Fisher Scientific) for 5 s prior to turbidity measurements and streaking on Baird-Parker agar plates.

From agar plates showing growth, one or more colonies presumptive of *S. aureus* were subjected to coagulase testing. This test involved the transfer of suspected *S. aureus* colonies to small tubes containing 2 ml Brain Heart Infusion (BHI) broth (Difco, Detroit, MI). Tubes of broth were mixed thoroughly for 10 s using a vortex-mixer. A culture suspension was transferred to PCA agar slants. Both BHI culture suspensions and slants were incubated 24 h at 37°C. Slant cultures were retained at room temperature (70°F) for repeat tests when coagulase test results were questionable.

Reconstituted coagulase plasma (0.5 ml) with EDTA (Becton Dickinson, Cockeysville, MD) was added to BHI cultures and mixed thoroughly. Cultures were incubated at 37°C and examined after 6 h for clot formation. Coagulase-positive cultures were considered to be *S. aureus*.

Assay for *Listeria monocytogenes*

A 25 g sample of each salad was added to 225 ml of *Listeria* Enrichment Broth (UVM) (Difco, Detroit, MI) and blended for 2 min in sterile quart jars. After incubation for 24 h at 30°C, 0.1 ml of UVM culture was pipetted into 10 ml of Fraser's secondary enrichment broth (Difco, Detroit, MI). Inoculated Fraser broth was incubated at 35°C for 24 h. Following incubation, Fraser broth cultures were streaked onto modified Oxford (MOX) agar *(28)* with a sterile cotton swab. MOX agar was incubated at 35°C for 24 h and examined for typical round *L. monocytogenes* colonies surrounded by a black zone. Confirmation of *L. monocytogenes* colonies was completed using API strips (Becton Dickinson, Cockeysville, MD).

RESULTS AND DISCUSSION

The microbial evaluation, temperature, and pH results are presented in Table 2. The temperature of all the salads ranged from 37.9°F to 46.6°F (3.3–8.0°C), with the average temperature of 43.1°F (6.2°C). Seventy-four percent of the salads were held at temperatures higher than the recommended 4°C. These results are similar to a study con-

TABLE 2. Microbial evaluation, temperature, and pH of mayonnaise-based deli salads

	Potato Salad	Macaroni Salad	Krab Salad*
Samples examined	18	18	18
Aerobic plate count (Log_{10} CFU/g)	2.97 ± 3.00	3.79 ± 3.87	3.35 ± 3.75
S. aureus – MPN (Log_{10} CFU/g)	0	7.3 – 53	15 – 290
Confirmed *S. aureus* (No. of samples)	0	1	3
Temperature range (°C)	3.3 – 8.0	4.4 – 8.0	4.1 – 7.8
Temperature average (°C)	6.1 ± 1.8	6.2 ± 1.3	6.3 ± 1.3
pH range	4.13 – 4.56	3.99 – 4.53	4.48 – 5.79
pH average	4.27 ± 0.15	4.23 ± 0.18	5.21 ± 0.45

* Surimi – processed fish

ducted by Albrecht et al. *(1)* in which 100% of the vegetable salad ingredients purchased from grocery store deli operations had been held at temperatures above 4°C. Staphylococcal growth can occur between 7 and 48°C, with the optimal growth range being 35–37°C; and *L. monocytogenes* is capable of growth between 3 and 45°C *(27)*. This information indicates that all the salads analyzed in our survey provide temperature conditions for *L. monocytogenes* growth and 22% of the salads had temperature conditions favorable for growth of *S. aureus*.

The pH range for 89% of the krab salad samples could support the growth of pathogenic microorganisms, whereas all potato and macaroni salad samples and 11% of the krab salad samples had pH levels below 4.6, where most pathogens are inhibited.

Total aerobic counts for all the salads ranged from 2.97 to 3.79 log_{10} CFU/g and MPN for *S. aureus* ranged from 1.36 to 2.47 log_{10} CFU/g, with krab salad containing higher levels of microorganisms (2.47 ± 2.67 log_{10} CFU/g) than macaroni salad (1.73 ± 1.79 log_{10} CFU/g) or potato salad (1.36 ± 1.57 log_{10} CFU/g). Thirty-three percent of the krab salad samples and 11% of the macaroni salad samples were found to contain coagulase positive *S. aureus*. All *S. aureus* positive samples had pH measurement below 4.6. However, the salads may have contained pockets of higher pH levels where bacteria can grow. Those salads containing a higher MPN of *S. aureus* were more likely to test coagulase positive for the microorganism. Kao and Shih *(21)* isolated *S. aureus* from 3 of 14 raw salad samples purchased from salad bars. Ibanaz-Guillen et al. *(19)* reported that 4.6% of salad samples from catered dishes were contaminated with *S. aureus* and three of the salad samples contained toxin-producing *S. aureus*. Another study showed 93% of salad sampled with contamination of fecal origin *(29)*. *L. monocytogenes* was not detected in any of the salad samples we analyzed. However, other studies have found salad and ingredients commonly found in salads to be contaminated with *L. monocytogenes*. Levre et al. *(24)* isolated *L. monocytogenes* from 2.6% of prepacked ready-to-eat salads.

Garnishes were found on 86% of the salads surveyed and neither gloves nor hairnets were worn by any of the foodservice personnel at the deli operations surveyed. Epidemiological reports show that foodborne illness is more often associated with foodservice than with food processing, partly because food is more intimately exposed to those who do final prepration in foodservice than to those who work in food processing *(15)*. Therefore, proper food handling techniques are of vital impor-

TABLE 3. Visual assessment of mayonnaise-based deli salads

Salad	Score	
	Range	Mean
Potato salad	2–3	2.3 ± 0.5
Macaroni salad	2–3	2.6 ± 0.5
Krab salad	1–2	1.9 ± 0.4

tance. These findings are of concern, because several studies have reported microbial contamination and addressed the potential for contamination resulting from improper food handling techniques and the use of contaminated garnishes. In one study, motile aeromonads and *Listeria* spp. were isolated from parsley used as a garnish *(18)*. The parsley came into direct contact with the displayed deli foods. Another group of investigators swabbed areas in deli production plants and found 68% of the swabs to be positive for *L. monocytogenes* in raw product areas and 33% positive swabs in finished product areas *(32)*.

The visual assessment results are listed in Table 3. The mean visual assessment score for the salads ranged from 1.9 to 2.6; with a score of 1 signifying excellent quality and 4 signifying poor quality. At the time of purchase of the salads, some undesirable visual characteristics were observed; crust layer on the surface of salads, dull-colored ingredients and watery consistency. However, none of the salads were deemed unacceptable. These undesirable attributes suggest that the salads were improperly handled, displayed for a long period of time, or held at improper temperatures. However, no relationship was found between poor visual appearance of the salads and increased probability of pathogenic contamination. Another survey also found ingredients from deli salads bars to exhibit undesirable visual characteristics, with one sample of broccoli being deemed unacceptable as it was mushy and emitted a strong sulfur odor *(11)*.

In conclusion, the results of this survey pose a concern to the deli and foodservice industry, because it was found that temperature conditions for all three salads and pH of the Krab salad could support pathogenic microorganisms. Also, food handling and storage practices indicate that HACCP procedures are necessary to ensure the safety of salad bar operations.

REFERENCES

1. Albrecht, J. A., F. L. Hamouz, S. S. Sumner, and V. Melch. 1995. Microbial evaluation of vegetable ingredients in salad bars. J. Food Prot. 58:683–685.
2. Anonymous. 1993. *Listeria* cases reduced by half since 1986: CDC official. Food Chem. News 35 (07–5):33.
3. Anonymous. 1994A. Potato salad under class I recall due to *Listeria*. Food Chem. News. 36(01–31):53.
4. Anonymous. 1994b. Suspect bacterial contamination causes several food recalls. Food Chem. News. 36(06–6):59–60.
5. Anonymous. 1994c. *L. monocytogenes* causes cheese, potato salad, bakery recalls. Food Chem. News. 36(10–31):21.
6. Anonymous. 1994d. Ice cream, potato salad, cereal contamination "preventable." Food Chem. News. 36(11–7):26.
7. Anonymous. 1995a. *L. monocytogenes* contamination sparks potato salad recalls. Food Chem. News. 37(02–6):14–15.
8. Anonymous. 1995b. *L. monocytogenes* detected in potato salad spurs FDA warning. Food Chem. News. 37(03–6):28.
9. Anonymous. 1995c. *L. monocytogenes* in prepared salads prompts recalls. Food Chem. News. 37(04–3):16–17.
10. Anonymous. 1995d. *Listeria monocytogenes* leads to seafood spread recall. Food Chem. News. 37(05–1):33.
11. Anonymous. 1995e. Contamination causes duck, potato salad, hot dog recalls. Food Chem. News. 37(05–29):27.
12. Anonymous. 1995f. Potato salad recalled due to *L. monocytogenes* contamination. Food Chem. News. 37(05–17):41.
13. AOAC. 1984. AOAC Official Methods of Analysis. AOAC International, Arlington, VA.
14. Bean, N. H., and P. M. Griffin. 1990. Foodborne disease outbreaks in the United States, 1973-1987: pathogens, vehicles and trends. J. Food Prot. 53:804–817.
15. Bergdoll, M. S. 1990. Foodborne Diseases: Staphylococcal Food Poisoning. p. 96. *In* Cliver, D.O. (ed.) Foodborne Disease. Academic Press, New York.
16. Donnelly, C.W. 1990. *Listeria* — an emerging foodborne pathogen. Nutr. Today. 68:7–11.
17. Dunn, R. A., W. N. Hall, J. V. Altamirano, S. E. Dietrich, B. Robinson-Dunn, and D. R. Johnson. 1985. Outbreak of *Shigella flexneri* linked to salad prepared at a central commissary in Michigan. Public Health Rep. 110:580–586.
18. Husdon, J. A., and S. J. Mott. 1993. Presence of *Listeria monocytogenes*, motile aeromonads, and *Yersinia enterocolitica* in environmental samples taken from a supermarket delicatessen. Int. J. Food Micro. 18:333–337.
19. Ibanez-Guillen, J. J., D. Garciea-Bermejo, and R. Escudero-Fombuena. 1994. Enterotoxigenic *Staphylococcus aureus*: identification in catered dishes. Alimentaria. 31:35–37.

20. Jay, J. M. 1992. Modern Food Microbiology. Van Nostrand Reinhold Co., New York.
21. Kao, W. H., and D. Y. C. Shih. 1993. Survey of *Staphylococcus aureus* in vegetable salad. J. Food & Drug Anal. 1:107–115.
22. Khatib, R., M. Naber, N. Shellum, L. Ashton, K. Knowles, V. Giardina, and F. M. Wilson. 1994. A common source outbreak of gastroenteritis in a teaching hospital. Infect. Control Hosp. Epidemiol. 15:534–535.
23. Krovacek, K., S. Dumontet, E. Eriksson, and S. B. Baloda. 1995. Isolation and virulence profiles of *Aeromonas hydrophila* implicated in an outbreak of food poisoning in Sweden. Microbiol. Immunol. 39: 655–661.
24. Levre, E., P. Valentini, and G. Caroli. 1995. Vegetables and *Listeria* contamination. L'Igiene Moderna. 103: 475–486.
25. Lew, J. F., D. L. Swerdlow, M. E. Dance, P. M. Griffin, C. A. Bopp, M. J. Gillenwater, T. Mercatante, and R. I. Glass. 1991. An outbreak of shigellosis aboard a cruise ship caused by a multiple-antibiotic-resistant strain of *Shigella flexneri*. Am. J. Epidemiol. 134:413–420.
26. Lo, S. V., A. M. Connolly, S. R. Palmer, D. Wright, P. D. Thomas, and D. Joynson. 1994. The role of the presymptomatic food handler in a common source outbreak of foodborne SRSV gastroenteritis in a group of hospitals. Epidemiol. Infect. 113:513–521.
27. Lovett, J. 1989. *Listeria monocytogenes*, pp.283–310. *In* Doyle, M. P. (ed.) Foodborne Bacterial Pathogens. Marcel Dekker, Inc., New York.
28. McClain, D., and W. H. Lee. 1989. FSIS method for the isolation and identification of *L. monocytogenes* from processed meat and poultry products. Laboratory Communication No. 57. United States Department of Agricultural Food Safety and Inspection Service, Microbiology Division. Beltsville, MD.
29. Monge, R., M. L. Arias, D. Utzinger, and F. Antillon. 1994. Sanitary quality of some food distributed by hospital food services of Costa Rica. Arch. Latinoam. Nutr. 44:164–167.
30. Rodrique, D. C., E. E. Mast, K. D. Greene, J. P. Davis, M. A. Hutchinson, J. G. Wells, T. J. Barrett, and P. M. Griffin. 1995. A university outbreak of *Escherichia coli* O157:H7 infections associated with roast beef and an unusually benign clinical course. J. Infect. Dis. 172:1122–1125.
31. Saguy, I. 1992. Simulated growth of *Listeria monocytogenes* in refrigerated foods stored at variable temperatures. Food Tech. 57:69–71.
32. Salvat, G., M. T. Toquin, Y. Michel, and P. Colin. 1995. Control of *Listeria monocytogenes* in the delicatessen industries: the lessons of a listeriosis outbreak in France. Int. J. Food Micro. 25:75–81.
33. Schlech, W. F., P. M. Lavigne, R. A. Bortolussi, A. C. Allen, E. V. Haldane, A. J. Wort, A. W. Hightower, S. E. Johnson, S. H. King, E. S. Nicholls, and C. V. Broome. 1983. Epidemic listeriosis: evidence for transmission by food. N. Engl. J. Med. 308:203–206.
34. USDA-FSIS. 1992. Preventing foodborne listeriosis. United States Department of Agricultural Food Safety and Inspection Service. Washington, D.C.
35. Zottola, A. Z., and L. B. Smith. 1990. The microbiology of foodborne disease outbreaks: an update. J. Food Safety 11:13–29.

Congratulations

In March 2003, the International Association for Food Protection participated at the Food Safety Summit in Washington, D.C. While exhibiting, we offered a drawing for a one-year Membership with our Association and a free registration to our Annual Meeting. We are pleased to announce the following winners of the drawing:

IAFP Membership

Ernie Younger
Sadler's Smokehouse
Henderson, Texas

IAFP Annual Meeting Registration

John Benko
Foodsense
McLean, Virginia

Food Protection Trends, Vol. 23, No. 5 Pages 393–400

6200 Aurora Ave., Suite 200W, Des Moines, IA 50322-2864

Eleven-year Trends of Microbiological Quality in Bulk Tank Milk

MICHAEL COSTELLO,[1] MIN-SUK RHEE,[2] MARC P. BATES,[1] STEPHANIE CLARK,[1] LLOYD O. LUEDECKE,[1] and DONG-HYUN KANG[1]*

[1]Department of Food Science and Human Nutrition, Washington State University, Pullman, Washington 99164-6376, USA; [2]Department of Food Science, Korea University, Seoul, Korea

SUMMARY

The objectives were (1) to report the microbiological quality of bulk tank milk (BTM) from a long-term series of data collection, (2) to investigate the transport sanitation and seasonal effect on the microbiological quality of BTM, and (3) to evaluate correlations among the microbiological quality traits. Samples (n = 545) were collected weekly from one herd and one bulk tank in Washington from January 1990 to December 2000. To determine the transport sanitation, additional samples (n = 288) were serially obtained from the farm, truck, and creamery bulk tank. Samples were analyzed by standard plate count (SPC), coliform count, and somatic cell count (SCC). Throughout the 11 years, the mean values were 5,600 (for SPC) 500 CFU/ml, (for coliforms) and 200,000 cells/ml, (for SCC). The relationships among microbiological traits were of low to moderate significance. In terms of sudden elevations of SPC, coliform numbers, and SCC, values for individual samples revealed no strong association with other variables. Our results indicate that those traits could not be used as predictors to estimate any other index. A significant increase of SPC ($P < 0.05$) was observed as transfer increased; the increase was approximately 1,000 CFU/ml between farm tank and creamery bulk tank. Higher ($P < 0.05$) SPC were observed in winter than in spring and summer. The SCC was highest ($P < 0.05$) in summer. The findings suggest that microbiological quality of BTM may be affected by factors such as transport system and season. This information may assist the dairy industry in examining the long-term trends of microbiological quality in BTM throughout the United States.

A peer-reviewed article.

*Author for correspondence: Phone 509.335.3937; Fax: 509.335.4815; E-mail: dhkang@wsu.edu

INTRODUCTION

Raw milk quality is greatly influenced by the microbial load of the milk. In most countries, bacterial content is one of the factors considered in determining the level of payment for raw milk. To improve bulk milk quality, most incentive programs focus on several aspects, including presence of bacteria, inhibitors, and somatic cell count (SCC) *(2, 5, 17)*. Standard plate count (SPC) is the reference method used to evaluate raw milk *(15, 19)*. Raw milk is also routinely monitored for SCC *(3, 19)*, and the enumeration of coliforms is an important microbial index for assessing its quality *(7)*.

Bovine mastitis is the most costly disease to the dairy industry, and over 135 different microorganisms have been identified as relevant to the disease. Increases in SPC could theoretically be attributed to coliform mastitis *(20)*. Coliforms such as *E. coli* and other gram negatives easily multiply in the milk residues left after improper cleaning of milking equipment. Subsequent milking can flush these residues into the bulk tank milk (BTM), greatly increasing the SPC *(6, 10, 21)*. Moreover, microbiological quality of BTM may vary in response to several factors such as geographical area, season, farm size, herd size, hygiene, and farm management practices *(16)*.

Basically, the dairy farmer has the responsibility of producing milk under clean and hygienic conditions. A survey *(12)* demonstrated that an overwhelming number (99%) of producers believed they were responsible for the safety of milk leaving the farm. However, microbiological contamination of bulk tank milk (BTM) can originate from multiple sources, including milk handling and storage equipment; even if a farmer produces high quality milk, the final quality of the BTM depends upon post-production sanitary practices. To date, no research regarding the effect of transport and storage sanitation on BTM counts has been published. Additionally, literature regarding seasonal effects on BTM microbiological quality is scanty.

The objectives of this study were (1) to report the microbiological quality of BTM from long-term series data, (2) to investigate the factors such as transport and storage system and season affecting the microbiological quality of BTM, and (3) to evaluate correlations among the microbiological quality traits and SCC.

MATERIALS AND METHODS

Sampling

Raw milk purchased by the Washington State University (WSU) Creamery from WSU's Knotts Dairy Center in Pullman, WA was routinely monitored for microbiological quality from January 1990 to December 2000. The herd size was 165 cows, and average daily milk production was 85 lbs per cow in December 2000. The creamery's licensed milk hauler collected samples (n = 545) approximately weekly from the bulk dairy's bulk tank before bringing the milk to the creamery. Each aliquot was collected after agitation immediately prior to milk pick-up. The samples were placed in sterile 1-ounce glass bottles and transported back to the creamery in an ice chest. Upon return to the creamery, the sample was placed in a refrigerator (4 ± 2°C) until analysis.

From September 1995 to December 2000, additional samples were taken from the milk tanker and the creamery's bulk tank. Samples of milk (n = 288) were taken aseptically, after agitation, from the tanker by creamery personnel, after the truck's return and prior to the milk's transfer into the creamery's bulk tank. These samples were also dispensed into one-ounce sterile glass bottles and placed in the same refrigerator already mentioned. Finally, after the milk was transferred into the creamery's bulk tank, within 5–10 min of transfer, another sample (n = 288) was taken as before and stored in the refrigerator. All samples were analyzed within 30 h of collection.

Microbiological analysis

Total aerobic microbial load was measured using standard plate count agar. One milliliter of raw milk was diluted (10^{-2}) in a 100-milliliter milk dilution bottle containing 99 ml of sterile 0.01 M phosphate-buffered solution (pH 7.2). Either 1 ml or 0.1 ml of the diluted milk was transferred into a petri dish and pour plated with Plate Count Agar (Difco Laboratories, Detroit, MI U.S.A.). Coliforms were enumerated by pipetting either 1 ml or 0.1 ml of undiluted raw milk and pour plating with Violet Red Bile Agar (VRB; Difco). Both procedures were performed in duplicate. After being mixed completely, the plates for SPC and coliform counts were incubated, at 32°C for 48 h and 32°C for 24 h, respectively. After incubation, the SPC and coliforms were enumerated.

Direct microscopic somatic cell counts were determined according to standard methods for the examination of dairy products *(11)*. The number of somatic cells counted in a single pass across the smear was multiplied by 4,600, reflecting the fraction of the total smear observed in that single pass.

Statistical analysis

Before analysis, the average of duplicate counts for SPC, coliform count, and SCC was converted to $\log_{10}$ CFU or cells/ml for analysis of variance. Data set 1 was composed of 545 observations from the farm tank only. Analyses were performed using the GLM procedure of SAS (Version 8.1; SAS Inst. Inc., Cary, NC, USA). Least squares (LS) means were gen-

FIGURE 1. Mean values of total mesophilic microbial count (log_{10} CFU/ml) from 1990 to 2000. Means and standard deviations of the means are displayed at the top of each year. Means with different superscript letters are different ($P < 0.05$)

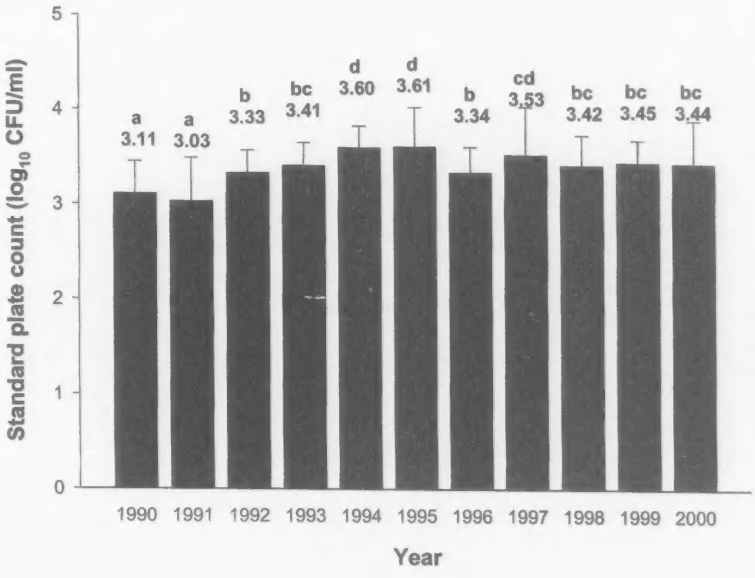


TABLE 1. Changes in total mesophilic microbial count (log_{10} CFU/ml) and coliform count (log_{10} CFU/ml) by gradient transport system

Source	*n*	SPC[a]	SEM[b]	Coliform	SEM
Farm tank	288	3.39[c]	0.01	1.28[c]	0.02
Truck tank	288	3.44[d]		1.31[c]	
Creamery tank	288	3.53[e]		1.35[d]	

[a]Standard plate count

[b]Standard error of the mean

[c,d,e]Least-square means within each column lacking a common superscript differ ($p < 0.05$)

erated for the dependent variables (SPC, coliform count, and SCC). When analyses of variance indicated statistical significance ($P < 0.05$), LS mean separation analyses were accomplished by the probability option (PDIFF; a pair-wise *t*-test). For seasonal effect, samples were divided into four classes: spring (March through May), summer (June through August), fall (September through November), and winter (December through February). Analysis of variance was conducted to determine the effects of season as a main effect, with year included in the model as a block effect. Statistical analyses were performed to generate means and standard deviations, by use of the MEANS and the UNIVARIATE procedures of SAS. Frequency distribution data also were analyzed using the FREQ procedure of SAS to reveal subclass distributions within SPC, coliform count, and SCC. Pearson correlation coefficients were calculated among the variables using raw data and log_{10}-transformed data. To test the sanitation of the transport system, data ($n = 288$) also were collected for an independent sample of each bulk tank (farm, truck, and creamery). Data were analyzed by analysis of variance using the GLM procedure of SAS, and, when appropriate ($P < 0.05$), LS means were separated as already described.

RESULTS AND DISCUSSION

In a preliminary experiment, we found no statistical variation ($P > 0.05$) in SPC among the triplicate samples from a single farm bulk tank (data not shown). Moreover, Hayes et al. *(10)* reported that, with proper sampling technique, one sample could reliably gauge the microbial status of the entire bulk tank.

In the study of transport sanitation (Table 1), there were significant differences in SPC ($P < 0.01$) and coliform counts ($P < 0.01$) by gradient transport system. Although the magnitude was not high, SPC significantly increased ($P < 0.05$) as transfer increased, resulting in a 0.14 log_{10} CFU/ml (approximately 1,000 CFU/ml) increase between farm tank and creamery tank. This increase is probably due to additional contact with surfaces; however, a pumping effect will also increase SPC counts. The coliform count also increased but no statistical difference ($P > 0.05$) was found between farm tank and truck tank. These results indicate the importance of transport and handling sanitation for BTM.

Eleven-year trends for SPC of farm BTM are presented in Fig 1. The highest mean SPC values were in 1994 and 1995, and the lowest in 1990 and 1991. When compared to 1990 and 1991, the mean SPC had

FIGURE 2. Frequency distribution across 8 subclasses for total mesophilic microbial count. Percentages are displayed at the top of each subclass

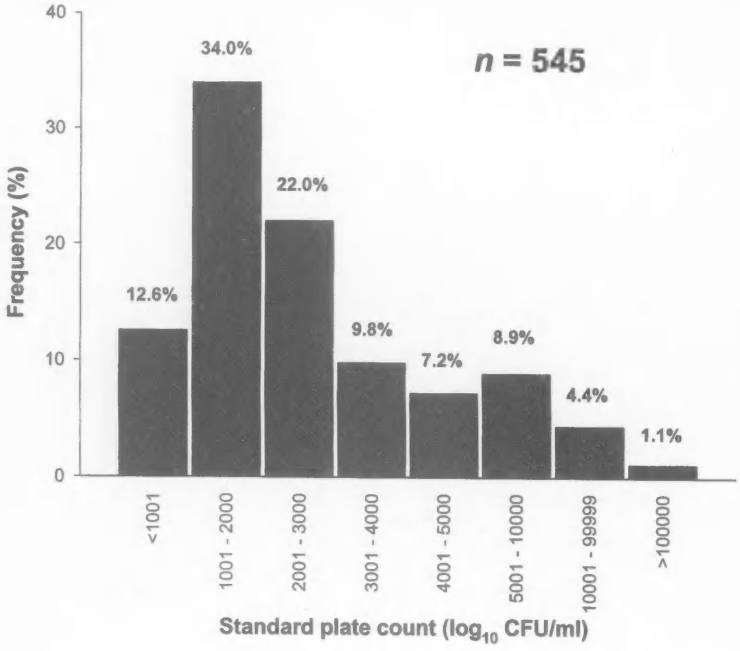
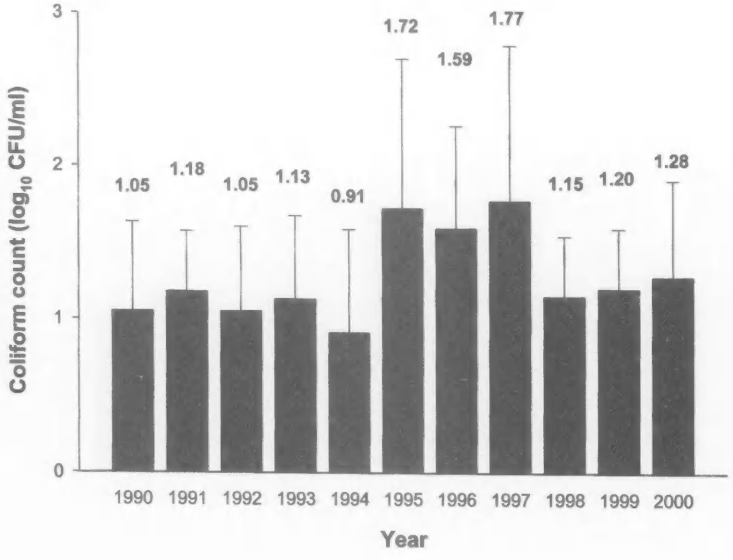


FIGURE 3. Mean values of coliform count (log_{10} CFU/ml) from 1990 to 2000. Means and standard deviations of the means are displayed at the top of each year



not been reduced throughout 9 years. In a survey of BTM in Vermont, Goldberg et al. *(8)* reported improvement in SPC, which was 23,000 CFU/ml in 1990 compared with 30,000 CFU/ml in 1985.

The frequency distribution of SPC values is shown in Fig. 2. The individual SPC enumerated throughout 11 years varied widely, ranging from 10 to 370,000 CFU/ml. In terms of the Grade "A" Pasteurized Milk Ordinance standard *(19)*, a total of 1.1% of BTM samples exceeded the SPC limit of 100,000 CFU/ml for Grade "A" prepasteurized milk throughout 11 years. In the United States, the SPC for raw milk from individual producers legally must not exceed 100,000 CFU/ml, with commingled raw milk not exceeding 300,000 CFU/ml, *(19)*. However, many economically driven milk quality incentive programs have led to the consistent production of individual and commingled milks having SPCs below 10,000 and 30,000 to 70,000 CFU/ml, respectively *(17)*. In the present study, the majority of BTM samples (94.5%) were less than 10,000 CFU/ml, yielding an average SPC of 5,600 CFU/ml for all samples. In previous surveys in the United States, researchers reported that a geometric mean SPC was 10,000 CFU/ml in New York State *(4)*, 11,000 CFU/ml in Vermont *(8)*, and 11,000 CFU/ml multi-state *(13)*. Our numbers of SPC (geometric mean SPC of 2,200 CFU/ml) were lower than those reported in these studies. However, in the multi-state study, Peeler et al. *(13)* found significant variation in the geometric mean for SPC by state of origin and reported that the mean SPC varied between 4,700 and 17,000 CFU/ml.

Figure 3 shows the 11-year trends in coliform count. An elevated mean coliform count was observed from 1995 to 1997, and relatively low mean coliform count from 1990 to 1994. Also, compared to earlier years, no improvement in coliform count was found in recent years.

TABLE 2. Correlation coefficients among traits of microbiological quality

	Coliform count	Somatic cell count
	Using raw data	
Standard plate count	0.643***	0.068
Coliform count		0.017
	Using transformed-$\log_{10}$	
Standard plate count	0.374***	0.288***
Coliform count		-0.015

***$p < 0.001$

TABLE 3. Effect of season on total mesophilic microbial count ($\log_{10}$ CFU/ml), coliform count ($\log_{10}$ CFU/ml), and somatic cell count ($\log_{10}$ cells/ml)

Season	*n*	SPC[a]	Coliform	SCC[b]
Spring	134	3.31 ± 0.03^{c}	1.22 ± 0.06	5.20 ± 0.01^{c}
Summer	138	$3.37 \pm 0.03^{c,d}$	1.33 ± 0.06	5.25 ± 0.01^{d}
Fall	145	$3.41 \pm 0.03^{d,e}$	1.27 ± 0.05	5.20 ± 0.01^{c}
Winter	128	3.47 ± 0.03^{e}	1.30 ± 0.06	5.20 ± 0.01^{c}

[a]Standard plate count

[b]Somatic cell count

[c,d,e]Least-square means within each column lacking a common superscript differ ($p < 0.05$)

The frequency within coliform subclass is shown in Fig. 4. There was a large variation in coliform count throughout 11 years. It ranged from 1 to an estimated value of 90,000 CFU/ml, yielding a mean coliform count of 500 CFU/ml (geometric mean of 14 CFU/ml). A total of 65.4% of BTM samples had coliform counts less than 20 CFU/ml, whereas 12.2% had more than 100 CFU/ml. Rea et al. *(14)*, who examined the coliforms in raw milk in Ireland, found that 65 to 71% of samples had less than 100 CFU/ml. Boor et al. *(4)* reported a geometric mean coliform count of 24 CFU/ml, in New York State.

The highest mean SCC was observed in 1994 and 1995 (Fig. 5) because of sudden elevations in SCC; SCC greater than 500,000 cells/ml were detected in 18 cases in 1994 and 9 cases in 1995, for a total of 27 cases throughout the 11 years (data not shown). Although many factors could be associated with elevated SCC, the most likely reason for those sudden elevations is the farm management practices (personal communication with farm manager). Recently, Saville et al. *(18)* pointed out the importance of farm management practices, because management practices influencing SCC might increase the risk of antibiotic residue violations.

The SCC ranged widely, from 56,000 to 920,000 cells/ml throughout the 11 years (Fig. 6), yielding a mean SCC of 200,000 cells/ml (geometric mean of 150,000). Currently, the Pasteurized Milk Ordinance *(19)* requires that Grade "A" raw milk have less than 750,000 cells/ml, and the Interstate Milk Shippers have proposed lowering that limit to 500,000 cells/ml *(2)*. The frequency of < 200,000 cells/ml was 74.5%, and the percentage of samples over the proposed limit (> 500,000 cells/ml) was 5.4% during 11 years in this study. In the survey in Vermont, Goldberg et al. *(8)* reported in (1991) that mean SCC decreased from 540,000 cells/ml in 1985 to 340,000 cells/ml in 1990. Allore et al. *(2)* reported that approximately 20% of the milk shipments from Northeastern area would be greater than the proposed 500,000 SCC limit.

Simple correlation coefficients among traits of microbiological quality are presented in Table 2. Using raw data, standard plate count was moderately correlated to coliform count ($r = 0.64$, $P < 0.001$), but the relationships between SCC and other microbiological indexes were very low. In contrast, use of $\log_{10}$-transformed data showed that the relationship between SPC and coliforms ($r = 0.37$, $P < 0.001$) was weaker than when raw data were used. In addition, a low but highly significant correlation was seen between SPC and SCC ($r = 0.29$, $P < 0.001$).

FIGURE 4. Frequency distribution across 9 subclasses for coliform count. Percentages are displayed at the top of each subclass

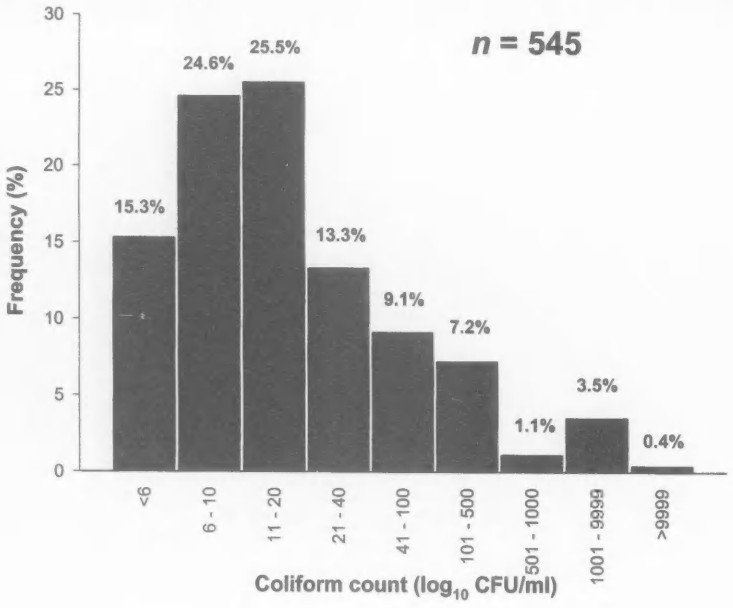
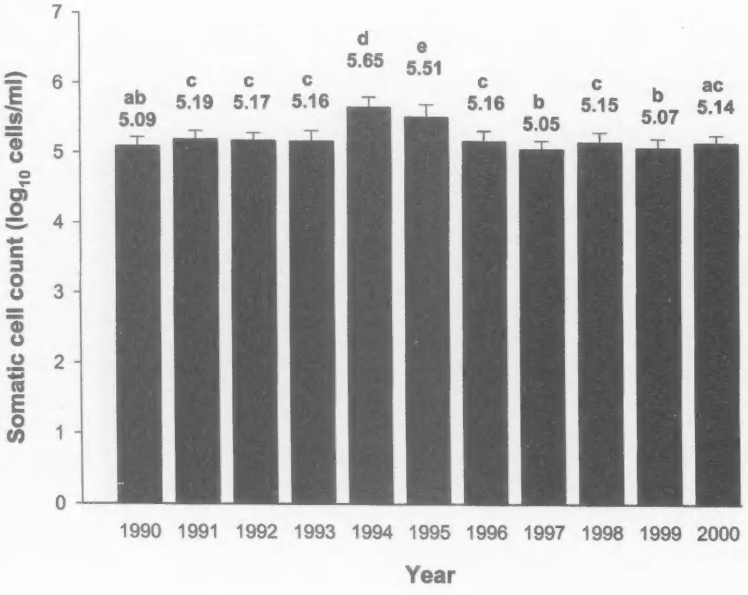


FIGURE 5. Mean values of somatic cell count (log_{10} cells/ml) from 1990 to 2000. Means and standard deviations of the means are displayed at the top of each year. Means with different superscript letters are different ($p < 0.05$)

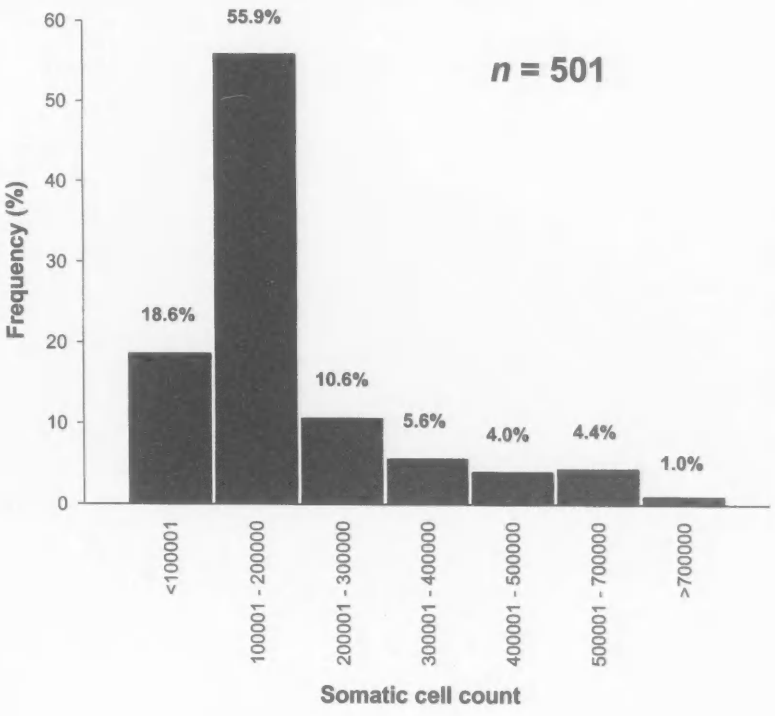


Ideally, a representative microbiological measurement could be used as a predictor of the microbiological index or of other bacterial values. However, as already shown, the correlations among obtained values for microbiological indices were low to moderate. Furthermore, in terms of sudden elevations in SPC, coliforms, and SCC, results obtained with individual samples revealed no strong association with other variables. Our results suggested that those traits could not be used as predictors to estimate any other index. In a study of microbiological quality of BTM, Boor et al. *(4)* found low to moderate correlations between the various microbiological parameters; for example, the correlation coefficient between SPC and coliforms was 0.42 in their study. In contrast, Aleksieva and Krushev *(1)* reported a correlation between the total bacterial contamination and coliforms, which was more clearly expressed in batches of high and low bacterial count.

Significant seasonal effects were detected on SPC ($P < 0.01$) and SCC ($P < 0.01$) (Table 3). Values for SPC were higher ($P < 0.05$) in winter than in spring and summer. This result was in agreement with Rea et al. *(14)*, who reported that high-count milks were mainly found during the winter months and who observed a significant rise in the isolation rate of pathogenic bacteria, including *Listeria monocytogenes* and *L. innocua*, during the winter months, while the cows were indoors.

The SCC was highest ($P < 0.05$) in summer, but no difference was found in other seasons (Table 3). This result was not consistent with results of Allore et al. *(2)*, who reported that SCC was higher in spring than in fall. They explained the seasonal effect on SCC by the fact that Northeastern dairy farms yield more milk in spring than in fall. Harmon et al. *(9)* noted that the effect of season on SCC is

FIGURE 6. Frequency distribution across 7 subclasses for somatic cell count. Percentages are displayed at the top of each subclass



minor if the mammary gland is uninfected, and infection status has the most important effect on milk SCC.

Although the mean value of coliform count was highest in summer (Table 3), there were no significant differences ($P > 0.05$) in coliform counts of BTM. This may be due to inherent large variations in coliforms of raw milk. Aleksieva and Krushev *(1)* reported that microbial contamination correlated strongly with the season, and the highest coliform numbers were noted during the warm months.

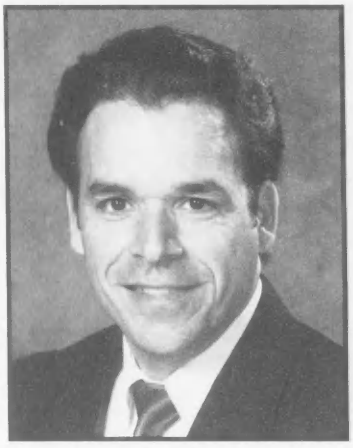
The findings of this study suggest that microbiological quality of BTM may be affected by factors such as transport and storage sanitation and season. In addition, the differences of microbiological quality in BTM vary considerably among surveys, which indicate that it can be influenced by geographical area and farm management practices. This information may assist the dairy industry in examining the long-term trends of microbiological quality of BTM. However, this study is limited in its scope because it follows a single herd, and it cannot be used to compare various herd sizes and farm management practices.

REFERENCES

1. Aleksieva, V., and B. Krushev. 1981. Quality of raw cow's milk. Vet. Med. Nauki. 18:65–71.
2. Allore, H. G., P. A. Oltenacu, and H. N. Erb. 1997. Effects of season, herd size, and geographic region on the composition and quality of milk in the Northeast. J. Dairy Sci. 80: 3040–3049.
3. Allore, H. G., P. A. Oltenacu, and R. Pearce. 1995. Impacts of impending somatic cell count limits on Northeast milk producers and processors. J. Dairy Sci. 78(Suppl. 1):179.
4. Boor, K. J., D. P. Brown, S. C. Murphy, S. M. Kozlowski, and D. K. Bandler. 1998. Microbiological and chemical quality of raw milk in New York State. J. Dairy Sci. 81:1743–1748.
5. Dekkers, J. C. M., T. Van Erp, and Y. H. Schukken. 1996. Economic benefits of reducing somatic cell count under the milk quality program of Ontario. J. Dairy Sci. 79:396–401.
6. Galton, D. M., R. W. Adkinson, C. V. Thomas, and T. W. Smith. 1982. Effects of premilking udder preparation on environmental bacterial contamination of milk. J. Dairy Sci. 65:1540–1543.
7. Ginn, R. E., V. S. Packard, and T. L. Fox. 1986. Enumeration of total bacteria and coliform in milk by dry rehydratable film methods: A collaborative study. J. AOAC. 69:527–531.
8. Goldberg, J. J., J. W. Pankey, P. A. Drechsler, P. A. Murdough, and D. B. Howard. 1991. An update survey of bulk tank milk quality in Vermont. J. Food Prot. 54:549–553.
9. Harmon, R. J., W. L. Crist, R. W. Hemken, and B. E. Langlois. 1986. Prevalence of minor udder pathogens after intramammary dry treatment. J. Dairy Sci. 69:843–849.
10. Hayes, M. C., R. D. Ralyea, S. C. Murphy, N. R. Carey, J. M. Scarlett, and K. J. Boor. 2001. Identification and characterization of elevated microbial counts in bulk tank raw milk. J. Dairy Sci. 84:292–298.
11. Packard, Jr., V. S., and R. E. Ginn. 1985. Direct microscopic methods for bacteria or somatic cells. *In* G. H. Richardson (ed.), Standard methods for the examination of dairy products, 15th ed. Am. Publ. Health Assoc., Washington, D.C.
12. Payne, M., C. M. Bruhn, B. Reed, A. Scearce, and J. O'Donnel. 1999. On-farm quality assurance programs: A survey of producer and industry leader opinions. J. Dairy Sci. 82:2224–2230.
13. Peeler, T. J., J. W. Messer, R. L. Sanders, and H. K. Bachelor. 1989. A comparison of preliminary incubation counts and standard plate counts of Grade A bulk tank milk from eleven states. Dairy Food Environ. Sanit. 9:494–497.
14. Rea, M. C., T. M. Cogan, and S. Tobin. 1992. Incidence of pathogenic

bacteria in raw milk in Ireland. J. Appl. Bacteriol. 73:331–336.
15. Reinbold, G. W. 1971. Bacteriological testing of milk for regulatory purposes usefulness of current procedures and recommendations for change: 3. Raw milk quality – where do we go from here? J. Milk Food Technol. 34:260–263.
16. Rohrbach, R. W., F. A. Draughon, P. M. Davidson, and S. P. Oliver. 1992. Prevalence of *Listeria monocytogenes, Campylobacter jejuni, Yersinia enterocolitica* and *Salmonella* in bulk tank milk: risk factors and risk of human exposure. J. Food Prot. 55:93–97.
17. Ryser, E. 1999. "Microorganisms of importance in raw milk", Michigan Dairy Review, [Internet, WWW], ADDRESS: http://www.canr.msu.edu/ans/ans/mdr/issues/mdr_v4_no3.pdf.
18. Saville, W. J., T. E. Wittum, and K. L. Smith. 2000. Association between measures of milk quality and risk of violative antimicrobial residues in grade-A raw milk. J. Am. Vet. Med. Assoc. 15:541–545.
19. United States Department of Health and Human Services. 1997. Grade "A" Pasteurized Milk Ordinance. Publ. No. 229. Publ. Health Serv., FDA, Washington, D.C.
20. Van Werven, T., E. N. Noordhuizen-Stassen, A. J. J. M. Daemen, Y. H. Schukken, A. Brand, and C. Burvenich. 1997. Preinfection in vitro chemotaxis, phagocytosis, oxidative burst, and expression of CD11/CD18 receptors and their predictive capacity on the outcome of mastitis induced in dairy cows with *Escherichia coli*. J. Dairy Sci. 80:67–74.
21. Zehner, M. M., R. J. Farnsworth, R. D. Appleman, K. Larntz, and J. A. Springer. 1986. Growth of environmental mastitis pathogens in various bedding materials. J. Dairy Sci. 69:1932–1941.

Frank Yiannas Elected IAFP Secretary



The International Association for Food Protection welcomes Frank Yiannas to the Executive Board as Secretary. Mr. Yiannas will take office at the conclusion of the Awards Banquet at IAFP 2003, the Association's 90th Annual Meeting in New Orleans, Louisiana. By accepting this position, he made a five-year commitment to the Association and will begin his term as President in August of 2006.

As Manager of Walt Disney World's Food Safety & Health Department, Mr. Yiannas oversees all food safety programs, as well as other public health functions, for one of the world's strongest and well-recognized global brands. His scope of responsibilities includes: food safety oversight of major theme parks and resorts, two cruise ships, two water parks, and hundreds of the world's busiest food locations. More than 15,000 food and beverage employees, hundreds of food suppliers, and a number of critical regulatory compliance issues also come under his purview.

Since joining Disney in 1989, Mr. Yiannas has expanded Disney's program beyond testing and inspections by creating leading-edge risk management strategies. Under his tenure, Disney has been recognized as a pioneer in food safety training, implementing HACCP at the food service level, developing hand-held computer technology to conduct food safety audits, and utilizing progressive microbial testing approaches. In 2001, Walt Disney World received the prestigious Black Pearl Award for corporate excellence in food safety by the International Association for Food Protection (IAFP).

As a frequent speaker at national and international conferences, Mr. Yiannas is known for his ability to build partnerships and for his innovative approaches to food safety. He has given many invited presentations to professionals in the United States and abroad and is frequently cited in industry publications.

Mr. Yiannas' commitment and involvement with IAFP includes numerous positions within the association such as: Immediate Past Chairperson of the Annual Meeting Program Committee, Past Chairperson of the Food Sanitation PDG, and Past Black Pearl Award Jury Committee Member. He has organized numerous symposia and workshops for annual meetings and lectured on relevant food safety topics as well as currently serving as the Chairperson of the Retail Food Safety & Quality PDG. Mr. Yiannas led a groundbreaking initiative on behalf of this PDG and IAFP, leading a task force to develop International Food Safety Icons, pictorial representations of important food safety concepts that can be recognized regardless of a person's native language.

At the affiliate level, Mr. Yiannas supports IAFP through his involvement with the Florida Association for Food Protection (FAFP) as their Immediate Past President. During his tenure as President in 2000 and 2001, FAFP received the Shogren Award for two consecutive years. The Shogren Award is given annually by IAFP to the best overall affiliate.

At the national level, Mr. Yiannas is Vice Chair of Council I, Laws and Regulations, of the Conference for Food Protection (CFP). This council reviews proposed changes to the Food and Drug Administration (FDA) Model Food Code. In addition, he participates in numerous professional committees involved with issues of national importance, including co-chairing a committee for the CFP to develop standards for permanent, outdoor cooking sites. Mr. Yiannas also participated on the FDA-sponsored, 10-member panel organized through the Institute of Food Technologists to review the current definition of potentially hazardous food.

Mr. Yiannas is a registered microbiologist with the American Academy of Microbiology. He holds memberships with several professional associations, including the National Environmental Health Association, the American Society of Microbiology, and the Institute of Food Technologists. He received his BS in Microbiology from the University of Central Florida and is completing a Master of Public Health (MPH) from the University of South Florida.

Congratulations!

CALL FOR SYMPOSIA

IAFP 2004

AUGUST 8–11, 2004

PHOENIX, ARIZONA

The Program Committee invites International Association for Food Protection Members and other interested individuals to submit a symposium proposal for presentation during IAFP 2004, August 8–11, 2004 in Phoenix, Arizona.

WHAT IS A SYMPOSIUM?

A symposium is an organized, 3 1/2 hour session emphasizing a central theme relating to food safety and usually consists of six 30-minute presentations by each presenter and a 30-minute break. It may be a discussion emphasizing a scientific aspect of a common food safety and quality topic, issues of general interest relating to food safety and quality, a report of recent developments, an update of state-of-the-art materials, or a discussion of results of basic research in a given area. The material covered should include current work and the newest findings. Symposia will be evaluated by the Program Committee for relevance to current science and to Association Members. Proposals may be prepared by individuals, committees, or professional development groups.

SUBMISSION GUIDELINES

To submit a symposium, complete the Symposium Proposal form in its entirety. When submitting a proposal, the presenters do not need to be confirmed, only identified. Confirmation of presenters takes place after acceptance of your symposium.

SYMPOSIUM PROPOSAL DEADLINE

Proposals may be submitted by mail to the IAFP office for receipt no later than July 21, 2003 or by presenting the proposal to the Program Committee at its meeting on Sunday, August 10, 2003 in New Orleans, Louisiana.

The Program Committee will review submitted symposia. Organizers will be notified as to the status of their proposal by September 2003. Symposia will be accepted for further development or rejected. Accepted symposia are required to be finalized and sent to the IAFP office by January 7, 2004. The Program Committee has the final decision whether the finalized symposia will be accepted for presentation at IAFP 2004. The organizer will be notified of the final results by February 2004.

PRESENTERS WHO ARE NOT MEMBERS

International Association for Food Protection does not reimburse invited presenters for travel, hotel, or other expenses incurred during the Annual Meeting. However, invited presenters who are not Association members will receive a complimentary registration. Presenters who are Association Members are expected to pay normal registration fees.

ASSOCIATION FOUNDATION SPONSORSHIP

The International Association for Food Protection Foundation has limited funds for travel sponsorship of presenters. After formal acceptance of the symposium, symposia organizers may make requests in writing to the Program Committee Chairperson. Requests are reviewed on an individual and first-come-first-served basis. The maximum funding grant will be $500 per symposium. Organizers are welcome to seek funding from other sources and the Association will provide recognition for these groups in our program materials. Organizers are asked to inform the Association if they obtain outside funding.

HAVE AN IDEA BUT YOU ARE UNABLE TO ORGANIZE IT?

Many Association Members have excellent suggestions for symposia topics, but are unable to organize the session. Such ideas are extremely valuable and are welcome. If you have an idea for a symposium topic, please contact Bev Corron. Symposia topics are among the most valuable contribution an Association Member can make to enhance the quality of our Annual Meeting.

WHO TO CONTACT:

Bev Corron
International Association for Food Protection
6200 Aurora Ave., Suite 200W
Des Moines, IA 50322-2864, USA
Phone: 800.369.6337; 515.276.3344
Fax: 515.276.8655
E-mail: bcorron@foodprotection.org

SYMPOSIUM PROPOSAL

IAFP 2004

AUGUST 8–11, 2004

PHOENIX, ARIZONA

Title: _____

Organizer's Name: _____

Address: _____

Phone: _____ Fax: _____ E-mail: _____

Topic – Suggested Presenter, Affiliation

(Example: 1. HACCP Implementation – John Smith, University of Georgia)

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

Suggested Convenors:

_____

_____

Description of Audience: _____

Signature of Organizer: _____

Submit by mail by July 21, 2003 to:	International Association for Food Protection Symposium Proposal 6200 Aurora Ave., Suite 200W Des Moines, IA 50322-2864, USA
Submit in person on August 10, 2003 to:	Program Committee Meeting IAFP 2003, the Association's 90th Annual Meeting New Orleans, Louisiana
or Contact:	Bev Corron International Association for Food Protection 6200 Aurora Ave., Suite 200W Des Moines, IA 50322-2864, USA Phone: 800.369.6337; 515.276.3344 Fax: 515.276.8655 E-mail: bcorron@foodprotection.org

AFFILIATE OFFICERS

ALABAMA ASSOCIATION FOR FOOD PROTECTION

Pres., John P. Nelson ..... Birmingham
Pres. Elect, Brian Bower ..... Headland
Vice Pres., James Patrick Nelson ..... Birmingham
Past Pres., Jon Searles ..... Sylacauga
Sec'y. Treas., Karen Crawford ..... Tuscaloosa
Delegate, Tom McCaskey ..... Auburn

Mail all correspondence to:
G. M. Gallaspy
P.O. Box 303017, Suite 1250
Montgomery, AL 36130-3017
334.206.5375
E-mail: ggallaspy@adph.state.al.us

ALBERTA ASSOCIATION FOR FOOD PROTECTION

Pres., Gary Gensler ..... Edmonton
Pres. Elect, Michelle Sigvaldson ..... Edmonton
Past Pres., Elaine Dribnenky ..... Red Deer
Sec'y., Kelly Sawka ..... Edmonton
Treas., Bonnie Jensen ..... Edmonton
Delegate, Lynn M. McMullen ..... Edmonton

Mail all correspondence to:
Lynn M. McMullen
University of Alberta
Dept. of Ag., Food and Nutritional Science
4-10 Ag. For. Center
Edmonton, Alberta T6G 2P5 Canada
780.492.6015
E-mail: lynn.mcmullen@ualberta.ca

BRAZIL ASSOCIATION FOR FOOD PROTECTION

Pres., Mariza Landgraf ..... São Pãulo
Vice Pres., Maria Teresa Destro ..... São Pãulo
Sec'y., Ivone Delazari ..... São Pãulo
Treas., Bernadette D.G.M. Franco ..... São Pãulo
Delegate, Maria Teresa Destro ..... São Pãulo

Mail all correspondence to:
Maria Teresa Destro
Univ. São Pãulo
Av Prof. Lineu Prestes 580 B114
São Pãulo, SP 05.508-900 Brazil
55.113.818.2399
E-mail: mtdestro@usp.br

BRITISH COLUMBIA FOOD PROTECTION ASSOCIATION

Pres., Terry Peters ..... Richmond
Vice Pres., Annette Moore ..... Abbotsford
Sec'y., Ernst Schoeller ..... West Vancouver
Treas., Christine Hein ..... Langley
Delegate, Terry Peters ..... Richmond

Mail all correspondence to:
Terry Peters
5500 Woodpecker Dr.
Richmond, British Columbia V7E 5A8 Canada
604.666.1080
E-mail: terry_peters@telus.net

CALIFORNIA ASSOCIATION OF DAIRY AND MILK SANITARIANS

Pres., Frances Valles ..... Ontario
1st Vice Pres., Michelle Clark ..... Hayward
2nd Vice Pres., Ross Henderson-McBean ..... Paso Robles
Past Pres., Dawn Stead ..... Woodland Hills
Exec. Sec'y. Treas., John Bruhn ..... Davis
Recording Sec'y., Sarah Houston ..... Fairfield
Delegate, John Bruhn ..... Davis

Mail all correspondence to:
John C. Bruhn
101B Cruess Hall
Dairy Research and Information Center
University of California-Davis
Food Science and Technology
Davis, CA 95616-8598
530.752.2192
E-mail: jcbruhn@ucdavis.edu

CAPITAL AREA FOOD PROTECTION ASSOCIATION

Pres., Jianghong Meng ..... College Park, MD
Vice Pres., Randy Huffman ..... Arlington, VA
Past Pres., Jill Snowdon ..... Washington, D.C.
Sec'y., Kalmia Kniel ..... Beltsville, MD
Treas., Alan Parker ..... Hanover, MD
Delegate, Carl Custer ..... Washington, D.C.

Mail all correspondence to:
Kalmia E. Kniel
USDA-ARS, 13100 Baltimore Ave.
Building 1040, Rm. 100 BARC East
Beltsville, MD 20705
301.504.8064
E-mail: kkniel@anri.barc.usda.gov

CAROLINAS ASSOCIATION FOR FOOD PROTECTION

Pres., Jeff Rhodehamel ..... Duncan, SC
Vice Pres., John Rushing ..... Raleigh, NC
Past Pres., Michael Rhodes ..... Raleigh, NC
Sec'y., James Ball ..... Salisbury, NC
Treas., Laura Oliver ..... Columbia, SC
Delegate, Jeff Rhodehamel ..... Duncan, SC

Mail all correspondence to:
Jeff Rhodehamel
Cryovac/Sealed Air Corp.
100 Rogers Bridge Road
Duncan, SC 29334-0464
864.433.2514
E-mail: jeff.rhodehamel@sealedair.com

CONNECTICUT ASSOCIATION OF DAIRY AND FOOD SANITARIANS

Pres., David Pantalone ..... Ansonia
Vice Pres./Treas., Kevin Gallagher ..... Milford
Vice Pres./Asst. Treas., Karen Rotella ..... Middlebury
Sec'y., Bob Brown ..... East Bridgewater
Delegate, Frank Greene ..... Hartford

Mail all correspondence to:
Frank Greene
CT Dept. of Consumer Protection
Div. of Food and Standards
Hartford, CT 06206
860.713.6160
E-mail: frank.greene@po.state.ct.us

FLORIDA ASSOCIATION FOR FOOD PROTECTION

Pres., Zeb E. Blanton ..... Altamonte Springs
Pres. Elect, Marjorie Jones ..... Port St. Lucie
Vice Pres., Rusty Reece ..... Tampa
Past Pres., Frank Yiannas ..... Lake Buena Vista
Sec'y., Sharon Grossman ..... Orange City
Treas., Bill Thornhill ..... Winter Haven
Delegate, Peter Hibbard ..... Oviedo

Mail all correspondence to:
Zeb E. Blanton
FL Dept. of Agri. & Consumer Service
3125 Conner Blvd., Room 288
Tallahassee, FL 32399-1650
850.488.3951
E-mail: blantoz@doacs.state.fl.us

GEORGIA ASSOCIATION FOR FOOD PROTECTION

Pres., Robert Brooks ..... Gainesville
Vice Pres., Mark Norton ..... Atlanta
Past Pres., Traci Sayer ..... Suwanee
Sec'y., Frederica Copeland ..... Lithonia
Treas., James Camp ..... Newman
Delegate, David Fry ..... Lilburn

Mail all correspondence to:
Robert W. Brooks
Woodson-Tenent Laboratories
2035 Atlas Circle, P.O. Box 1097
Gainesville, GA 30501
770.536.5909
E-mail: robertbrooks3@csi.com

IDAHO ENVIRONMENTAL HEALTH ASSOCIATION

Pres., Paul Guenther ..... Lewiston
Past Pres., Barry Burnell ..... Boise
Sec'y. Treas., Jim Lane ..... Twin Falls
Delegate, Frank Isenberg ..... Boise

Mail all correspondence to:
Jim Lane
So. Central District Health
220 6th Ave. North
Twin Falls, ID 83301
208.734.5900 ext. 309
E-mail: jlane@phd5.state.id.us

ASSOCIATED ILLINOIS MILK, FOOD AND ENVIRONMENTAL SANITARIANS

Pres., Mark Kloster ..... North Aurora
Pres. Elect, Don Wilding ..... Springfield
1st Vice Pres., Pat Callahan ..... Carlinville
2nd Vice Pres., Jane Nosari ..... Springfield
Past Pres., Steve DiVincenzo ..... Springfield
Sec'y., John Ellingson ..... Rockford
Treas., Nicolette Oates ..... Chicago
Delegate, Mark Kloster ..... North Aurora

Mail all correspondence to:
John Ellingson
Dean Foods Company
1126 S. Kilburn Avenue
Rockford, IL 61101
815.490.5523
E-mail: john_ellingson@deanfoods.com

INDIANA ENVIRONMENTAL HEALTH ASSOCIATION, INC.

Pres., Jason LeMaster ..... Noblesville
Pres. Elect, Scott Gilliam ..... Indianapolis
Vice Pres., Richard Wise ..... Indianapolis
Past. Pres., Robert Lewis ..... Shelbyville
Treas., George Laraway ..... Indianapolis
Sec'y., Margaret Voyles ..... Indianapolis
Delegate, Helene Uhlman ..... Hammond

Mail all correspondence to:
Helene Uhlman
Hammond Health Dept.
649 Conkey St., East
Hammond, IN 46324-1101
219.853.6358

IOWA ASSOCIATION FOR FOOD PROTECTION

Pres., Randy Stephenson ..... Stacyville
Vice Pres. Pro Tem, Dennis Murphy ..... Waukon
1st Vice Pres., Bill Nietert ..... Arlington
2nd Vice Pres., Leo Timms ..... Ames
Past Pres., Jimmy Clark ..... Seymore
Sec'y., Phyllis Borer ..... Sibley
Treas., Jim Mills ..... Sibley
Delegate, Randy Stephenson ..... Stacyville

Mail all correspondence to:
Phyllis Borer
AMPI
1020 - 4th Ave., P.O. Box 36
Sibley, IA 51249
712.754.2511
E-mail: borerp@ampi.com

KANSAS ASSOCIATION OF SANITARIANS

Pres., Angela Kohls ..... Topeka
1st Vice Pres., Mark Bradshaw ..... Wichita
2nd Vice Pres., Karen Purvis ..... Hays
Past Pres., Steve Johnson ..... McPherson
Sec'y., Tim Wagner ..... Wichita
Treas., Greg Willis ..... Hoisington
Delegate, Angela Kohls ..... Topeka

Mail all correspondence to:
Tim Wagner
Sedgwick Co. Code Enforcement
1144 S. Seneca
Wichita, KS 67213
316.383.7951
E-mail: twagner@sedgwick.gov

KENTUCKY ASSOCIATION OF DAIRY, FOOD AND ENVIRONMENTAL SPECIALISTS

Pres., Sue Jewell ..... Florence
Pres. Elect, Laura Strevels ..... Edgewood
Vice Pres., Tony White ..... Harrodsburg
Past Pres., Sam Burnette ..... Frankfort
Sec'y., Brenda Haydon ..... Waddy
Treas., Kim True ..... Frankfort
Delegate, Sue Jewell ..... Florence

Mail all correspondence to:
Sue Jewell
8045 Trailwood Ct.
Florence, KY 41042
859.371.2278
E-mail: suejewell@hotmail.com

KOREA ASSOCIATION OF MILK, FOOD AND ENVIRONMENTAL SPECIALISTS

Pres., Duck-hwa Chung ..... Kyungnam
Vice Pres., Dong-Suck Chang ..... Pusan
Past Pres., Kook-Hee Kang ..... Kyunggido
Sec'y., Deog-Hwan Oh ..... Kangwondo
Delegate, Dong-Kwan Jeong ..... Pusan

Mail all correspondence to:
Deog-Hwan Oh
Division of Food and Biotechnology
Kangwon National University
192-1, Hyoja 2 Dong
Chunchon, Kangwondo 200-701, South Korea
82.361.250.6457
E-mail: deoghwa@cc.kangwon.ac.kr

METROPOLITAN ASSOCIATION FOR FOOD PROTECTION

Pres., Patrick Boyle ..... Whitehouse, NJ
1st Vice Pres., Gary Moore ..... Pittstown, NJ
2nd Vice Pres., Dennis Tidwell ..... Hamilton, NJ
Past Pres., Steven Mitchell ..... Plainview, NY
Sec'y. Treas., Carol A. Schwar ..... Washington, NJ
Delegate, Fred Weber ..... Hamilton, NJ

Mail all correspondence to:
Carol Schwar
Warren County Health Dept.
319 W. Washington Ave.
Washington, NJ 07882
908.689.6693
E-mail: cschwar@entermail.net

MEXICO ASSOCIATION FOR FOOD PROTECTION

Pres., Lydia Mota De La Garza ..... Mexico City
Vice Pres., Fausto Tejeda-Trujillo ..... Puebla
Past Pres., Alejandro Castillo ..... College Station, TX
Sec'y., Nanci E. Martinez-Gonzalez ..... Guadalajara
Delegate, M. Rufugio Torres-Vitela ..... Guadalajara

Mail all correspondence to:
Lydia Mota De La Garza
Avenida 479 No. 35, Seccion 7
Unidad Aragon Del Gustavo A. Madero CP 07920 Mexico
01.5794.0526
E-mail: lgarza88@hotmail.com

MICHIGAN ENVIRONMENTAL HEALTH ASSOCIATION

Pres., Bruce DuHamel ..... Stanton
Pres. Elect., John Gohlke ..... Lansing
Past Pres., Lori Simon ..... Lansing
Treas., Becky Ouellette ..... Jackson
Sec'y., Alan Hauck ..... Ann Arbor
Delegate, Bruce DuHamel ..... Stanton

Mail all correspondence to:
Alan Hauck
Washtenaw County Environmental Health
705 N. Zeeb Road, P.O. Box 8645
Ann Arbor, MI 48107-8645
734.222.3819
E-mail: haucka@co.washtenaw.mi.us

MISSISSIPPI MILK, FOOD, AND ENVIRONMENTAL HEALTH ASSOCIATION

Pres., Jesse Shields ..... Tupelo
Vice Pres., Anne Hogue ..... Canton
Past Pres., Willie Brown ..... Jackson
Sec'y./Treas., Rick Hill ..... Ripley
Delegate, Jesse Shields ..... Tupelo

Mail all correspondence to:
Jesse Shields
Public Health District II
P.O. Box 199
Tupelo, MS 38802
662.841.9015
E-mail: jshields@msdh.state.ms.us

MISSOURI MILK, FOOD AND ENVIRONMENTAL HEALTH ASSOCIATION

Pres., Linda S. Haywood ..... Springfield
Pres. Elect, Deborah Seeck ..... St. Louis
Vice Pres., Marsha Perkins ..... Columbia
Past Pres., Joel VanHoose ..... Jefferson City
Sec'y., Andrew Hoffman ..... Warrenton
Treas., Gala Jaramillo ..... Jefferson City
Delegate, Linda S. Haywood ..... Springfield

Mail all correspondence to:
Linda S. Haywood
Dairy Farmers of America Inc.
800 W. Tampa, P.O. Box 1837
Springfield, MO 65801-1837
417.829.2788
E-mail: lhaywood@dfamilk.com

NEBRASKA ASSOCIATION OF MILK AND FOOD SANITARIANS

Pres., Dianne Peters ..... Lincoln
Vice Pres., Tom Tieso ..... Lincoln
Past Pres., Gary Hosek ..... Lincoln
Treas., Jill Schallehn ..... Omaha
Delegate, Tom Tieso ..... Lincoln

Mail all correspondence to:
Tom Tieso
Nebraska Dept. of Agriculture
3703 S. 14th
Lincoln, NE 68502
402.471.2176
E-mail: tomlt@agr.state.ne.us

NEW YORK STATE ASSOCIATION FOR FOOD PROTECTION

Pres., Bill Young ..... LeRoy
Pres. Elect, Norman Fogg ..... Troy
Past Pres., John Schrade ..... Jamaica
Council Chairman, John Grom ..... Vernon
Exec. Sec'y., Janene Lucia ..... Ithaca
Delegate, Steve Murphy ..... Ithaca

Mail all correspondence to:
Janene Lucia
NYS Assn. for Food Protection
172 Stocking Hall
Ithaca, NY 14853
607.255.2892
E-mail: jgg3@cornell.edu

NORTH DAKOTA ENVIRONMENTAL HEALTH ASSOCIATION

Pres., Dick Bechtel ..... Mandan
1st Vice Pres., Terry Ludlum ..... Fargo
2nd Vice Pres., Grant Larson ..... Fargo
Past Pres., James Schothorst ..... Grand Forks
Sec'y., Debra Larson ..... Bismarck
Treas., Lisa Well ..... Bismarck
Delegate, Dick Bechtel ..... Mandan

Mail all correspondence to:
Debra Larson
ND Dept. of Health
600 E. Boulevard Ave.
Bismarck, ND 58505
701.328.6150
E-mail: djlarson@state.nd.us

OHIO ASSOCIATION OF MILK, FOOD AND ENVIRONMENTAL SANITARIANS

Pres., Merle Vitug ..... Cincinnati
1st Vice Pres., Virginia Meacham ..... Cincinnati
2nd Vice Pres., Daniel McElroy ..... Cincinnati
Past Pres., Dixie Lauer ..... Columbus
Sec'y. Treas., Donald Barrett ..... Columbus
Delegate, Gloria Swick-Brown ..... Somerset

Mail all correspondence to:
Donald Barrett
Ohio Health Dept.
6855 Diley Road NW
Canal Winchester, OH 43110
614.645.6195
E-mail: donb@columbus.gov

ONTARIO FOOD PROTECTION ASSOCIATION

Pres., Gail Evans Seed ..... Bright
Vice Pres., Tom Graham ..... Guelph
Past Pres., Robert Serapiglia ..... Weston
Sec'y. Treas., Melodie Wynne ..... Guelph
Delegate, Gail Evans Seed ..... Bright

Mail all correspondence to:
Glenna Haller
Ontario Food Protection Association
28-380 Eramosa Road, Suite 279
Guelph, Ontario N1E 7E1 Canada
519.823.8015
E-mail: ofpa-info@worldchat.com

PENNSYLVANIA ASSOCIATION OF MILK, FOOD AND ENVIRONMENTAL SANITARIANS

Pres., Brett Brumbaugh ..... Brockway
Pres. Elect, Douglas Kennedy ..... Harrisburg
Vice Pres., Samuel A. Maclay ..... Mechanicsburg
Past Pres., Troye Cooper ..... Lebanon
Sec'y., Eugene R. Frey ..... Lancaster
Treas., Robert K. Mock ..... Boyertown
Delegate, Eugene R. Frey ..... Lancaster

Mail all correspondence to:
Eugene R. Frey
Land O'Lakes, Inc.
307 Pin Oak Place
Lancaster, PA 17602-3469
717.397.0719
E-mail: efrey@landolakes.com

QUEBEC FOOD PROTECTION ASSOCIATION

Pres., Marie-Claude Lamontagne ..... St. Anselme
Pres. Elect, Gisèle LaPointe ..... Quebec
Vice Pres., André Giguère ..... St. Romuald
Sec'y., Noël Brousseau ..... Candiac
Treas., Carl Pietrazsko ..... St. Anselme
Delegate, Marie-Claude Lamontagne ..... St. Anselme

Mail all correspondence to:
Marie-Claude Lamontagne
J. M. Schneider Inc.
254 Rue Principale
St. Anselme, Quebec G0R 2N0 Canada
418.855.4474 ext. 3409
E-mail: mlamonta@jms.ca

SOUTH DAKOTA ENVIRONMENTAL HEALTH ASSOCIATION

Pres., Clark Hepper ..... Pierre
Pres. Elect, Mark Shuttleffel ..... Sioux Falls
Past Pres., Rod Coker ..... Pierre
Sec'y. Treas., Cindy Koopman-Viergets ..... Spearfish
Delegate, Darwin Kurtenbach ..... Pierre

Mail all correspondence to:
Clark Hepper
SD Dept. of Health
Office of Health Protection
600 E. Capitol
Pierre, SD 57501
605.773.3364
E-mail: clark.hepper@state.sd.us

SOUTHERN CALIFORNIA ASSOCIATION FOR FOOD PROTECTION

Pres., Jennylynd James ..... Westlake Village
Pres Elect., Howard Malberg ..... Anaheim
Vice Pres., Robert Delmore ..... Los Angeles
Past Pres., Margaret Burton ..... San Diego
Sec'y., Marty Gushwa ..... Glendale
Treas., Cristi Wisham ..... San Diego
Delegate, Margaret Burton ..... San Diego

Mail all correspondence to:
Jennylynd A. James
Dole Foods Co.
One Dole Dr.
Westlake Village, CA 91362-7300
818.874.4710
E-mail: jennylynd_a_james@na.dole.com

TENNESSEE ASSOCIATION OF MILK, WATER AND FOOD PROTECTION

Pres., Robert Owen ..... Murfreesboro
Past Pres., Jim Howie ..... Waxhaw
Sec'y. Treas., F. Ann Draughon ..... Knoxville
Delegate, Robert Owen ..... Murfreesboro

Mail all correspondence to:
F. Ann Draughon
University of Tennessee
Food Safety & Processing Center
2605 River Road
Knoxville, TN 37996
865.974.8400
E-mail: draughon@utk.edu

TEXAS ASSOCIATION FOR FOOD PROTECTION

Pres., Gregory G. Crishi ..... Dallas
Past Pres., Mike Giles ..... Tyler
Sec'y. Treas., Ron Richter ..... College Station
Delegate, Gene Wright ..... Austin

Mail all correspondence to:
Ron Richter
Texas A & M University
Dept. of Animal Science
2471 TAMU
College Station, TX 77843-2471
979.845.4409
E-mail: rlrichter@neo.tamu.edu

UPPER MIDWEST DAIRY INDUSTRY ASSOCIATION

Pres., Bruce Steege ..... Zumbrota
Vice Pres., Dale Heinz ..... Eyota
Gen. Mgr., Gene Watnass ..... Vining
Sec'y. Treas., Paul Nierman ..... Mounds View
Delegate, Bruce Steege ..... Zumbrota

Mail all correspondence to:
Paul Nierman
DQCI Services, Inc.
5205 Quincy St.
Mounds View, MN 55112-1400
763.785.0484
E-mail: paul@dqci.com

VIRGINIA ASSOCIATION OF SANITARIANS AND DAIRY FIELDMEN

Pres., Jim Byington ..... Blountville
Past Pres., Doug Greenway ..... Roanoke
Sec'y. Treas., Mary Jane Wolfinger ..... Orange
Delegate, Mary Jane Wolfinger ..... Orange

Mail all correspondence to:
Mary Jane Wolfinger
17066 Tyson's Center Road
Orange, VA 22960
540.854.6208

WASHINGTON ASSOCIATION FOR FOOD PROTECTION

Pres., Robert Brooke ..... Seattle
Pres. Elect, Joseph Muller ..... Seattle
Past Pres., Michael Nygaard ..... Seattle
Sec'y. Treas., Bill Brewer ..... Seattle
Delegate, Stephanie Olmsted ..... Kent

Mail all correspondence to:
Bill Brewer
12509 10th Ave., NW
Seattle, WA 98177-4309
206.363.5411
E-mail: billbrewer1@juno.com

WISCONSIN ASSOCIATION FOR FOOD PROTECTION

Pres., Goeff Marcks ..... Brownsville
Pres. Elect, Virginia Deibel ..... Madison
1st Vice Pres., Howard W. Mack ..... Deerfield
2nd Vice Pres., Marianne Smukowski ..... Madison
Past Pres., Kathy Glass ..... Madison
Sec'y., Randall Daggs ..... Sun Prairie
Treas., Neil Vassau ..... Madison
Delegate, Randall Daggs ..... Sun Prairie

Mail all correspondence to:
Randall Daggs
State of Wisconsin
6699 Prairie View Dr.
Sun Prairie, WI 53590-9430
608.837.2087
E-mail: rdaggs@juno.com

WYOMING ENVIRONMENTAL HEALTH ASSOCIATION

Pres., Roy Kroeger ..... Cheyenne
Pres. Elect, Sherry Maston ..... Wheatland
Past Pres., Shirley Tcshannon ..... Lander
Sec'y., Bryan Grapes ..... Torrington
Treas., Doug Evans ..... Gillette
Delegate, Bryan Grapes ..... Torrington

Mail all correspondence to:
Bryan J. Grapes
Wyoming Dept. of Agriculture
2526 E. B St.
Torrington, WY 82240
307.532.4208
E-mail: bgrape@state.wy.us

NEW MEMBERS

CANADA

Germain Brazeau
Canadian Food Inspection Agency
Ottawa, Ontario

Colleen Gemmill
Schneider Foods
Kitchener, Ontario

Tina L. Johansson
Canadian Food Inspection Agency
Ottawa, Ontario

Ruby M. Lee
Guelph Food Technology Centre
Guelph, Ontario

Jeff S. Roberts
Med-Ox Diagnostics Inc.
Manotick, Ontario

PHILIPPINES

Maria Ana U. Catenza
Unicentre Industries Inc.
Makati City

UNITED STATES

CALIFORNIA

Ingrid Penuela
Sugar Foods Corp.
Santa Clarita

Kenneth T. Stearns
Monterey Mushrooms
Watsonville

DELAWARE

John T. Gannon
DuPont
Newark

GEORGIA

Mark E. Berrang
USDA-ARS
Athens

Tom Childers
Chick-fil-A, Inc.
Atlanta

Bob L. Long
Golden State Foods
Conyers

Mark R. Norton
Georgia Dept. of Agriculture
Atlanta

IDAHO

Rob Eachon
Panhandle Health District
Coeur D'Alene

INDIANA

Eric B. Sheiss
Indiana Packers Corp.
Delphi

MARYLAND

Ben E. Hargrove
Avendra LLC
Bethesda

J. Douglas Park
FDA
College Park

George E. Wilson
BD Diagnostic Systems
Sparks

Emily T. Yeh
University of Maryland
College Park

NEW YORK

Irvin N. Hirshfield
St. John's University
Jamaica

Victoria R. Lappi
Cornell University
Ithaca

Tony Perruccio
Mott's Inc.
Williamson

NORTH CAROLINA

Michael J. Casteel
University of North Carolina
Chapel Hill

OHIO

Rob Gilmore
US Air Force
Columbus

PENNSYLVANIA

Kathiravan Krishnamurthy
Penn State University
University Park

TEXAS

Kenneth W. Widmer
Texas A & M University
College Station

VERMONT

Robert Aragona
Ben & Jerry's Homemade Inc.
Burlington

Cecilia A. Golnazarian
University of Vermont
Essex Junction

WYOMING

Ronald Wudtke
Wyoming Dept. of Agriculture
Laramie

UPDATES

Seven Elected and Appointed to IAFIS Board of Directors

The membership of the International Association of Food Industry Suppliers (IAFIS) elected one new member and reelected four members to the organizations Board of Directors. Elections were held March 21–22 at the IAFIS 2003 Annual Conference in Marco Island, FL.

Five seats were available on the IAFIS Board of Directors this year, including two industry segment director seats and three at-large seats. Each of the following directors will serve a three-year term:

Fred W. Beer, president & CEO, The Deam Company Limited, Richmond Hill, Ontario, Canada, was re-elected to the packaging director seat; Brian K. Gehrke, senior vice president of sales, A&B Process Systems Corp., Stratford, WI, was re-elected to the technical services director seat; Daniel Larsen, managing director, VNE Corporation, Janesville, WI, is newly elected as an at-large director; Ivan G. Larsh, chief operating officer, WEDECO Ideal Horizons, Charlotte, NC, was re-elected as an at-large director; and Viggo Nielsen, president, Safeline Inc., Tampa, FL, was re-elected as an at-large director.

The IAFIS Board of Directors also made two appointments to fill vacant Board seats. John Rooney, general manager of Evergreen Packaging Equipment/International Paper, Cedar Rapids, IA, was appointed to a one-year term. Kirk Spitzer, president of Alfa Laval Inc., Richmond, VA, was appointed to a two-year term.

At its March 19 meeting at the IAFIS 2003 Annual Conference in Marco Island, FL, three members were reappointed to the Foundation of IAFIS Board of Directors.

Each of the following directors will serve a three-year term: John Fearn, Walker Stainless Equipment Co. Inc., New Lisbon, WI, was reappointed by the IAFIS Foundation Board; Wolfgang Stamp, Fristam Pumps, Inc., Hamburg, Germany, was reappointed by the IAFIS Foundation Board; and Bruce D. Poulterer, Media, PA, was reappointed to the Foundation Board by the IAFIS Board of Directors.

Silliker Announces Sales Staff Additions

Silliker, Inc. announced the hiring of Stacy Riggs, Anthony Crandle, and Greg Bikofsky as technical sales managers. They bring years of valuable industry experience and food science expertise to their new posts.

Ms. Riggs most recently served as a senior account manager with BioControl Systems and spent four years with Monsanto as a sales representative in its animal agricultural division. She is based at the organization's Grand Prairie, TX, facility and responsible for sales and customer service activities in the southwest region of the US.

Prior to joining Silliker, Anthony Crandle served as a quality assurance specialist with Tengu Company, Inc. and a quality assurance manager with Vitex Foods, Inc. Based at Silliker's Carson, CA, facility, his territorial responsibilities encompass Southern California and adjacent states.

Greg Bikofsky previously served as an account manager for Degussa and a quality assurance chemist with International Flavors and Fragrances. He will be stationed at the organization's Garwood, NJ lab and will be responsible for sales and customer service activities along the Northeast Atlantic coast.

Alfa Laval Names National Sales Manager

Alfa Laval Inc. is pleased to announce that Zino Lappas has accepted the position of national sales manager at the Pleasant Prairie, WI facility.

In this position, Mr. Lappas will be responsible for the planning and implementation of national sales programs for the sanitary fluid handling and heat transfer industries. He will manage the outside sales team, developing strategy to grow the business through strategic channel management as well as through the development of key account programs.

Mr. Lappas has over 19 years of experience in the sanitary industry. He joined the former Tri-Clover organization in 1991 and has held positions including district sales manager and most recently, eastern regional sales manager for Alfa Laval Inc.

Mr. Lappas holds a bachelor of engineering degree from Stevens Institute of Technology.

SKF® Appoints New President of SKF Service Division, North America

SKF® has named Donald A. Poland, Jr., president of the SKF Service Division, North America.

Mr. Poland will be based at the Service Division Headquarters in Kulpsville, PA, and will oversee SKF's industrial bearing replacement business, which is conducted through an extensive network of authorized distributors. He is also responsible for sales of SKF Reliability Systems and Services throughout North America.

Prior to joining SKF, Mr. Poland spent over 20 years with General Electric, holding a variety of engineering, manufacturing, sales and material management positions. For the past seven years, he has had responsibility for the Midwest Region of GE Supply.

Mr. Poland has an M.B.A. from the University of Chicago and a B.S. in industrial engineering from the University of Pittsburgh.

3-A Announces New Inspection Program to Launch in May

3-A Sanitary Standards, Inc. will officially implement a new third party inspection program for equipment bearing the 3-A symbol beginning in May. The announcement was made by 3-A SSI Executive Director, Tim Rugh at the International Association of Food Industry Suppliers Annual Conference on March 22 in Marco Island, FL.

According to Rugh, the actual implementation date hinged upon the date when qualified inspectors would be available to conduct the inspections. We now expect to have qualified inspectors available in May to begin the verifications. He noted the names of the new certified inspectors would be listed on the 3-A Web site beginning in late April as soon as the candidates earn the credential.

The new third party verification (TPV) inspection will be required for equipment manufacturers or resellers of used equipment to obtain or renew a 3-A Symbol. A qualified inspector, known as a certified conformance evaluator (CCE), must conduct the independent verification. 3-A SSI recently announced that the exam for qualified CCE candidates was given on April 22 in Rosemont, IL and McLean, VA; the test will also be given on May 13 in Milwaukee, WI in conjunction with the annual meeting of the 3-A standards committees.

3-A SSI announced the search for CCE candidates in January. Applicants were required to document a specific combination of educational background, the ability to review and evaluate complex processes and to interpret engineering drawings for the food processing industries, and work experience in food or pharmaceutical processing, particularly the operations where 3-A standards were applied. CCE candidates were also required to submit references attesting to the candidates work experience and integrity.

The new verification requirement will be phased in over a four-year period for specific groups of equipment that are built to 3-A standards and show the 3-A symbol. The equipment groups subject to the new requirement beginning in 2003–2006 and other provisions of the new program are detailed in the new Manual for Third Party Verification and 3-A Symbol Authorization. A complete copy is available at: www.3-a.org/protocols/TPVManual_Jan_ 2003.pdf.

Food Safety Magazine Presents Beuchat, Katsuyama with 2003 Distinguished Service Awards

Food Safety Magazine (FSM) presented the 2003 Food Safety Magazine Distinguished Service Award to Larry R. Beuchat, Ph.D. and Allen Katsuyama at the 5th Annual Food Safety Summit in Washington, D.C. last month.

"We are pleased to present the 2003 Food Safety Magazine Distinguished Service Award to Dr. Beuchat and Mr. Katsuyama, both of whom are widely recognized as influential leaders in promoting food safety science, research and education to the benefit of so many of today's professionals working in industry, government and research," said Stacy Atchison, Publisher.

The Food Safety Magazine Distinguished Service Award honors individuals who best exemplify the characteristics of the dedicated food safety professional. Those honored are recognized by members of the profession for their collective works in promoting or advancing science-based solutions for food safety issues.

Dr. Beuchat, Distinguished Research Professor with the Center for Food Safety and Department of Food Science and Technology at the University of Georgia, was recognized for his nearly 40 years of outstanding contributions to the advancement of food safety science in the area of the microbiology of fruits, vegetables, nuts, and legumes, and his overall leadership in promoting safe fruit and vegetable production practices.

Currently, Dr. Beuchat is involved in researching the standardization of methods for determining the efficacy of raw fruit and vegetable sanitizers, reviewing the lethality of sanitizers to *Bacillus cereus*, and evaluating a wide array of processes and technologies to eliminate or control the growth of pathogens in foods.

The Food Safety Magazine Distinguished Service Award was presented posthumously to Allen Katsuyama, a leading scientist and educator with the National Food Processors Association (NFPA) for almost 40 years, where his achievements remain widely respected and admired. Mr. Katsuyama is an acknowledged pioneer who helped clarify the relationship between HACCP, sanitation and GMPs in achieving food safety. This action set the stage for industry and government to

separate sanitation and GMP programs from HACCP, thereby protecting and preserving the integrity of the HACCP system. A respected educator who was well-known for his expertise in the area of food processing sanitation, Katsuyama's seminal work, "Principles of Food Processing Sanitation," is regarded as an industry standard.

Accepting the award for Mr. Katsuyama was Keith Ito, Vice President of NFPA's Center for Technical Services and Assistance in Dublin, CA.

Bamboozled, Baffled and Bombarded

Clearer, more accurate and more honest information is needed on food labels if consumers are to avoid being misinformed, according to a report commissioned by the UK Food Standards Agency (FSA). The report, Bamboozled, baffled and bombarded: consumer views on voluntary food labeling, published by the UK National Consumer Council (NCC), says that logos on food labels are currently 'more likely to confuse and mislead consumers than inform them'.

The Agency commissioned the NCC to look at consumer perception of voluntary food labeling schemes. Voluntary labeling schemes make claims, carry endorsements or offer information or some form of assurance to consumers, often using logos.

The report, which was published in February, recognizes that voluntary food labeling can deliver benefits to consumers in terms of choice; but suggests that too often this kind of labeling confuses and misleads. The NCC has recommended that the FSA should develop: a code of practice for good governance of food assurance schemes that includes a commitment to involve consumers in the design of schemes and to communicate the benefits of schemes to consumers in plain English; a Good Labeling Guide which would encourage transparency and provide practical suggestions for how to promote consumer education and information about food labels; consistent definitions for food claims which should be clear, accurate and widely understood by consumers; clear criteria for the use of endorsements so that consumers are given information about, for instance, any existing financial arrangements. Rosemary Hignett, Head of Food Labelling at the Agency said: "The Food Standards Agency welcomes this report. It shows that the food industry and supermarkets need to do more to help consumers make informed choices. There are too many confusing logos and claims on foods, and too little of the clear factual information consumers want. The Agency has an important role here — we have already taken up a number of the recommendations in this report and will be pressing the food industry for further action to improve labels."

NCC Chair Deirdre Hutton added: "The FSA are already making moves to improve food labeling. But the changes we recommend will not be possible without industry buy-in."

Cooking for Crowds: A Volunteer's Guide to Safe Food Handling

Penn State University Department of Food Science Press Release "Cooking for Crowds," a new food safety curriculum available through Penn State University, is designed to be used with non-profit audiences (civic organizations, religious organizations, fire halls, etc.) who cook food for the public as part of food fundraisers. Although many of the food safety strategies recommended in the "Cooking for Crowds" curriculum are similar to those recommended to commercial foodservice establishments, the strategies have been translated into practical methods to meet the specific needs of nonprofit audiences.

The curriculum includes:

1. A 108-page, 3-color manual which can be ordered for $9 or downloaded for free from the www.cookingforcrowds.psu.edu Web site. The manual includes the following chapters:
   - Why Risk It?
   - The Causes of Foodborne Illness
   - Preventing Conditions That Lead to Foodborne Illness
   - Safe Purchasing, Storage, Preparation, and Service
   - Planning for a Safe Event
   - Conducting Safe and Successful Meals, Barbecues, Bake Sales, Sub and Sandwich Sales, Home-Delivered Meals, and Temporary Events
   - Getting Started — How to Implement Food Safety Strategies in Your Organization's Kitchen
   - Appendix
     - A Food Safety Assessment of Your Organization's Food Fundraiser
     - Fundraising Planning Form
     - Record-keeping Forms
     - Resources
2. The www.cooking for crowds.psu.edu Web site contains all the tools to teach a workshop including:

- Marketing materials, brochures, press release, marketing strategies
- Instructor resources — list of supplies, teaching agendas, activities
- Powerpoint presentations – color or black and white
- Certificate
- Evaluations — post workshop evaluation and follow-up evaluation
- Additional resources.

Anyone interested in food safety for nonprofit groups may use the curriculum and all materials may be downloaded free of charge. For more information, please see www.cookingforcrowds.psu.edu.

USDA Begins Sampling Program for Advanced Meat Recovery Systems

The US Department of Agriculture's Food Safety and Inspection Service has announced a regulatory sampling program to ensure beef products derived from Advanced Meat Recovery (AMR) systems are accurately labeled.

AMR is a technology that removes muscle tissue from beef carcasses without breaking bones. When produced properly, AMR product can be labeled as "meat." Previously, FSIS inspectors took regulatory samples of AMR product if they believed that an establishment was not completely removing spinal cord tissue. Products labeled as "meat" found to contain spinal cord tissue are considered misbranded under FSIS policy.

FSIS has begun a routine regulatory sampling of beef products from AMR systems as outlined in a December directive. FSIS' new sampling program requires inspectors to test beef product from AMR systems on a routine basis to verify that spinal cord tissue is not present. If spinal cord tissue is detected, action will be taken to relabel held product or recall distributed product from commerce. Inspection personnel also will conduct follow-up sampling to verify that the establishment has taken appropriate corrective action. AMR production will not be allowed to resume until FSIS determines that those corrective actions have been successful.

A 2002 survey of 34 establishments producing beef products from AMR systems to determine the frequency that products contained central nervous system tissue, including spinal cord tissue, showed that approximately 35 percent of the final product samples tested positive for central nervous system (spinal cord) and central nervous system-associated tissues.

The survey results provide FSIS with the necessary data to proceed with rulemaking on AMR systems that will include specifications for the removal of central nervous system and associated tissues. FSIS will seek public comment on an existing AMR proposed rule before it is finalized.

More information on AMR systems and FSIS' new sampling program can be accessed online at www.fsis.usda.gov/.

USDA Takes Food Safety Message "On the Road"; Food Safety Mobile to Cross America Delivering Food Safety Messages

Agriculture Secretary Ann M. Veneman has launched a nationwide tour to educate and reinforce to consumers the importance of handling food safely. The cornerstone of the initiative is a new USDA Food Safety Mobile that will serve as a backdrop during the tour of some 100 communities across the country.

"Food safety is top priority for this Administration and food safety education is an important part of our efforts to reduce foodborne illness," said Veneman during the christening of the Mobile at the 2003 Food Safety Summit. "The tour and the Mobile will help educate millions of people about the risks associated with mishandling food and how they can reduce their risk of foodborne illness."

The 35-foot recreational-style vehicle is emblazoned with bold, eye-catching graphics and prominent food safety messages. The Mobile depicts BAC! — the notorious foodborne bacteria character that provides consumers a memorable message about the four critical steps they must take to keep their food safe: Clean, Separate, Cook and Chill.

"Foodborne illness is preventable," said Dr. Elsa Murano, under secretary for Food Safety. "We want to empower consumers through education, and the USDA Food Safety Mobile will provide us with face-to-face access to millions of consumers." The USDA Food Safety Mobile will travel throughout the continental United States, appearing at state and county fairs, schools, libraries, grocery stores, community events, parades, festivals, cooperative extension offices and at events sponsored by USDA.

You can follow the travels of the Mobile and find useful food safety information at www.fsis.usda.gov/foodsafetymobile. The Mobile project will be operated in

partnership with the Federal government, industry and local cooperative extension educators. At the Mobile sites, food safety experts will provide food safety information to consumers, as well as demonstrate critical food safety techniques, including the proper usage of food thermometers.

Food Producers, Processors, and Transporters: Food Security Preventive Measures Guidance

This guidance represents the US FDA's current thinking on the kinds of measures that food establishments may take to minimize the risk that food under their control will be subject to tampering or other malicious, criminal, or terrorist actions. It does not create or confer any rights for or on any person and does not operate to bind FDA or the public.

Purpose and Scope: This guidance is designed as an aid to operators of food establishments (firms that produce, process, store, repack, relabel, distribute, or transport food or food ingredients). This is a very diverse set of establishments, which includes both very large and very small entities.

This guidance identifies the kinds of preventive measures operators of food establishments may take to minimize the risk that food under their control will be subject to tampering or other malicious, criminal, or terrorist actions. It is relevant to all sectors of the food system, including farms, aquaculture facilities, fishing vessels, producers, transportation operations, processing facilities, packing facilities, and warehouses. It is not intended as guidance for retail food stores or food service establishments.

Operators of food establishments are encouraged to review their current procedures and controls in light of the potential for tampering or other malicious, criminal, or terrorist actions and make appropriate improvements. FDA recommends that the review include consideration of the role that unit and distribution packaging might have in a food security program.

This guidance is designed to focus operators' attention sequentially on each segment of the farm-to-table system that is within their control, to minimize the risk of tampering or other malicious, criminal, or terrorist action at each segment. To be successful, implementing enhanced preventive measures requires the commitment of management and staff. Accordingly, FDA recommends that both management and staff participate in the development and review of such measures.

More information can be accessed online at www.cfsan.fda.gov/~dms/guidance.html.

Importers and Filers: Food Security Preventive Measures Guidance

This guidance represents the US FDA's current thinking on the kinds of measures that food importers and filers may take to minimize the risk that food under their control will be subject to tampering or other malicious, criminal, or terrorist actions. It does not create or confer any rights for or on any person and does not operate to bind FDA or the public.

Purpose and Scope: This guidance is designed as an aid to operators of food importing establishments, storage warehouses, and filers. It identifies the kinds of preventive measures that they may take to minimize the risk that food under their control will be subject to tampering or other malicious, criminal, or terrorist actions. Operators of food importing establishments are encouraged to review their current procedures and controls in light of the potential for tampering or other malicious, criminal, or terrorist actions and make appropriate improvements.

This guidance is designed to focus operators' attention sequentially on each segment of the food delivery system that is within their control, to minimize the risk of tampering or other malicious, criminal, or terrorist action at each segment. To be successful, implementing enhanced preventive measures requires the commitment of management and staff. Accordingly, FDA recommends that both management and staff participate in the development and review of such measures.

Limitations: Not all of the guidance contained in this document may be appropriate or practical for every food importing establishment, particularly small facilities. FDA recommends that operators review the guidance in each section that relates to a component of their operation, and assess which preventive measures are suitable. Example approaches are provided for many of the preventive measures listed in this document. These examples should not be regarded as minimum standards, nor should they be considered an inclusive list of all potential approaches to achieving the goal of the preventive measure. FDA recommends that operators consider the goal of the preventive measure, assess whether

the goal is relevant to their operation, and, if it is, design an approach that is both efficient and effective to accomplish the goal under their conditions of operation.

Structure: This guidance is divided into five sections that relate to individual components of food importing operations and practices: Management; Human Element — Staff; Human Element — Public; Facility; and Operations.

Related Guidance: FDA has published a companion guidance document on food security, entitled, "Guidance for Food Producers, Processors, and Transporters: Food Security Preventive Measures Guidance". This document is available at www.access.gpo.gov/. Search for Guidance for Food Producers, Processors, and Transporters.

New Fish and Seafood Safety Initiative

The Canadian Food Inspection Agency (CFIA) and Food and Agriculture Organization (FAO) have launched the Aquatic Food Product Initiative (AFPI). The main goal of the AFPI is to assist developing countries in the production of fish and seafood products by creating a knowledge base of scientific information. This initiative will promote a better understanding of the safety and quality factors related to the production and processing of aquatic species as food for human consumption. Increased mass production, coupled with increased globalization and trade, has multiplied the risk of cross-border transmission of infectious agents and food poisoning outbreak.

By providing greater access to scientific knowledge, the AFPI will assist developing countries to access international markets in the context of sustainable development and facilitate active participation in standard setting organizations such as the Codex Alimentarius. It will also generate information that can help in the delivery of training programs and education. International fish trade is very important as approximately 37 percent of the world's fish production is being traded across national borders, half of which originates in developing countries.

By fostering cooperation between the FAO, the CFIA and various international institutions, the initiative will also generate a knowledge base that will be used to assist subject matter experts involved in the production and processing of a wide variety of fish and seafood products. Based on the well-proven EcoPort technology, which operates under the auspices of the EcoPort consortium and the patronage of ex-President of South Africa Nelson Mandela and Harvard Professor Edward Wilson, the technological tool, which will disseminate the information to recipient countries, is known as FishPort. This technology will allow scientists from around the world to collate and link comprehensively information in the field of aquatic food safety and quality to a central repository. "This global knowledge system will allow users in developed and developing countries to access pertinent and up-to-date information on fish safety and quality," FAO experts say.

The creation of the AFPI has been internationally recognized as one of the first examples of efforts to develop a preventative and integrated food chain approach to food safety based on science, according to same experts. In addition, Canada has a long-standing reputation for assisting developing countries through the collaboration of scientific experts involved in the environmental sciences, fisheries management and fish processing practices.

INDUSTRY PRODUCTS

Thermo Orion

New from Thermo Orion, Water Analysis Test Kits Featuring the AQUAfast® AQ4000 for Water and Environmental Measurements

Thermo Orion introduces the new water analysis test kits for waste water and environmental measurement.

The new AQUAfast water analysis kits feature the AQUAfast AQ4000 colorimeter and Thermo Orion portable meters, electrodes and reagents for testing water samples. Four new kits provide a complete portable laboratory in one package for on-site field measurements. The water analysis kits are specifically designed for popular field measurements, such as ammonia, nitrate, sulfide, chlorine, fluoride, cyanide, conductivity and pH. Packages are targeted for clean water, dirty water and water conditioning tests. All meters are simple to use and come with easy-to-follow instructions. The rugged carrying case enables portability and storage for all water analysis needs.

Thermo Orion, Waltham, MA

READER SERVICE NO. 260

NSF Certification Available on Food Contact Gloves — Only from Foodhandler

FoodHandler recently introduced the first disposable gloves certified by NSF for foodservice use. This is critical because the Center for Disease Control reports 76 million foodborne illnesses with improper hand hygiene the most important means by which illness — causing viruses are transmitted. You are familiar with NSF and what it represents. Long recognized as a leader in the development of standards and testing procedures for products in food, public health and safety, NSF has, for the first time, established a strict and rigorous certification process for food contact gloves. All FoodHandler NSF certified gloves must meet these demanding standards — so you and the food service operations you visit can be sure that our gloves are safe for food contact, made in clean, inspected plants and durable because they are specifically designed to handle the toughest foodservice tasks.

NSF-certified gloves, now available from FoodHandler, are part of our overall safe food handling program that includes ServSafe® certification seminars, food safety training, glove and hand washing audits and much more. Our NSF certified gloves are perfectly suited for any foodservice task, from making sandwiches and mixing salads to slicing meat and prepping ready-to-eat food. Available in a variety of styles and sizes.

FoodHandler, Westbury, NY

READER SERVICE NO. 261

UV Spy™ Radiometer/ Dosimeter from Apprise Technologies, Inc.

Apprise Technologies, Inc. announces the release of the UV Spy,™ an affordable UV monitoring device that optimizes effectiveness of curing processes.

The UV Spy is a compact, rugged, fixed bandwidth radiometer and dosimeter capable of withstanding the intense heat and demanding conditions inside curing chambers. The UV Spy is available in both individual UV-A and individual UV-V (visible) wavelengths (UV-B, UV-A+B and UV-C wavelengths are available by special order).

The UV Spy simultaneously measures irradiance in Watts/cm^2 and energy density (dose) in Joules/cm^2. Results from the UV Spy are traceable to the National Institute of Standards.

The UV Spy uses sapphire optics to greatly enhance its ruggedness. The scratch-resistant optics overcomes the fragility of stacked optical filters used in competitive products.

Spatial response of the UV Spy closely approximates theoretical cosine response. A Teflon® diffuser, with a low reflectance from radiation at low angles, is used to achieve the cosine response.

The UV Spy operates in temperatures from 0 to 75°C (32-167°F) and has an internal temperature monitoring system, which allows the user to monitor the device temperature for optimal perfor-

mance. This system also offers an auto-shut down to guard against permanent damage when temperatures exceed 80°C.

A two-button operation and two row LCD display offers users three modes of options. The unit measures and displays irradiance, dose and internal temperature.

The UV Spy is compact (102 x 102 x 13 mm or 4 x 4 x .052") and lightweight (240 g or 8.5 oz) for ease of handling and enables the unit to fit effortlessly under curing lamps as well as travel through belt-driven curing chambers.

Apprise Technologies, Inc., Duluth, MN

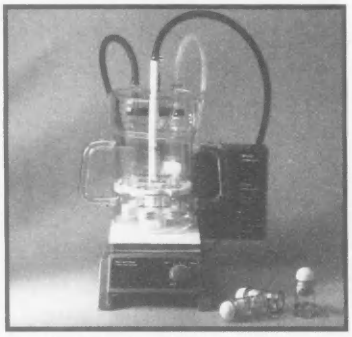
READER SERVICE NO. 262

Hardy Diagnostics Introduces the New *spot*check™ Hygiene Monitoring Swab

The new *spot*check™ hygiene monitoring swab is the first hygiene monitoring device that requires no instrument while giving results comparable to ATP systems. *spot*check™ detects glucose which is contained in all major food types. Results can be read in 60 seconds, turning bright green when residue is present. *spot*check™ is an easy-to-use, simple to interpret device that allows you to demonstrate due diligence. *spot*check™ works well with companies processing bakery products, chicken, eggs, potato products, food dressings and sauces, raw vegetables, root vegetables, fruits, juices, and soft drinks. *spot*check Plus™ is the same as *spot*check™ but detects both glucose and lactose which is found in dairy products such as milk and yogurt. *spot*check Plus™ is designed specifically for hygiene monitoring in the dairy industry.

Hardy Diagnostics, Santa Maria, CA

READER SERVICE NO. 263



Foss North America

Foss North America's New Soxtec® System 2047 SoxCap® for Acid Hydrolysis of Fat in Food and Feed Samples

Foss North America announces the release of its new, compact, high performance, lower cost Soxtec System 2047 SoxCap for the hydrolysis of food and feed samples, in accordance with approved methods, prior to total fat analysis by solvent extraction using Foss' Soxtec Avanti System. Target users are small to medium food and feed laboratories performing total fat analysis. Current applications include total fat analysis in meat and meat products, milk and cream powder, feeds, grains, cheese, biscuits, chocolate, and fish.

The new SoxCap performs acid hydrolysis, filtration and washing without manual sample transfer, with minimum manual handling using batch-handling tools. The design of the SoxCap capsule filter (patent pending) ensures fast filtration and sample washing. The entire analysis occurs within a closed vessel, ensuring no operator contact with hot acid during hydrolysis, filtration, and washing. Acid fumes ftom hydrolysis are removed automatically. Benefits are low investment cost, shorter analysis time, increased sampling accuracy and improved lab safety.

The Soxtec System 2047 SoxCap can process up to 36 samples per day in batches of 6 samples. Sample size ranges from 0.5 to 3 grams and measuring range is 0.1 to 100%. The compact system requires minimal bench space.

Foss North America, Eden Prairie, MN

READER SERVICE NO. 264

Meese Orbitron Dunne Co. Unveils Tamper-evident Security System on UN-Certified Intermediate Bulk Container

Container manufacturer Meese Orbitron Dunne Co. has unveiled a tamper-evident security system on its UN-certified, all-plastic Unitote intermediate bulk container to deter and prevent unauthorized access. Developed to safeguard chemicals, pharmaceuticals, edible oils, flavors, fragrances and other regulated materials, the tamper-evident security system features a polyethylene door set into the pallet base and locked with a steel bolt to block access to the discharge assembly. The MOD system accommodates standard padlocks and plastic or metal security seals that provide immediate evidence of unauthorized access. For instant container identification, the tamper-evident security system may be customized with permanent, molded-in company logos, tracking numbers and color-coordinated information on the locking door.

The tamper-evident security system is offered on both the 275- and 330-gallon Unitotes, which are rotationally molded of LMDPE in one, seamless piece to accommodate products with specific gravity ratings up to 1.9.

Meese Obitron Dunne Co., Saddle Brook, NJ

READER SERVICE NO. 265

In-Line pH Analyzer Uses Non-Glass Probes from IQ Scientific Instruments, Inc.

The new IQ500 processLab™ series of pH analyzers accept rugged non-glass, silicon chip sensor probes as well as conventional glass sensor pH probes. Designed for in-line continuous process monitoring applications, the waterproof processLab pH analyzer is an extraordinarily powerful instrument with easily configurable relay and analog outputs. Four relays can be set for on/off, pulse length, pulse frequency, or alarm mode. Four 0/4-20mV analog outputs are optically isolated and can be driven by pH, mV, or temperature. Menus in plain language make set-up and operation easy.

The extra large 5-1/2" backlit LCD display is easy to read and shows pH, temperature, date/time and the status of all relays and outputs at a glance.

IQ Scientific Instruments, Inc., San Diego, CA

READER SERVICE NO. 266

Columbus Instruments' New Field and Laboratory Respirometer-Oxymax ER

Columbus Instruments' New Oxymax ER is an ideal solution for respirometry experiments on soil, water, and sludge. Using precise gas analyzers for oxygen and carbon dioxide, the head space gas exchange is measured directly in up to 10 different samples. With its rugged and compact design, it can be used in a laboratory with limited bench space or taken on site. In the lab, it connects to your IBM compatible PC for experiment configuration and data collection/ presentation (software included). The Oxymax ER can then also be carried on site, in stand-alone operation, powered by a cigarette lighter adapter. The Oxymax ER can aid in the identification of contaminated sites; and then, turn right around and aid in the bioremediation effort by monitoring respiration of samples with different micronutrients, inoculum, etc.

Columbus Instruments

Columbus Instruments, Columbus, OH

READER SERVICE NO. 267

New Hart® Transmitter for Temperature Applications from Burns Engineering

Burns Engineering is introducing a new transmitter that features Hart® communication protocol. The new Model TH Transmitter can be configured with the Hart Communicator or with a PC and Hart modem. The transmitter allows Bums Engineering's thermocouple and RTD sensors to be easily integrated with systems and equipment utilizing Hart communication protocol. The transmitter is available for new and retrofit applications.

The Hart-style transmitter has been specifically engineered for the high performance of Burns' RTD sensors and offers an accuracy of +/- 0.01 FRI and +/-0.07% Rdg. In addition to working in Hart standardized feedback loops, the transmitter operates with asset managers like AMS Plant Web®. It enables full, digitized communication in automated and computerized control instrumentation, equipment, and process systems.

The transmitter is FM approved and carries the CE Mark. With a DIN-style headmount configuration, it is easily installed in a wide variety of processing applications for the pharmaceutical, food, chemical, oil, gas and refinery industries.

Burns Engineering, Edina, MN

READER SERVICE NO. 268

International Association for
Food Protection®
6200 Aurora Avenue, Suite 200W
Des Moines, Iowa 50322-2864, USA

To All IAFP Members:

Today I want to encourage your involvement in the Committees and Professional Development Groups (PDGs) of the International Association for Food Protection. Each of these groups serves a vital function in providing guidance, direction and information for the Association and our fellow Members. Your experience and expertise is welcome and needed! You may volunteer to serve on multiple Committees or PDGs at one time, so don't be shy. If you have participated on our Committees or PDGs in the past, I commend you for your service and encourage you to continue. I also ask that you consider personally inviting a colleague to join you.

Committees and PDGs meet during the Annual Meeting and may meet throughout the year via conference call or E-mail. Even if you are not able to attend IAFP 2003 in New Orleans, your involvement is still possible. Please review the Committees and PDGs listed on the following pages to find a group that is of special interest to you. If you have questions, call or E-mail the Chairperson listed to learn more about the function of the group. Then, if it sounds interesting to you, volunteer your time and efforts to serve the Association in this way. Through active participation, you can establish a network of contacts and help better the profession while strengthening your leadership skills.

Your input and ideas are welcome at all times. So accept the challenge today; call one of the Chairpersons to let him or her know of your interest in sharing your knowledge and expertise with other IAFP Members.

I look forward to seeing your name on our next Committee listing!

Sincerely,

Kathy Glass

Kathy Glass
Vice President, IAFP

"Our mission is to provide food safety professionals worldwide with a forum to exchange information on protecting the food supply."
Publisher of the *Journal of Food Protection* and *Food Protection Trends*

Committee Chairpersons

Professional Development Groups and Affiliate Council

STANDING COMMITTEES

Food Protection Trends Management Committee

Christine Bruhn
Phone: 530.752.2774 Fax: 530.752.3975
E-mail: cmbruhn@ucdavis.edu

Journal of Food Protection Management Committee

Isabel Walls
Phone: 202.659.3306 x134 Fax: 202.659.3617
E-mail: iwalls@ilsi.org

Program Committee

Lynn M. McMullen
Phone: 780.492.6015 Fax: 780.492.8914
E-mail: lynn.mcmullen@ualberta.ca

SPECIAL COMMITTEES

3-A Committee on Sanitary Procedures

Sherry Roberts
Phone: 972.938.7639 Fax: 972.937.3120
E-mail: rsher9@aol.com

Audiovisual Library Committee

Thomas A. McCaskey
Phone: 334.844.1518 Fax: 334.844.1519
E-mail: tmccaske@acesag.auburn.edu

Awards Committee

Peter Hibbard
Phone: 407.245.6881 Fax: 407.366.2152
E-mail: phibbard@darden.com

Black Pearl Selection Committee

James S. Dickson
Phone: 515.294.4733 Fax: 515.294.6019
E-mail: jdickson@iastate.edu

Committee on Communicable Diseases Affecting Man

Ewen Todd
Phone: 517.432.3100 Fax: 517.432.2310
E-mail: toddewen@cvm.msu.edu

Constitution and Bylaws Committee

Michael H. Brodsky
Phone: 416.816.9837 Fax: 905.889.2276
E-mail: mhbrodsky@rogers.com

Developing Scientist Awards Committee

Gary R. Acuff
Phone: 979.845.4402 Fax: 979.845.9354
E-mail: gacuff@tamu.edu

Fellows Selection Committee

James S. Dickson
Phone: 515.294.4733 Fax: 515.294.6019
E-mail: jdickson@iastate.edu

Foundation Fund Committee

Harry Haverland
Phone: 513.851.1810

Nominating Committee

John Cerveny
Phone: 608.242.0760 Fax: 608.245.8895
E-mail: jcerveny@itis.com

Past Presidents' Committee

Jack Guzewich
Phone: 301.436.1608 Fax: 301.436.2717
E-mail: john.guzewich@cfsan.fda.gov

Tellers Committee

Peter J. Slade
Phone: 708.563.8172 Fax: 708.563.1873
E-mail: slade@iit.edu

PROFESSIONAL DEVELOPMENT GROUPS

Applied Laboratory Methods PDG

Robert W. Brooks
Phone: 770.536.5909 Fax: 770.536.6909
E-mail: robertbrooks@eurofinsus.com

Dairy Quality and Safety PDG

Don M. Breiner
Phone: 717.486.2213 Fax: 717.486.3730
E-mail: dbrei@landolakes.com

Food Safety Network PDG

Sid Camp
Phone: 770.938.3823 Fax: 770.493.5953
E-mail: Sid.Camp@hcbrill.com

Food Sanitation PDG

Veneranda Gapud
Phone: 404.459.4491 Fax: 404.459.4546
E-mail: vgapud@afce.com

Fruit and Vegetable Safety and Quality PDG

Philip Blagoyevich
Phone: 925.820.3558 Fax: 925.820.4141
E-mail: blagoyevich@msn.com

Meat and Poultry Safety and Quality PDG

Ruff Lowman
Phone: 613.228.6698 x4946 Fax: 613.228.6675
E-mail: rlowman@inspection.gc.ca

Microbial Risk Analysis PDG

Richard C. Whiting
Phone: 301.436.1925 Fax: 301.436.2632
E-mail: rwhiting@cfsan.fda.gov

Outreach Education PDG

Barbara H. Ingham
Phone: 608.263.7383 Fax: 608.262.6872
E-mail: bhingham@facstaff.wisc.edu

Retail Food Safety and Quality PDG

Frank Yiannas
Phone: 407.397.6060 Fax: 407.397.6630
E-mail: frank.yiannas@disney.com

Seafood Safety and Quality PDG

Carlos Abeyta
Phone: 425.483.4870 Fax: 425.483.4996
E-mail: cabeyta@ora.fda.gov

Student PDG

Manan Sharma
Phone: 770.228.7293 x115 Fax: 770.229.3216
E-mail: msharma@griffin.uga.edu

Viral and Parasitic Foodborne Disease PDG

Lee-Ann Jaykus
Phone: 919.513.2074 Fax: 919.515.7124
E-mail: leeann_jaykus@ncsu.edu

Water Safety and Quality PDG

Susan K. McKnight
Phone: 847.291.7674 x207 Fax: 847.291.7679
E-mail: smcknight@qualityflow.com

AFFILIATE COUNCIL

Eugene Frey
Phone: 717.397.0719 Fax: 717.399.9430
E-mail: efrey@landolakes.com

Dr. Elsa A. Murano

Under Secretary for Food Safety
United States Department of Agriculture

Plenary Session —

"Breaking the Cycle of Foodborne Illness: The War on Pathogens"

August 12, 2003 — 3:45 p.m. – 4:30 p.m.
New Orleans, Louisiana

Dr. Elsa A. Murano will deliver a special presentation during a plenary session on Tuesday, August 12 at IAFP 2003 in New Orleans, Louisiana. Dr. Murano is uniquely qualified to address the IAFP audience having obtained her doctorate in food science and technology from Virginia Tech and having held various faculty positions at both Texas A&M and Iowa State University for 10 years prior to her work with the United States Department of Agriculture. Time will be allowed for a question and answer period during the 45 minute plenary session.

Dr. Murano was sworn in as Under Secretary for Food Safety by Agriculture Secretary Ann M. Veneman on October 2, 2001. In this position, she oversees the policies and programs of the Food Safety and Inspection Service.

Dr. Murano has extensive public and private experience in the field of food safety as both a manager and educator. From 1995 until her swearing-in, Dr. Murano held several positions with Texas A&M University at College Station, Texas. Between 1997 to 2001 she served as the Director of the university's Center for Food Safety within the Institute of Food Science and Engineering. During this time she also served on the university's Department of Animal Science Research Advisory Committee and the Food Safety Response Team of the Texas Agriculture Extension Service, and served from 1999 to 2001 as the chair of the Food Safety State Initiative Committee of the Texas Agriculture Experiment Station. She held the position of the Center for Food Safety's Associate Director from 1995 to 1997. In 2000 she was appointed Professor in the Department of Animal Science, after having been an Associate Professor in that same department from 1995 to 2000. In addition, in 2000 Dr. Murano was awarded the Sadie Hatfield Endowed Professorship in Agriculture.

Dr. Murano served as a Professor-in-Charge of research programs at the Linear Accelerator Facility at Iowa State University in Ames, Iowa from 1992 to 1995. She was an Assistant Professor in the Department of Microbiology, Immunology, and Preventive Medicine at that university since 1990.

Before joining the USDA, from 2001 until her appointment, Dr. Murano served as a member of the USDA National Advisory Committee for Meat and Poultry Inspection. Since 1998 she also served on the National Alliance for Food Safety Operations Committee, which she chaired during 2000. She was a member of several professional organizations, which included the International Association for Food Protection, American Society for Microbiology, the Association of Meat Science, the Institute of Food Technologists, and the Poultry Science Association.

A native of Havana, Cuba, Dr. Murano holds a B.S. degree in biological sciences from Florida International University in Miami. She also holds a M.S. degree in anaerobic microbiology and a Ph.D. in food science and technology, both from Virginia Polytechnic Institute and State University in Blacksburg, Virginia.

Ivan Parkin Lecture

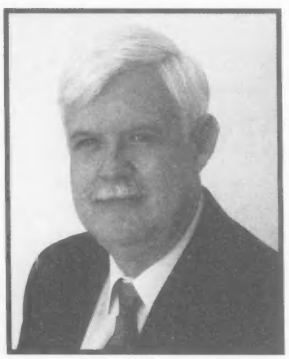
presented by

Donald L. Zink, Ph.D.

Lead Scientist, Food Processing
Food and Drug Administration
Center for Food Safety and Applied Nutrition
Office of Plant, Dairy Foods, and Beverages
College Park, Maryland

"On the Trail of Food Safety — From the Early Days to the Future"

Sunday, August 10, 2003
Opening Session — 7:00 p.m.



Dr. Donald L. Zink received his undergraduate degree from Abilene Christian University. He earned an M.S. degree in Microbiology and a Ph.D. in Biochemistry and Biophysics from Texas A&M University. Between 1978 and 1983, he held faculty positions at Texas A&M University's College of Veterinary Medicine and at The University of Arizona in the Department of Microbiology and Immunology and the Department of Food Science. He joined Campbell Soup Company in 1983 as Manager of Process Microbiology where he worked in the area of refrigerated food safety and aseptic processing. In 1990, he joined Nestlé, where he held various positions in Quality Assurance for the Carnation Company and later served as Director of Food Safety for Nestlé USA. In 2000, he joined a new beef processing venture company, Future Beef Operations, as Vice President of Research and Development and Product Safety. Recently, he joined the US Food and Drug Administration's Center for Food Safety and Applied Nutrition in the Office of Plant, Dairy Foods, and Beverages, where he serves as the Lead Scientist for Food Processing.

Dr. Zink has served as a member of several advisory committees including the Committee on Program and Technical Review of the US Army Natick RDEC for the National Research Council and the National Advisory Committee on Microbiological Criteria for Foods.

Preliminary Program

Sunday, August 10, 2003 — 7:00 p.m.

***Opening Session* – Ivan Parkin Lecture:**

Donald L. Zink, Ph.D., Lead Scientist, Food Processing, Food and Drug Administration, Center for Food Safety and Applied Nutrition, Office of Plant, Dairy Foods, and Beverages, College Park, Maryland

"On the Trail of Food Safety — From the Early Days to the Future"

Monday, August 11, 2003

Morning — 8:30 a.m. – 12:00 p.m.

Symposium Topics

- Use of Food Safety Objectives and Other Risk-based Approaches to Reduce Foodborne Listeriosis
- Intervention Strategies for Ready-to-Eat Meat Products
- Hazard Identification in the Fresh Produce Industry
- Recipe for Food Safety at Retail

Technical Session

- Microbiological Methods

Poster Session (10:00 a.m. – 1:00 p.m.)

- Pathogens and Their Controls

Afternoon — 1:30 p.m. – 5:00 p.m.

Symposium Topics

- Effective Food Worker Hygiene Interventions: A Risk Assessment Approach
- Cost of Industry and Government Food Safety Actions: What is at Stake?
- Current Issues in the Microbiological Safety of Dairy Foods – From Farm to Table
- Hot Topics in Seafood Quality and Safety

Technical Session

- Food Safety Management and Communication

Poster Session (3:00 p.m. – 6:00 p.m.)

- Microbiological Methods

Tuesday, August 12, 2003

Morning — 8:30 a.m. – 12:00 p.m.

Symposium Topics

- New Horizons in Diagnostic Food Microbiology
- Food Allergens: Past, Present, and Future
- Molecular Investigative Techniques and Their Application to Food Safety
- Spoilage and Pathogenic Fungi and Yeasts

Technical Session

- Produce Microbiology

Poster Session (10:00 a.m. – 1:00 p.m.)

- Foods of Animal Origin

Afternoon — 1:30 p.m. – 3:30 p.m.

Symposium Topics

- Assuring Food Safety and Security
- Applied Microbiological Genomics for Food Safety and Quality
- *Campylobacter*: A Pathogen in Need of Resolution
- Microbial Stress Response to Intervention Technologies
- Current Issues in Food Toxicology

Technical Session

- Food Handling in the Domestic Food Service Environment

Plenary Session — 3:45 p.m. – 4:30 p.m.

- Dr. Elsa A. Murano, Under Secretary for Food Safety "Breaking the Cycle of Foodborne Illness: The War on Pathogens"

Business Meeting — 4:45 p.m. – 5:30 p.m.

Wednesday, August 13, 2003

Morning — 8:30 a.m. – 12:00 p.m.

Symposium Topics

- Science-based Shelf Life Dating of Ready-to-Eat Refrigerated Foods
- All the Latest Jazz — Recent Foodborne Outbreaks
- Food on the Move
- Aquaculture: Safety and Quality Issues

Technical Session

- Foodborne Pathogens

Poster Session (9:00 a.m. – 12:00 p.m.)

- Jambalaya

Afternoon — 1:30 p.m. – 5:00 p.m.

Symposium Topics

- The Evolution of Foodborne Pathogens
- Natural Antimicrobials – Current Trends and Future Perspectives
- Risk Communication – Putting Food Safety in Perspective
- Emerging Issues in Water Quality for the Food Industry

Technical Session

- Risk Modeling

Poster Session (2:00 p.m. – 5:00 p.m.)

- Produce and Seafood Microbiology

Program subject to change

Event Information

EVENING TOURS

MONDAY NIGHT SOCIAL AT MARDI GRAS WORLD – *Sponsored by IGEN International, Inc.*

Monday, August 11, 2003 • 6:30 p.m. – 10:00 p.m.

Fred Flinstone awaits. So do Rhett Butler, Wonder Woman, King Kong, Hulk Hogan and Marilyn Monroe. They're standing around a wondrous warehouse filled with Mardi Gras floats, giant disembodied heads and larger-than-life creatures such as Medusa and Poseidon.

Coming upon them at Blaine Kern's Mardi Gras World is like walking into a giant toy box of doll parts. What visitors are actually seeing are bits and pieces of Mardi Gras floats (and some complete ones), movie-set pieces and sculpted characters made for Walt Disney World attractions and other festive occasions.

Blaine Kern, known in New Orleans as "Mr. Mardi Gras," started the company Blaine Kern Artists in 1947 and opened Mardi Gras World to the public in 1984. Now, 150,000 people tour the studio every year.

Even those who never plan to go to the real Mardi Gras would probably like visiting Mardi Gras World. After all, how often do you get to see Spiderman, Marilyn, Scarlett and Rhett all in the same room? The night will be filled with food, entertainment, and fun! This is a Monday Night Social you will not want to miss.

CREOLE QUEEN DINNER & JAZZ CRUISE

Tuesday, August 12, 2003

7:00 p.m. – 8:00 p.m. Boarding

8:00 p.m. – 10:00 p.m. Cruising with Dinner

Constructed at Moss Point, Mississippi, the Paddle-wheeler Creole Queen took her maiden voyage on October 1, 1983. She is an authentic paddle-wheeler powered by a 24-foot diameter paddlewheel. You will experience the finest in Southern hospitality as you board the Creole Queen for a leisurely and fun trip down the Mississippi. The sounds of Dixieland fill the air as you step aboard for an adventure back in time. Relive the era when cotton was king while enjoying a lavish Creole buffet. A cruise on the Mississippi is pure New Orleans and pure pleasure! Your ticket purchase benefits the IAFP Foundation Fund.

IAFP FUNCTIONS

NEW MEMBER RECEPTION

Saturday, August 9, 2003 • 4:30 p.m. – 5:30 p.m.

If you recently joined the Association or if this is your first time attending an IAFP Annual Meeting, welcome! Attend this informal reception to learn how to get the most out of attending the Meeting and meet some of today's leaders.

AFFILIATE RECEPTION

Saturday, August 9, 2003 • 5:30 p.m. – 7:00 p.m.

Affiliate officers and delegates plan to arrive in time to participate in this educational reception. Watch your mail for additional details.

COMMITTEE MEETINGS

Sunday, August 10, 2003 • 7:00 a.m. – 5:00 p.m.

Committees and Professional Development Groups (PDGs) plan, develop and institute many of the Association's projects, including workshops, publications, and educational sessions. Share your expertise by volunteering to serve on any number of committees or PDGs.

STUDENT LUNCHEON

Sunday, August 10, 2003 • 12:00 p.m. – 1:30 p.m.

The mission of the Student PDG is to provide students of food safety with a platform to enrich their experience as Members of IAFP. Sign up for the luncheon to help start building your professional network.

OPENING SESSION

Sunday, August 10, 2003 • 7:00 p.m. – 8:00 p.m.

Join us to kick off IAFP 2003 at the Opening Session. Listen to the prestigous Ivan Parkin Lecture delivered by Donald L. Zink, Ph.D., Lead Scientist, Food Processing, FDA, CFSAN, OPDFB, College Park, Maryland. The presentation will be "On the Trail of Food Safety — From the Early Days to the Future."

CHEESE AND WINE RECEPTION

Sunday, August 10, 2003 • 8:00 p.m. – 10:00 p.m.

An IAFP tradition for attendees and guests. The reception begins immediately following the Ivan Parkin Lecture on Sunday evening in the Exhibit Hall.

IAFP JOB FAIR

Sunday, August 10 through Wednesday, August 13, 2003

Employers, take advantage of recruiting the top food scientists in the world! Post your job announcements and interview candidates. Watch for additional information at www.foodprotection.org.

DAYTIME TOURS

NEW ORLEANS SUPER CITY TOUR

Sunday, August 10, 2003 • 9:00 a.m. – 2:00 p.m.

See the landmarks and architecture and listen to the legends and charm that make New Orleans famous! Three hundred years of entertaining history about "America's Most Interesting City" make this tour a visitor's favorite. The tour will begin with Jackson Square, continue along Esplanade Avenue with its splendid architecture, and then on to the "Cities of the Dead" where you'll learn about a most unusual burial system. City Park, Lake Pontchartrain, the New Orleans Yacht Club, the oldest in the US and the Causeway, the longest bridge in the world are next on the agenda. Traveling along the line of the famous St. Charles Avenue Streetcar, the tour will pass Tulane and Loyola Universities and Audubon Park. Better known as "Millionaire's Row", St. Charles Avenue boasts stately mansions and lush tropical gardens. While uptown, enjoy a traditional New Orleans jazz brunch at Dominique's. The tour will brush the edges of the warehouse and business districts enroute back to the Hilton New Orleans Riverside. When this tour draws to an end, guests will have a much deeper understanding of New Orleans and its fascinating history.

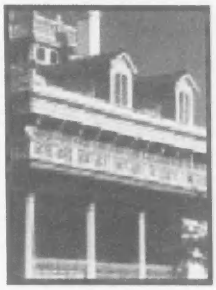
SWAMP & BAYOU TOUR

Monday, August 11, 2003 • 9:00 a.m. – 1:00 p.m.

Along with the wondrous alligator, visit a few other Louisiana swamp friends. How about a beautiful ivory white egret (related to the crane) perched on a moss-draped cypress tree searching for an ill-fated catfish? Or a curious raccoon along the bayou's edge gathering his lunch of crawfish while a Louisiana snapping turtle watches him from atop a fallen willow tree? Or a Cajun hunter's cabin with an alligator sunbathing on his weather-beaten wharf? All this and much more will accompany your adventure into the pristine bayous and swamps of Southern Louisiana. Your guide will entertain you with Cajun folklore and Cajun Zydeco music as he skillfully guides your climate-controlled swamp boat beneath the beautiful foliage draped mysteriously across your path. He will bring you into hidden coves which you probably only thought existed on the Discovery Channel. Enjoy lunch in the Gator Den Cafe before leaving Cajun country.

RIVER ROAD PLANTATION TOUR

Tuesday, August 12, 2003 • 9:00 a.m. – 4:00 p.m.



Sit back, relax and enjoy a delightful journey along the River Road, back in time to an era when sugar was king and a massive plantation was a sugar planter's kingdom! A native tour guide will point out sites and tell tales of the bygone antebellum period on the excursion to two magnificent plantations, Oak Alley and San Francisco. Oak Alley is named for the dramatic double row of live oaks interlaced to form a beautiful canopy leading three hundred yards from River Road to the mansion. It is considered to be one of the finest remaining examples of adaptive restoration. Nowhere else in the Mississippi Valley is there such a spectacular setting! Enjoy a luncheon buffet on the grounds before continuing along River Road to bright and colorful San Francisco Plantation. Originally named for its builder, Marmillion, it was renamed as a derivation of the French Slang "sans fruscins" — "without a penny in my pocket," in reference to its high cost to build. Gingerbread galleries and extensive ornamentation mark the exterior while San Francisco's interior is ornate, boasting handcarved woodwork, ceiling paintings, frescos and beveled glass. A tour you will be sure to remember.

NEW ORLEANS SCHOOL OF COOKING

Wednesday, August 13, 2003 • 9:30 a.m. – 1:00 p.m.

Join in the fun in the comfortable atmosphere of a Louisiana homestyle kitchen to learn the secrets of authentic Creole cooking. The City That Care Forgot never forgets about its food, and you will never forget it either. In just three hours, you'll learn to recreate the magic of New Orleans in your own kitchen. Founded in 1980, the cooks at The New Orleans School of Cooking demonstrate basic Creole recipes and share their favorite tips while the rich, spicy aromas float through the air.

HOSPITALITY ROOM

SPOUSE/COMPANION ROOM

Register your spouse/companion and they will have access to the hospitality room where a continental breakfast and afternoon snacks are provided Sunday through Wednesday.

IMPORTANT! Please read this information before completing your registration form.

MEETING INFORMATION

Register to attend the world's leading food safety conference.

Registration includes:

- Technical Sessions
- Symposia
- Poster Presentations
- Ivan Parkin Lecture
- Exhibit Hall Admittance
- Cheese and Wine Reception
- Exhibit Hall Reception
- Program and Abstract Book

4 EASY WAYS TO REGISTER

Complete the Attendee Registration Form and submit it to the International Association for Food Protection by:

Online: www.foodprotection.org

Fax: 515.276.8655

Mail: 6200 Aurora Avenue, Suite 200W,
Des Moines, IA 50322-2864, USA

Phone: 800.369.6337; 515.276.3344

The early registration deadline is July 9, 2003.
After this date, late registration fees are in effect.

International Association for Food Protection®

REFUND/CANCELLATION POLICY

Registration fees, less a $50 administration fee and any applicable bank charges, will be refunded for written cancellations received by July 25, 2003. No refunds will be made after July 25, 2003; however, the registration may be transferred to a colleague with written notification. Refunds will be processed after August 18, 2003. Event and tour tickets purchased are nonrefundable.

EXHIBIT HOURS

Sunday, August 10, 2003	8:00 p.m. – 10:00 p.m.
Monday, August 11, 2003	9:30 a.m. – 1:30 p.m. 3:00 p.m. – 6:30 p.m.
Tuesday, August 12, 2003	9:30 a.m. – 1:30 p.m.

DAYTIME TOURS

(Lunch included in all daytime tours)

Sunday, August 10, 2003	
New Orleans Super City Tour	9:00 a.m. – 2:00 p.m.
Monday, August 11, 2003	
A Swamp Tour Experience	9:00 a.m. – 1:00 p.m.
Tuesday, August 12, 2003	
River Road Plantation Tour	9:00 a.m. – 4:00 p.m.
Wednesday, August 13, 2003	
New Orleans School of Cooking	9:30 a.m. – 1:00 p.m.

EVENING EVENTS

Sunday, August 10, 2003	
Opening Session	7:00 p.m. – 8:00 p.m.
Cheese and Wine Reception *Sponsored by Kraft Foods North America*	8:00 p.m. – 10:00 p.m.
Monday, August 11, 2003	
Exhibit Hall Reception *Sponsored by Qualicon Inc.*	5:00 p.m. – 6:30 p.m.
Monday Night Social at Mardi Gras World *Sponsored by IGEN International, Inc.*	6:30 p.m. – 10:00 p.m.
Tuesday, August 12, 2003	
Creole Queen Dinner and Jazz Tour Ticket sales will benefit the IAFP Foundation Fund	7:00 p.m. – 10:00 p.m.
Wednesday, August 13, 2003	
Awards Banquet Reception	6:00 p.m. – 7:00 p.m.
Awards Banquet	7:00 p.m. – 9:30 p.m.

HOTEL INFORMATION

For reservations, contact the hotel directly and identify yourself as an International Association for Food Protection Annual Meeting attendee to receive a special rate of $145/$165 per night, single/double. Make your reservations as soon as possible; this special rate is available only until July 9, 2003.

Hilton New Orleans Riverside
Two Poydras St.
New Orleans, Louisiana 70140
800.HILTONS
504.561.0500

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

Attendee Registration Form

Name (Print or type your name as you wish it to appear on name badge) _____ Member Number: _____

Employer _____ Title _____

Mailing Address (Please specify: ❒ Home ❒ Work) _____

City _____ State/Province _____ Country _____ Postal/Zip Code _____

Telephone _____ Fax _____ E-mail _____

❒ Regarding the ADA, please attach a brief description of special requirements you may have. Member since: _____

❒ IAFP occasionally provides Attendees' addresses (excluding phone and E-mail) to vendors and exhibitors supplying products and services for the food safety industry. If you prefer NOT to be included in these lists, please check the box.

PAYMENT MUST BE RECEIVED BY JULY 9, 2003 TO AVOID LATE REGISTRATION FEES

REGISTRATION FEES:	MEMBERS	NONMEMBERS	TOTAL
Registration (Awards Banquet included)	$ 305 ($355 late)	$ 475 ($525 late)	_____
Association Student Member (Awards Banquet included)	$ 52 ($ 62 late)	Not Available	_____
Retired Association Member (Awards Banquet included)	$ 52 ($ 62 late)	Not Available	_____
One Day Registration:* ❒ Mon. ❒ Tues. ❒ Wed.	$ 170 ($195 late)	$ 235 ($260 late)	_____
Spouse/Companion* (Name): _____	$ 50 ($ 50 late)	$ 50 ($ 50 late)	_____
Children 15 & Over* (Names): _____	$ 25 ($ 25 late)	$ 25 ($ 25 late)	_____
Children 14 & Under* (Names): _____	FREE	FREE	_____
*Awards Banquet not included			

EVENTS:		# OF TICKETS	
Student Luncheon (Sunday, 8/10)	$ 5 ($ 10 late)	_____	_____
Monday Night Social at Mardi Gras World (Monday, 8/11)	$ 39 ($ 44 late)	_____	_____
Children 14 and under	$ 34 ($ 39 late)	_____	_____
Creole Queen Dinner and Jazz Tour (Tuesday, 8/12)	$ 70 ($ 75 late)	_____	_____
Awards Banquet (Wednesday, 8/13)	$ 50 ($ 55 late)	_____	_____

DAYTIME TOURS: (Lunch included in all daytime tours)			
New Orleans Super City Tour (Sunday, 8/10)	$ 69 ($ 74 late)	_____	_____
A Swamp Tour Experience (Monday, 8/11)	$ 68 ($ 73 late)	_____	_____
River Road Plantation Tour (Tuesday, 8/12)	$ 70 ($ 75 late)	_____	_____
New Orleans School of Cooking (Wednesday, 8/13)	$ 48 ($ 53 late)		

PAYMENT OPTIONS:

❒ Check Enclosed ❒ VISA ❒ MasterCard ❒ Discover

TOTAL AMOUNT ENCLOSED $ _____
US FUNDS on US BANK

Credit Card # _____ Expiration Date _____

Name on Card _____

Signature _____

JOIN TODAY AND SAVE!!!
(Attach a completed Membership application)

EXHIBITORS DO NOT USE THIS FORM

Workshops

Sponsored by
International Association for Food Protection®

Workshop 1
Assuring Confidence in Laboratory Data

This workshop will present principals for understanding and implementing microbial control in a food production environment by providing skills to address limitations in your current laboratory testing and documentation. You will learn, in an interactive environment, how to perform effectively sound food and environmental sampling and microbial testing that can be implemented into your standard operating procedures and will conform to today's QA and ISO requirements. Workshop participants will review and discuss material from practical case studies and present their findings to the group in an informal presentation that will facilitate open discussion. Workshop includes a binder of tools and references to reinforce the practical experience gained from the workshop.

Workshop Topics

- Outsourcing/Auditing: What should you expect from an outside food-testing laboratory relative to quality systems and capabilities
- Laboratory quality assurance and preparing your laboratory to address ISO 17025
- Microbial control: where and how raw ingredient and finished product testing fit into the big picture
- Microbial control: where and how environmental/investigational sampling fit into the big picture
- Practical approaches to incorporating rapid methods into the laboratory
- IQ, OQ, PQ: what food companies can learn from pharmaceutical validation principals
- Using data management and trend analysis techniques to drive continuous improvement

Instructors

Robert Behling, Independent Consultant, Madison, WI

Jay Ellingson, Marshfield Laboratories, Marshfield, WI

Robert Ferer, Vectech Pharmaceutical Consultants, Inc. Farmington Hills, MI

W. Payton Pruett, Jr., Ph.D., ConAgra Refrigerated Prepared Foods, Downers Grove, IL

Cindy Ryan, Nestlé USA, Dublin, OH

Michael Sole, Canadian Food Inspection Agency, Ottawa, Ontario, Canada

Organizers and Instructors

Patricia Rule, bioMérieux, Inc., Hazelwood, MO

Jeff Kornacki, Ph.D., University of Georgia, Griffin, GA

Who Should Attend?

Laboratory managers, supervisors, scientists and technicians responsible for product sampling, as well as performing and documenting microbial tests in a food production environment.

Hours for Workshop

Friday August 8, 2003	Saturday August 9, 2003
Registration – 7:30 a.m. Continental Breakfast	7:30 a.m. Continental Breakfast
Workshop – 8:00 a.m. – 5:00 p.m. (Lunch Provided)	**Workshop –** 8:00 a.m. – 4:00 p.m. (Lunch Provided)

Workshop TT
A Hands-on Course in Quantitative Microbial Risk Assessment

This workshop will cover fitting data to statistical distributions, creating and using predictive models in risk assessment, developing a process risk model, using sensitivity analysis, and testing proposed mitigations to reduce risk. Over the course of the workshop, the participants will build an actual working quantitative microbial risk assessment in Excel (Microsoft Corporation) using BestFit and @Risk software (Palisades Corporation).

Participants will build, run, interpret, and determine the impact of various changes to the model. Two-way risk model will be run to show the value of separating variability and uncertainty in quantitative risk assessment. Students will learn to determine whether additional data, better process control or a redesigned process will produce the greatest reduction in risk.

You are encouraged to bring actual data and real world problems to the workshop, but a fictitious example will also be developed during the workshop. Each participant is also strongly encouraged to bring his or her own laptop (with CD drive) and have a working copy of Excel (Microsoft Corp.). Thirty-day demonstration copies of BestFit and @Risk software (Palisades Corporation) will be provided.

Workshop Topics

- Overview of QRA
- Fitting data to distributions
- Use of predictive modeling in QRA
- Building a process risk model in Excel
- Conducting a sensitivity analysis
- Separating variability and uncertainty in QRA
- Hands on exercise:
  - Distributions
  - Modeling
  - Process Risk Model
  - Sensitivity Analysis
  - Variability and Uncertainty

Organizers and Instructors

Don Schaffner, Ph.D., Rutgers University, New Brunswick, NJ

Richard Whiting, Ph.D., Food and Drug Administration, Center for Food Safety and Applied Nutrition, College Park, MD

Who Should Attend?

This workshop will serve as an "advanced introduction" intended for anyone interested in gaining direct hands-on experience with tools and techniques used in quantitative microbial risk assessment.

Hours for Workshop

Friday August 8, 2003	Saturday August 9, 2003
Registration – 12:30 p.m.	7:30 a.m. Continental Breakfast
Workshop – 1:00 p.m. – 5:00 p.m.	**Workshop –** 8:00 a.m. – 5:00 p.m. (Lunch Provided)

Workshop T *Assuring Confidence in Laboratory Data*	Early Rate	Late Rate
IAFP Member	$525.00	$600.00
Non-Member	$625.00	$700.00

Workshop TT *A Hands-on Course in Quantitative Microbial Risk Assessment*	Early Rate	Late Rate
IAFP Member	$315.00	$390.00
Non-Member	$415.00	$490.00

Continued on next page

Workshop Registration Form

Friday–Saturday, August 8-9, 2003

Workshop I: Assuring Confidence in Laboratory Data

Workshop II: A Hands-on Course in Quantitative Microbial Risk Assessment

First Name (will appear on badge)

Last Name

Company | Job Title

Address | City

State/Province | Country | Postal Code/Zip + 4

Area Code & Telephone | Fax

E-mail | Member #

❒ Check Enclosed ❒ VISA ❒ ❒ MasterCard

Total Amount Enclosed (US Funds on US Bank) $ _____

Credit Card # _____

Signature _____ **Expiration date** _____

Register by July 18, 2003 to avoid late registration fees

● Registration ●

WORKSHOP I: Assuring Confidence in Laboratory Data

	Early Rate	Late Rate
IAFP Member	$525.00	$600.00
NonMember	$625.00	$700.00

WORKSHOP II: A Hands-on Course in Quantitative Microbial Risk Assessment

	Early Rate	Late Rate
IAFP Member	$315.00	$390.00
NonMember	$415.00	$490.00

GROUP DISCOUNT:
Register 3 or more people from your company and receive a 15% discount. Registrations must be received as a group.

Refund/Cancellation Policy

Registration fees, less a $50 administrative charge, will be refunded for written cancellations received by July 25, 2003. No refunds will be made after that date; however, the registration may be transferred to a colleague with written notification. Refunds will be processed after August 18, 2003. The workshop may be cancelled if sufficient enrollment is not received by July 18, 2003.

For further information, please contact the Association office at 800.369.6337; 515.276.3344; Fax: 515.276.8655; E-mail: jcattanach@foodprotection.org.

● 4 Easy Ways to Register ●

To register, complete the Workshop Registration Form and submit it to the International Association for Food Protection by:

Online: www.foodprotection.org

Phone: 800.369.6337; 515.276.3344

Fax: 515.276.8655

Mail: 6200 Aurora Avenue, Suite 200W, Des Moines, IA 50322-2864

Sponsors

3M Microbiology Products

BD Diagnostic Systems

bioMérieux, Inc.

Bio-Rad Laboratories

Deibel Laboratories, Inc.

Dole Food Company

DuPont Qualicon

Ecolab, Inc., Food and Beverage Division

F & H Food Equipment Company

Wilbur Feagan

IAFP Foundation Fund

IGEN International, Inc.

International Life Sciences Institute, N.A. (ILSI, N.A.)

International Packaged Ice Association (IPIA)

Kraft Foods North America

Nasco International, Inc.

National Food Processors Association

Nelson-Jameson, Inc.

Nestlé USA, Inc.

NSF International

Silliker, Inc.

Strategic Diagnostics, Inc.

Warren Analytical Laboratory

Weber Scientific

Exhibitors

Companies scheduled to exhibit as of March 31, 2003

3M Microbiology
Phone: 800.228.3957 Fax: 651.737.1994

ABC Research Corporation
Phone: 352.372.0436 Fax: 352.378.6483

AIHA Food Laboratory Accreditation Program
Phone: 703.846.0762

aLF Ventures, LLC
Phone: 816.961.1030 Fax: 816.961.1031

American Proficiency Institute
Phone: 800.333.0958 Fax: 231.941.7287

BD Diagnostic Systems
Phone: 410.316.4024 Fax: 410.316.4906

BioControl Systems, Inc.
Phone: 800.245.0113 Fax: 425.603.0080

Biolog, Inc.
Phone: 510.785.2564 Fax: 510.782.4639

bioMérieux, Inc.
Phone: 314.731.8681 Fax: 314.731.8678

Bio-Rad Laboratories
Phone: 800.4BIORAD Fax: 510.741.5800

Bioscience International, Inc.
Phone: 301.230.0072 Fax: 301.230.1418

Copan Diagnostics, Inc.
Phone: 800.216.4016 Fax: 909.549.8850

Decagon Devices, Inc.
Phone: 800.755.2751 Fax: 509.332.5158

Deibel Laboratories
Phone: 847.329.9900 Fax: 847.329.9903

Diffchamb, Inc.
Phone: 866.DIFFCHAMB Fax: 312.346.0683

DonLevy Laboratories
Phone: 219.736.0472 Fax: 219.736.0539

DQCI Services, Inc.
Phone: 763.785.0484 Fax: 763.785.0584

DSM Food Specialties USA, Inc.
Phone: 800.423.7906 Fax: 262.255.7732

DuPont Qualicon
Phone: 800.863.6842 Fax: 302.695.5301

Dynal Biotech, Inc.
Phone: 866.DYNALTT Fax: 610.940.3606

EMD Chemicals Inc.
Phone: 800.222.0342 Fax: 856.423.6313

EnvoyWorldWide, Inc.
Phone: 781.482.2181 Fax: 781.482.2199

FoodHandler, Inc.
Phone: 516.338.4433 Fax: 516.338.5486

Food Processors Institute
Phone: 800.355.0983 Fax: 202.639.5932

Food Quality Magazine
Phone: 215.860.7800 Fax: 215.860.7900

Food Safety Institute
Phone: 215.860.7800

Food Safety Magazine
Phone: 818.842.4777 Fax: 818.769.2939

Food Safety Net Services, Ltd.
Phone: 888.525.9788 Fax: 210.525.1702

Hanna Instruments
Phone: 401.765.7500 Fax: 401.765.7575

Hardy Diagnostics
Phone: 215.860.7800

Hygiena, LLC
Phone: 805.388.8007 Fax: 805.388.5531

IGEN International, Inc.
Phone: 800.336.4436 Fax: 240.632.2214

International Association for Food Protection
Phone: 800.369.6337 Fax: 515.276.8655

International Association for Food Protection – Student PDG
Phone: 800.369.6337 Fax: 515.276.8655

International BioProducts
Phone: 800.729.7611 Fax: 425.398.7973

International Food Hygiene
Phone: 44.13.7724.1724 Fax: 44.13.7725.3640

International Food Information Council Foundation
Phone: 202.296.6540 Fax: 202.296.6547

International Life Sciences Institute (ILSI)
Phone: 202.659.0074 Fax: 202.659.8654

Interscience Laboratories, Inc.
Phone: 331.34.62.62.61 Fax: 331.34.62.43.03

IQ Scientific Instruments, Inc.
Phone: 800.276.0723 Fax: 858.673.1853

MATRIX MicroScience, Ltd.
Phone: 303.277.9613 Fax: 303.277.9643

Medallion Laboratories
Phone: 800.245.5615 Fax: 763.764.4010

Michelson Laboratories, Inc.
Phone: 562.928.0553 Fax: 562.927.6625

MicroBioLogics, Inc.
Phone: 800.599.2487 Fax: 320.253.6250

Microbiology International
Phone: 800.396.4276 Fax: 301.662.8096

National Center for Food Safety and Technology
Phone: 708.563.1576 Fax: 708.563.1873

The National Food Laboratory, Inc.
Phone: 925.828.1440 Fax: 925.833.9239

National Food Safety and Toxicology Center
Phone: 517.432.3100 Fax: 517.432.2310

National Restaurant Assocation Educational Foundation
Phone: 312.715.5384 Fax: 800.247.8978

Nelson-Jameson, Inc.
Phone: 800.826.8302 Fax: 715.387.8746

Neogen Corporation
Phone: 800.234.5333 Fax: 517.372.2006

NP Analytical Laboratories
Phone: 800.423.6832 Fax: 314.982.1078

NSF International
Phone: 800.NSF.MARK Fax: 734.769.0109

Orkin Pest Control
Phone: 800.ORKIN.NOW Fax: 404.888.2012

Oxoid, Inc.
Phone: 800.267.6391 Fax: 613.226.3728

Procter & Gamble
Phone: 513.983.8349 Fax: 513.983.1583

Q Laboratories, Inc.
Phone: 513.471.1300 Fax: 513.471.5600

REMEL, Inc.
Phone: 800.255.6730 Fax: 800.447.5750

rtech™ laboratories
Phone: 800.328.9687 Fax: 651.481.2002

Silliker, Inc.
Phone: 800.957.LABS Fax: 708.957.1483

Strategic Diagnostics Inc.
Phone: 800.544.8881 Fax: 302.456.6782

Warnex Diagnostics Inc.
Phone: 450.663.6724 Fax: 450.669.2784

Warren Analytical Laboratory
Phone: 800.945.6669 Fax: 970.351.6648

Weber Scientific
Phone: 800.328.8378 Fax: 609.584.8388

Zep Manufacturing Company
Phone: 877.IBUYZEP Fax: 404.603.7742

Indicates IAFP Sustaining Member

Sunday, August 10, 2003	Monday, August 11, 2003	Tuesday, August 12, 2003
8:00 p.m. – 10:00 p.m. Cheese and Wine Reception	9:30 a.m. – 11:00 a.m. Pastries and Coffee 3:00 p.m. – 4:30 p.m. Coffee Break 5:00 p.m. – 6:30 p.m. Exhibit Hall Reception	9:30 a.m. – 11:00 a.m. Pastries and Coffee

EXHIBIT HOURS

Sunday, August 10, 2003	Monday, August 11, 2003	Tuesday, August 12, 2003
8:00 p.m. – 10:00 p.m.	9:30 a.m. – 1:30 p.m. 3:00 p.m. – 6:30 p.m.	9:30 a.m. – 1:30 p.m.

Contribute to the Sixth Annual Foundation Fund Silent Auction Today!

The Foundation of the International Association for Food Protection will hold its Annual Silent Auction during IAFP 2003, the Association's 90th Annual Meeting in New Orleans, Louisiana, August 10 –13, 2003. The Foundation Fund supports the:

* Ivan Parkin Lecture
* Travel support for exceptional speakers at the Annual Meeting
* Audiovisual Library
* Developing Scientist Competition
* Shipment of volumes of surplus *JFP* and *FPT* journals to developing countries through FAO in Rome

Support the Foundation by donating an item today. A sample of items donated last year included:

* Black Tahitian Pearl Necklace
* Food Safety Information Handbook
* Hand Crocheted Table Coverings
* Stadium Blanket with IAFP Logo
* Zoo Wall Hanging
* Oscar Mayer Remote Controlled Wiener Mobile
* 2001 United States Congressional Ornament
* Wine
* Cougar Gold Cheese
* Missouri Ham

Complete the form and send it in today.

Description of Auction Items _____

Estimated Value _____

Name of Donor _____

Company (if relevant) _____

Mailing Address _____

(Please specify: ❒ Home ❒ Work)

City _____ State or Province _____

Postal Code/Zip + 4 _____ Country _____

Telephone # _____ Fax # _____

E-mail _____

Return to:

Donna Gronstal
International Association for Food Protection
6200 Aurora Avenue, Suite 200W
Des Moines, IA 50322-2864, USA
800.369.6337; 515.276.3344
Fax: 515.276.8655
E-mail: dgronstal@foodprotection.org

International Association for Food Protection®

Promotional Opportunities

Advertising and sponsorship opportunities are available to enhance the promotion of your organization.

Sponsorships

We invite you to participate as a sponsor for IAFP 2003. Sponsorship participation provides an excellent opportunity to position your company or organization as a supporter of the Association.

Please review the event listing to select the one that will best position your organization. Reservations will be taken in order received for any open sponsorship events. A waiting list for events with a right of first option will be established.

Sponsorship Event List

Amount	Event
$16,000	Monday Evening Social
$15,000	Opening Reception (Sunday)
$14,000	Exhibit Hall Reception (Monday)
$10,000	President's Reception (Tuesday)
$7,500	Badge Holders w/Lanyards
$5,000	Exhibit Hall Pastries and Coffee (Monday Morning)
$3,000	Exhibit Hall Coffee Break (Monday Afternoon)
$5,000	Exhibit Hall Pastries and Coffee (Tuesday Morning)
$3,000	Coffee Break (Tuesday Afternoon)
$3,000	Coffee Break (Wednesday Morning)
$2,500	Coffee Break (Wednesday Afternoon)
$3,500	Notepads with Sponsor's Logo
$3,500	Spouse/Companion Hospitality Room
$3,500	Student PDG Luncheon (Sunday)
$2,500	IAFP New Member Orientation (Saturday)
$3,000	Affiliate Reception (Saturday)
$2,000	Awards Banquet Flowers (Wednesday)
$1,750	Committee Day Refreshments (Sunday)
$1,500	Exhibitor Move-in Refreshments (Sunday)
$1,000	Speaker Travel Support

Partial sponsorship for the above events is available.

Contact David Larson for details.
Phone: 515.440.2810
Fax: 515.440.2809
E-mail: larson6@earthlink.net

Sponsorship Participant

Name _____

Company _____

Address _____

City _____ State or Province _____

Country _____ Postal Code/Zip + 4 _____

Phone _____ Fax _____

E-mail _____

Desired Event to Sponsor _____

Amount Paid $ _____
U.S. Funds on U.S. Bank

Return form to:
IAFP
6200 Aurora Ave., Suite 200W
Des Moines, IA 50322-2864
Phone: 515.276.3344
Fax: 515.276.8655
E-mail: info@foodprotection.org

Payment: ❑ Check ❑ Mastercard ❑ VISA ❑ American Express

Account Number _____

Expiration Date _____

Cardholder Signature _____

IAFP Student Professional Development Group T-shirts

Back center of T-shirt.

The IAFP Student Professional Development Group (SPDG) will be selling T-shirts at the Annual Meeting in New Orleans in August. Pre-ordered shirts are $13 and will be available for pick up from the SPDG booth throughout IAFP 2003. All order forms are due by June 15th. If you have any questions, please contact Renee Raiden (rraiden@vt.edu) or Megan Hereford (mherefor@vt.edu).

IAFP SPDG T-Shirt Order Form

Please return order form to the following address:

Renee Raiden
Virginia Tech
22 FST Building
Blacksburg, VA 24061

If you choose to pay by credit card, please make sure you include the amount to be charged. If you are paying by check, please make checks payable to IAFP and remember to enclose the check with your order form! Please mail order forms and checks by June 15, 2003 for pre-orders!

Name _____ Title _____

Address _____

City _____ State or Province _____

Country _____ Postal/Zip Code _____

Telephone _____ E-mail _____

Quantity _____ **T-shirts** S ❑ M ❑ L ❑ XL ❑ **Total** _____

US FUNDS on US BANK

METHOD OF PAYMENT:

❑ Check or Money Order Enclosed ❑ VISA ❑ MasterCard ❑

Credit Card # _____

Exp. Date _____ Signature _____

All checks payable to IAFP. Credit card orders will be paid to the International Association for Food Protection and will not be charged until June 15, 2003.

The 20-minute Listeria Test from Oxoid. Because time is money.

The Oxoid Listeria Rapid Test is a fast and reliable method for the detection of Listeria species in food samples.

1. After just two 21-hour enrichment steps, place 135ul of the sample into this Clearview™ Test Unit window.

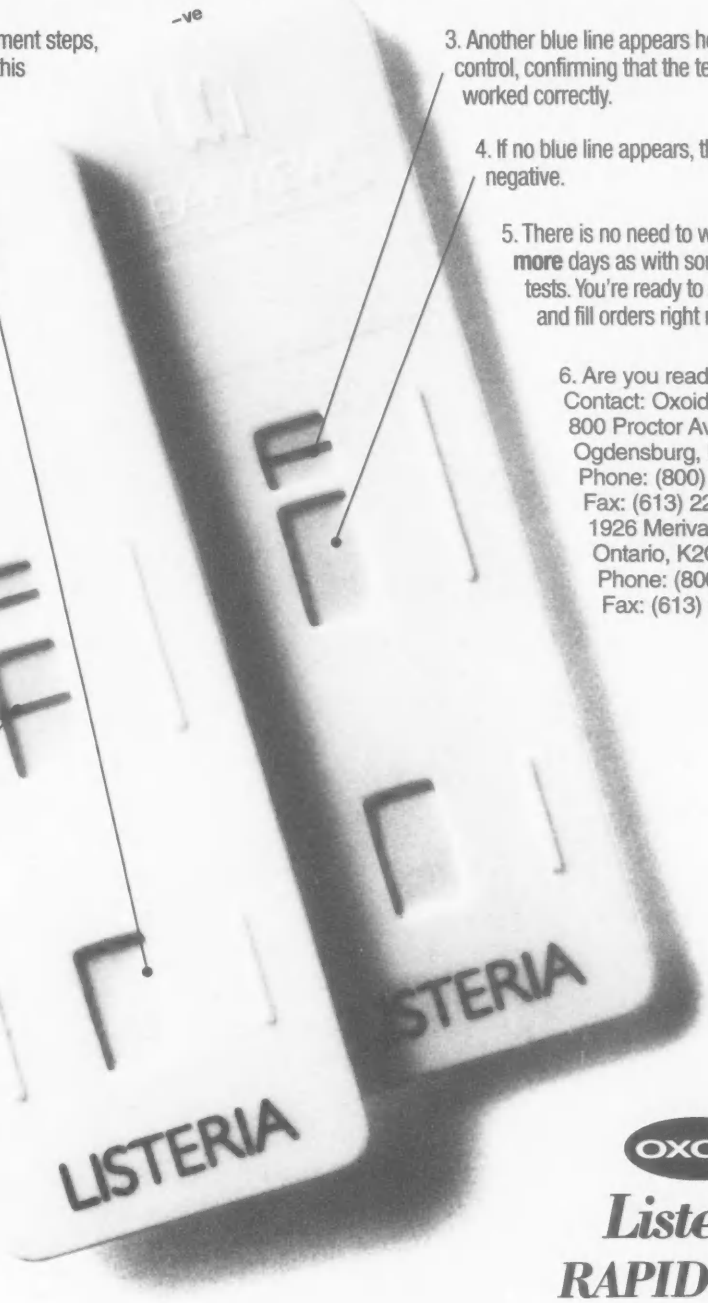
2. Only 20 minutes later, a blue line in this window clearly indicates the presence of Listeria species.

3. Another blue line appears here as a control, confirming that the test has worked correctly.

4. If no blue line appears, the sample is negative.

5. There is no need to wait up to 5 **more** days as with some other tests. You're ready to ship product and fill orders right now.

6. Are you ready to call for details
Contact: Oxoid Inc.
800 Proctor Ave.,
Ogdensburg, NY 13669,
Phone: (800) 567-TEST.
Fax: (613) 226-3728. Or Oxoid Inc
1926 Merivale Road, Nepean,
Ontario, K2G 1E8 Canada.
Phone: (800) 267-6391
Fax: (613) 226-3728



INCORPORATING
CLEARVIEW
LISTERIA

OXOID
Listeria
RAPID TEST

Reader Service No. 126

IAFP 2003 Exhibitor

COMING EVENTS

JUNE

- **2, Basic Microbiology Techniques Workshop,** Pennsylvania State University, Berks-Lehigh Valley College, Reading, PA. For more information, contact Dr. Hassan Gourama at 610.396.6121; E-mail: hxg7@psu.edu.
- **2-4, Texas Association for Food Protection Annual Meeting,** Omni Austin Hotel at Southpark, Austin, TX. For more information, contact Gene Wright at 512.719.0260.
- **2-6, AIB Cookie Ingredient Technology Seminar,** Manhattan, KS. For more information, contact AIB at 785.537.4750.
- **3-4, Clean-in-Place Short Course,** Michigan State University, East Lansing, MI. For more information, call 517.355.8474 ext. 114; E-mail: partridg@msu.edu.
- **3-5, Penn State Food Microbiology Short-course Detection and Control of Foodborne Pathogens,** Pennsylvania State University, Berks-Lehigh Valley College, Reading, PA. For more information, contact Dr. Hassan Gourama at 610.396.6121; E-mail: hxg7@psu.edu.
- **3-5, AIB Recertification Program for Pest Management Professionals,** Chicago, IL. For more information, contact AIB at 785.537.4750.
- **3-5, AIB Engineering Seminar,** Ft. Mitchell, KY (Cincinnati, OH). For more information, contact AIB at 785.537.4750.
- **5, Functional Foods and Nutraceuticals,** Guelph Food Technology Centre, Guelph, Ontario, Canada. For more information, contact Marlene Inglis at 519.821.1246; E-mail: minglis@gftc.ca.
- **8-11, National Environmental Health Association (NEHA) Annual Educational Conference,** Reno Hilton Hotel, Reno/Lake Tahoe, NV. For more information, contact Kim Brandow at 303.756.9090 ext. 306; E-mail: kbrandow@neha.org.
- **9-13, AIB Cookie Processing Technology Seminar,** Manhattan, KS. For more information, AIB at 785.537.4750.
- **13-20, International Workshop/ Symposium on Rapid Methods and Automation in Microbiology XXIII,** Kansas State University, Manhattan, KS. For more information, contact Daniel Y. C. Fung at 785. 532.5654; E-mail: dfung@oznet.ksu.edu.
- **14-18, AFDO Annual Educational Conference,** Oakbrook Hills Resort, Chicago, IL. For more information, contact Cheryl Bortner at 717.757. 2888; E-mail: afdo@afdo.org.
- **16-19, AIB Cracker Production Technology Seminar,** Manhattan, KS. For more information, AIB at 785.537.4750.
- **23-25, Alberta Association for Food Protection Annual Meeting,** West Edmonton Mall, Edmonton, Alberta, Canada. For more information, contact Lynn McMullen at 780.492.6015.
- **25-27, South Dakota Environmental Health Association Annual Meeting,** Ramkota Convention Center, Pierre. For more information, contact Clark Hepper at 605.773.3364.
- **26, Processing Foods Safely,** Guelph Food Technology Centre, Guelph, Ontario, Canada. For more information, contact Marlene Inglis at 519.821.1246; E-mail: minglis@gftc.ca.

JULY

- **6-9, Home Economics International Consumer Science Conference,** University of Wales Institute, Cardiff, Wales. For more information, contact Ms. Zoe Fearn at 44.29.2041. 6306; E-mail: zfearne@uwic.ac.uk.
- **9-10, 2003 Hawaii Lodging, Hospitality and Foodservice Expo 2003,** Honolulu, HI. For more information, contact Ken Kanter at 800.525.5275; E-mail: kanter@lava.net.
- **14-15, HACCP I: Documenting HACCP Prerequisites,** Guelph Food Technology Centre, Guelph, Ontario, Canada. For more information, contact Marlene Inglis at 519.821.1246; E-mail: minglis@gftc.ca.
- **16-18, HACCP II: Developing your HACCP Plan,** Guelph Food Technology Centre, Guelph, Ontario, Canada. For more information, contact Marlene Inglis at 519.821.1246; E-mail: minglis@gftc.ca.
- **16-20, 12th World Congress of Food Science and Technology,** Chicago, IL. For more information, visit the Congress site at www.worldcongress.org.
- **20-23, 6th Annual Foodborne Pathogen Analysis,** TradeWinds Island Grand Resort, St. Pete Beach, FL. For more information, contact Peggy Melton at 850.414.0408; E-mail: meltonp@doacs.state.fl.us.
- **31-Aug. 3, American Cheese Society National Conference,** San Francisco, CA. For more information, call 502.583.3783; Web site: acs@hqtrs.com.

AUGUST

- **8-9, IAFP 2003 Workshops,** Hilton New Orleans Riverside, New Orleans, LA.

  Workshop I – Assuring Confidence in Laboratory Data.

  Workshop II – A Hands-on Course in Quantitative Microbial Risk Assessment.

  See page 434 of this issue for additional workshop information.
- **10-13, IAFP 2003, the Association's 90th Annual Meeting,** Hilton New Orleans Riverside. For more information, contact Julie Cattanach at 515.276.3344; E-mail: jcattanach@foodprotection.org.
- **24-27, International Dairy Federation 2nd World Symposium of Dairy Products in Human Health and Nutrition,** Melbourne, Austra-

IAFP UPCOMING MEETINGS

AUGUST 10-13, 2003
New Orleans, Louisiana

AUGUST 8-11, 2004
Phoenix, Arizona

AUGUST 14-17, 2005
Baltimore, Maryland

AUGUST 13-16, 2006
Calgary, Alberta, Canada

lia. For more information, contact Pamela Tyers at 61.3.9731.3484; E-mail: Pamela.tyers@foodscience.afisc.csiro.au.

- **26, Microbiology II: Sanitation,** Guelph Food Technology Centre, Guelph, Ontario, Canada. For more information, contact Marlene Inglis at 519.821.1246; E-mail: minglis@gftc.ca.

SEPTEMBER

- **7-12, International Meeting on Radiation Processing (IMRP) 2003,** Chicago, IL. For more information, contact Patty Brewer at 814.870.8483.
- **10-14, International Food, Drink and Technology Exhibition,** National Expocenter of Ukraine, Kiev. For more information, contact Ken Cardelle at 203.357.1400; E-mail: Kcardelle@iegexpo.com.
- **16-17, Upper Midwest Dairy Industry Association Annual Meeting,** Holiday Inn, St. Cloud, MN. For more information, contact Paul Nierman at 763.785.0484.
- **17-18, Wisconsin Association for Food Protection Joint Education Conference,** Holiday Inn, Fond du Lac, WI. For more information, contact Randy Daggs at 608.837.2087.
- **24, Wyoming Environmental Health Association Annual Fall Meeting,** Holiday Inn, Cheyenne, WY. For more information, contact Bryan Grapes at 307.532.4208.
- **29-Oct. 1, Canadian Institute of Public Health Inspectors (CIPHI) Ontario Branch 64th Annual Educational Conference,** Waterloo Inn and Conference Centre, Waterloo, Ontario, Canada. For more information, contact Ken Diplock at 519.883.2008 ext. 5435; E-mail: dken@region.waterloo.on.ca.

OCTOBER

- **7-8, Associated Illinois Milk, Food and Environmental Sanitarians Annual Fall Meeting,** Stoney Creek Hotel, Peoria, IL. For more information, contact John Ellingson at 815.490.5523.
- **19-22, University of Wisconsin-River Falls 23rd Annual Food Microbiology Symposium,** University of Wisconsin-River Falls. For more information, contact the University of Wisconsin-River Falls Animal and Food Science Dept. at 715.425.3704; E-mail: foodmicro@uwrf.edu.
- **28-30, North Dakota Environmental Health Association Annual Fall Meeting,** Spirit Lake Resort, Devil's Lake, ND. For more information, contact Debra Larson at 701.328.6150.
- **29-30, Iowa Association for Food Protection Annual Fall Meeting,** Ames, IA. For more information, contact Phyllis Borer at 712.754.2511, ext. 33.

Journal of Food Protection®

ISSN: 0362-028X
Official Publication

International Association for Food Protection

Reg. U.S. Pat. Off.

Vol. 66 **May 2003** **No. 5**

* Asterisk indicates author for correspondence.

CAREER SERVICES SECTION

MARSHFIELD CLINIC®

Career Opportunities Await At Marshfield Clinic

Join Marshfield Clinic's – Laboratory Leadership Team

With expansion of new business lines, Marshfield Clinic is looking for solid laboratorians.

Leaders, who enjoy challenges, coupled with staff stability and long-term leadership.

Leaders, who look toward the future and challenge status quo to improve patient care as their first priority.

Administrative Dir.- Food Safety (MC-02-1036)

If this describes you, join our team!

Position Description and information can be found on the following site or by inquiring at:

Email: hrshared@marshfieldclinic.org

Marshfield Clinic Lab Division: http://www.marshfieldlaboratories.org/

Position Description: http://www.marshfieldclinic.org/jobs/Search.asp

To apply:
Marshfield Clinic
1000 N. Oak Ave.
Marshfield, WI 54449
Attn: Human Resources
Email: hrshared@marshfieldclinic.org
Fax: 715-387-5400

Marshfield Clinic is an Equal Opportunity/Affirmative Action Employer M/F/D/V.

CAREER SERVICES SECTION

List your open positions in *Food Protection Trends*. Special rates for this section provide a cost-effective means for you to reach the leading professionals in the industry. Call today for rate information.

Ads appearing in *FPT* will be posted on the Association Web site at www.foodprotection.org at no additional cost.

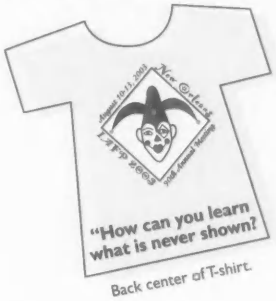
Send your job ads to Donna Bahun at dbahun@foodprotection.org or to the Association office: 6200 Aurora Ave., Suite 200W, Des Moines, IA 50322-2864; Phone: 800.369.6337; 515.276.3344; Fax: 515.276.8655.

International Association for Food Protection®

IAFP Members

Did you know that you are eligible to place an advertisement if you are unemployed and looking for a new position? As a Member benefit, you may assist your search by running an advertisement touting your qualifications.

Support the Student PDG



Back center of T-shirt

Buy a T-shirt today.
See page 442 for details

In Memory of...

Dr. Jim Ayres
Atlanta, GA

IAFP would like to extend our deepest sympathy to the family and friends of Dr. Jim Ayres. IAFP will always have sincere gratitude for his contribution to the association and the profession.

ADVERTISING INDEX

AUDIOVISUAL LIBRARY ORDER FORM

The use of the Audiovisual Library is a benefit for **Association Members only.** Limit your requests to five videos. Material from the Audiovisual Library can be checked out for 2 weeks only so that all Members can benefit from its use.

International Association for Food Protection®
6200 Aurora Avenue, Suite 200W
Des Moines, IA 50322-2864, USA
Phone: 800.369.6337; 515.276.3344;
Fax: 515.276.8655
E-Mail: info@foodprotection.org
Web Site: www.foodprotection.org

Member # _____

First Name _____ M.I. ____ Last Name _____

Company _____ Job Title _____

Mailing Address _____

Please specify: ❒ Home ❒ Work

City _____ State or Province _____

Postal Code/Zip + 4 _____ Country _____

Telephone # _____ Fax # _____

E-Mail _____ Date Needed _____

PLEASE CHECK BOX NEXT TO YOUR VIDEO CHOICE

(Allow 4 weeks minimum from date of request.)

DAIRY

- ❒ D1180 10 Points to Dairy Quality
- ❒ D1010 The Bulk Milk Hauler: Protocol & Procedures
- ❒ D1030 Cold Hard Facts
- ❒ D1040 Ether Extraction Method for Determination of Raw Milk
- ❒ D1060 Frozen Dairy Products
- ❒ D1070 The Gerber Butterfat Test
- ❒ D1080 High-Temperature, Short-Time Pasteurizer
- ❒ D1090 Managing Milking Quality
- ❒ D1100 Mastitis Prevention and Control
- ❒ D1110 Milk Plant Sanitation: Chemical Solution
- ❒ D1120 Milk Processing Plant Inspection Procedures
- ❒ D1130 Pasteurizer – Design and Regulation
- ❒ D1140 Pasteurizer – Operation
- ❒ D1150 Processing Fluid Milk (slides)

ENVIRONMENTAL

- ❒ E3010 The ABCs of Clean – A Handwashing & Cleanliness Program for Early Childhood Programs
- ❒ E3020 Acceptable Risks?
- ❒ E3030 Air Pollution: Indoor
- ❒ E3040 Asbestos Awareness
- ❒ E3055 Effective Handwashing–Preventing Cross-Contamination in the Food Service Industry
- ❒ E3060 EPA Test Methods for Freshwater Effluent Toxicity Tests (Using Ceriodaphnia)
- ❒ E3070 EPA Test Methods for Freshwater Effluent Toxicity Tests (Using Fathead Minnow Larva)
- ❒ E3075 EPA: This is Superfund
- ❒ E3080 Fit to Drink
- ❒ E3110 Garbage: The Movie
- ❒ E3120 Global Warming: Hot Times Ahead
- ❒ E3130 Kentucky Public Swimming Pool & Bathing Facilities
- ❒ E3135 Plastic Recycling Today: A Growing Resource
- ❒ E3140 Putting Aside Pesticides
- ❒ E3150 Radon
- ❒ E3160 RCRA – Hazardous Waste
- ❒ E3161 Sanitation Video
- ❒ E3170 The New Superfund: What It is & How It Works–(1) Changes in the Remedial Process: Clean-up Standards & State Involvement Requirements
- ❒ E3180 The New Superfund: What It is & How It Works–(2) Changes in the Removal Process: Removal & Additional Program Requirements
- ❒ E3190 The New Superfund: What It is & How It Works – (3) Enforcement and Federal Facilities
- ❒ E3210 The New Superfund: What It is & How It Works – (4) Emergency Preparedness & Community Right-to-Know
- ❒ E3220 The New Superfund: What It is & How It Works – (5) Underground Storage Tank Trust Fund & Response Program
- ❒ E3230 The New Superfund: What It is & How It Works – (6) Research & Development/Closing Remarks
- ❒ E3240 Sink a Germ
- ❒ E3245 Wash Your Hands
- ❒ E3250 Waste Not: Reducing Hazardous Waste

FOOD

- ❒ F2260 100 Degrees of Doom...The Time & Temperature Caper
- ❒ F2450 A Guide to Making Safe Smoked Fish
- ❒ F2005 A Lot on the Line
- ❒ F2007 The Amazing World of Microorganisms
- ❒ F2008 A Recipe for Food Safety Success
- ❒ F2440 Cleaning & Sanitizing in Vegetable Processing Plants: Do It Well, Do It Safely!
- ❒ F2010 Close Encounters of the Bird Kind
- ❒ F2015 Controlling *Listeria*: A Team Approach
- ❒ F2111 Controlling *Salmonella*: Strategies that Work
- ❒ F2037 Cooking and Cooling of Meat and Poultry Products (2 Videos)
- ❒ F2030 "Egg Games" Foodservice Egg Handling and Safety
- ❒ F2020 Egg Handling & Safety
- ❒ F2036 Emerging Pathogens and Grinding and Cooking Comminuted Beef (2 Videos)
- ❒ F2035 Fabrication and Curing of Meat and Poultry Products (2 Videos) ***FastTrack Restaurant Video Kit***
- ❒ F2500 Tape 1–Food Safety Essentials
- ❒ F2501 Tape 2–Receiving and Storage
- ❒ F2502 Tape 3–Service
- ❒ F2503 Tape 4–Food Production
- ❒ F2504 Tape 5–Warewashing
- ❒ F2039 Food for Thought – The GMP Quiz Show
- ❒ F2040 Food Irradiation
- ❒ F2045 Food Microbiological Control (6 Videos)
- ❒ F2050 Food Safe – Food Smart – HACCP & Its Application to the Food Industry (Part 1&2)
- ❒ F2060 Food Safe – Series I (4 Videos)
- ❒ F2070 Food Safe – Series II (4 Videos)
- ❒ F2080 Food Safe – Series III (4 Videos)
- ❒ F2133 Food Safety First
- ❒ F2090 Food Safety: An Educational Video for Institutional Food-Service Workers
- ❒ F2100 Tape 1–Cross Contamination
- ❒ F2101 Tape 2– HACCP
- ❒ F2102 Tape 3–Personal Hygiene
- ❒ F2103 Tape 4–Time and Temperature Controls
- ❒ F2104 Tape 1–Basic Microbiology and Foodborne Illness
- ❒ F2105 Tape 2– Handling Knives, Cuts and Burns
- ❒ F2106 Tape 3–Working Safely to Prevent Injury
- ❒ F2107 Tape 4–Sanitation
- ❒ F2120 Food Safety: For Goodness Sake, Keep Food Safe
- ❒ F2110 Food Safety is No Mystery
- ❒ F2130 Food Safety: You Make the Difference
- ❒ F2125 Food Safety Zone: Basic Microbiology
- ❒ F2126 Food Safety Zone: Cross Contamination
- ❒ F2127 Food Safety Zone: Personal Hygiene
- ❒ F2128 Food Safety Zone: Sanitation
- ❒ F2135 Get with a Safe Food Attitude
- ❒ F2136 GLP Basics: Safety in the Food Micro Lab
- ❒ F2137 GMP Basics: Avoiding Microbial Cross-Contamination
- ❒ F2140 GMP Basics: Employee Hygiene Practices
- ❒ F2143 GMP Basics: Guidelines for Maintenance Personnel
- ❒ F2148 GMP – GSP Employee
- ❒ F2150 GMP: Personal Hygiene and Practices in Food Manufacturing
- ❒ F2147 GMP Basics: Process Control Practices
- ❒ F2160 GMP: Sources & Control of Contamination during Processing
- ❒ F2180 HACCP: Safe Food Handling Techniques
- ❒ F2169 HACCP:Training for Employees–USDA Awareness
- ❒ F2172 HACCP:Training for Managers
- ❒ F2170 The Heart of HACCP
- ❒ F2171 HACCP: The Way to Food Safety
- ❒ F2173 Inside HACCP: Principles, Practices & Results
- ❒ F2175 Inspecting for Food Safety – Kentucky's Food Code
- ❒ F2190 Is What You Order What You Get? Seafood Integrity
- ❒ F2210 Northern Delight – From Canada to the World
- ❒ F2240 On the Front Line
- ❒ F2250 On the Line
- ❒ F2270 Pest Control in Seafood Processing Plants
- ❒ F2271 Preventing Foodborne Illness
- ❒ F2280 Principles of Warehouse Sanitation
- ❒ F2290 Product Safety & Shelf Life
- ❒ F2220 Proper Handling of Peracidic Acid
- ❒ F2230 Purely Coincidental
- ❒ F2310 Safe Food: You Can Make a Difference
- ❒ F2320 Safe Handwashing
- ❒ F2325 Safe Practices for Sausage Production
- ❒ F2460 Safer Processing of Sprouts
- ❒ F2330 Sanitation for Seafood Processing Personnel
- ❒ F2340 Sanitizing for Safety
- ❒ F2341 Science and Our Food Supply
- ❒ F2350 SERVSAFE® Steps to Food Safety (6 Videos)
- ❒ F2430 Smart Sanitation: Principles & Practices for Effectively Cleaning Your Food Plant
- ❒ F2370 Supermarket Sanitation Program – "Cleaning & Sanitizing"
- ❒ F2380 Supermarket Sanitation Program – "Food Safety"
- ❒ F2390 Take Aim at Sanitation
- ❒ F2410 Wide World of Food-Service Brushes
- ❒ F2420 Your Health in Our Hands – Our Health in Yours

OTHER

- ❒ M4010 Diet, Nutrition & Cancer
- ❒ M4020 Eating Defensively: Food Safety Advice for Persons with AIDS
- ❒ M4030 Ice: The Forgotten Food
- ❒ M4050 Personal Hygiene & Sanitation for Food Processing Employees
- ❒ M4060 Psychiatric Aspects of Product Tampering
- ❒ M4070 Tampering: The Issue Examined

Visit our Web site at www.foodprotection.org for detailed tape descriptions

BOOKLET ORDER FORM

SHIP TO:

Member # _____

First Name _____ M.I. ____ Last Name _____

Company _____ Job Title _____

Mailing Address _____

Please specify: ☐ Home ☐ Work

City _____ State or Province _____

Postal Code/Zip + 4 _____ Country _____

Telephone # _____ Fax # _____

E-Mail _____

BOOKLETS:

QUANTITY	DESCRIPTION	MEMBER OR GOV'T PRICE	NON-MEMBER PRICE	TOTAL
	Procedures to Investigate Waterborne Illness—2nd Edition	$10.00	$20.00	
	Procedures to Investigate Foodborne Illness—5th Edition	10.00	20.00	

SHIPPING AND HANDLING – $3.00 (US) $5.00 (Outside US) Each additional booklet $1.50 Shipping/Handling

Multiple copies available at reduced prices.
Phone our office for pricing information on quantities of 25 or more. Booklets Total

OTHER PUBLICATIONS:

QUANTITY	DESCRIPTION	MEMBER OR GOV'T PRICE	NON-MEMBER PRICE	TOTAL
	*International Food Safety Icons CD	$ 25.00	$25.00	
	Pocket Guide to Dairy Sanitation (minimum order of 10)	$ .60	$1.20	
	Before Disaster Strikes…A Guide to Food Safety in the Home (minimum order of 10)	.60	1.20	
	Food Safety at Temporary Events (minimum order of 10)	.60	1.20	
	*Developing HACCP Plans–A Five-Part Series (as published in *DFES*)	15.00	15.00	
	*Surveillance of Foodborne Disease – A Four-Part Series (as published in *JFP*)	18.75	18.75	
	*Annual Meeting Abstract Book Supplement (year requested _____)	25.00	25.00	
	*IAFP History 1911-2000	25.00	25.00	

SHIPPING AND HANDLING – per 10 – $2.50 (US) $3.50 (Outside US) Shipping/Handling

*Includes shipping and handling Other Publications Total

TOTAL ORDER AMOUNT

Prices effective through August 31, 2003

PAYMENT:

Payment must be enclosed for order to be processed • US FUNDS on US BANK

☐ **Check or Money Order Enclosed** ☐ VISA ☐ MasterCard ☐ Discover

CREDIT CARD # _____

EXP. DATE _____

SIGNATURE _____

International Association for Food Protection®

4 EASY WAYS TO ORDER

PHONE	FAX	MAIL	WEB SITE
800.369.6337; 515.276.3344	515.276.8655	6200 Aurora Ave., Suite 200W Des Moines, IA 50322-2864, USA	www.foodprotection.org

MEMBERSHIP APPLICATION

MEMBERSHIP DATA:

Prefix (❑ Prof. ❑ Dr. ❑ Mr. ❑ Ms.)

First Name _____ M.I. ____ Last Name _____

Company _____ Job Title _____

Mailing Address _____

Please specify: ❑ Home ❑ Work

City _____ State or Province _____

Postal Code/Zip + 4 _____ Country _____

Telephone # _____ Fax # _____

E-Mail _____

❑ IAFP occasionally provides Members' addresses (excluding phone and E-mail) to vendors supplying products and services for the food safety industry. If you prefer NOT to be included in these lists, please check the box.

MEMBERSHIP CATEGORIES:

MEMBERSHIPS	US	Canada/Mexico	International
❑ **Membership with *JFP* & *FPT* – *BEST VALUE!***	$165.00	$190.00	$235.00
12 issues of the *Journal of Food Protection* and *Food Protection Trends* (formerly *DFES*)			
❑ add *JFP* Online	$36.00	$36.00	$36.00
❑ **Membership with *FPT***	$95.00	$105.00	$120.00
12 issues of *Food Protection Trends*			
❑ add *JFP* Online	$36.00	$36.00	$36.00
❑ ***Student Membership with *JFP* & *FPT***	$82.50	$107.50	$152.50
❑ ***Student Membership with *JFP***	$47.50	$62.50	$92.50
❑ ***Student Membership with *FPT***	$47.50	$57.50	$72.50
❑ add *JFP* Online	$36.00	$36.00	$36.00

*Student verification must accompany this form.

SUSTAINING MEMBERSHIPS

Recognition for your organization and many other benefits. *JFP* Online included.

❑ **GOLD**	$5,000.00
❑ **SILVER**	$2,500.00
❑ **SUSTAINING**	$750.00

PAYMENT:

Payment must be enclosed for order to be processed • US FUNDS on US BANK

❑ **Check Enclosed** ❑ VISA ❑ MasterCard ❑ Discover

TOTAL MEMBERSHIP PAYMENT $ _____

All prices include shipping and handling
Prices effective through August 31, 2003

CREDIT CARD # _____

EXP. DATE _____

SIGNATURE _____

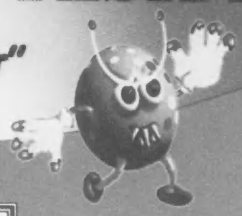
International Association for Food Protection®

4 EASY WAYS TO JOIN

PHONE	FAX	MAIL	WEB SITE
800.369.6337; 515.276.3344	515.276.8655	6200 Aurora Ave., Suite 200W Des Moines, IA 50322-2864, USA	www.foodprotection.org

MAXIMIZE RISK MANAGEMENT"

--Says Germ "Buster"



Tough to get a kid
to clean up his mess...
What makes you think
he's got clean hands while
working in your kitchen?

"Reprinted with permission of King Features"

Do Germs Need
To Be This Big
To Be Seen?

FOOD SAFETY FIRST!

First In Food Safety!

Implement
Your Custom
Food Safety
Training Program

P. O. Box 189
Moab, UT 84532
1-800-842-6622

www.glogerm.com

Reader Service No. 123