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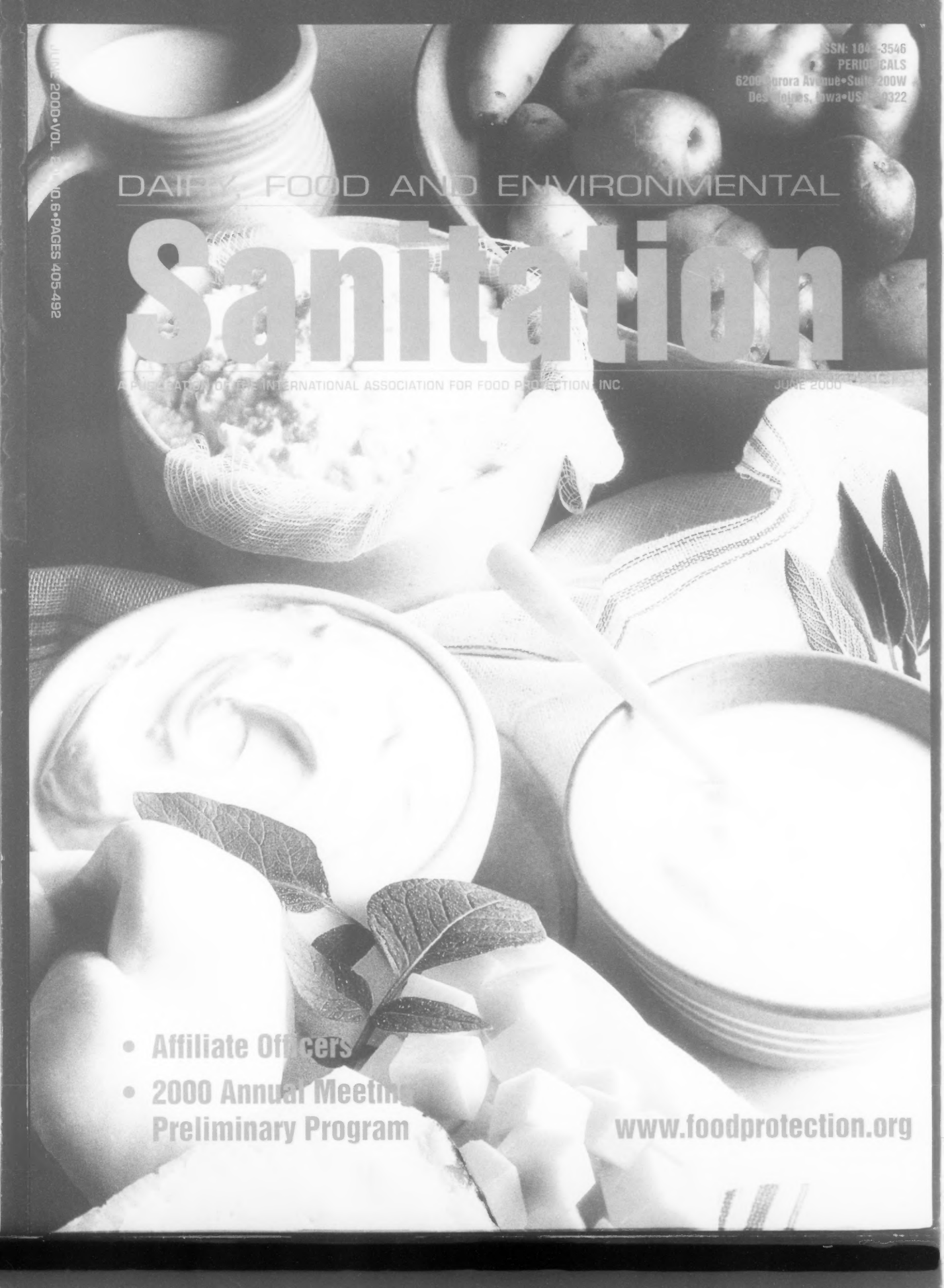
DAIRY, FOOD AND ENVIRONMENTAL

Sanitation

A PUBLICATION OF THE INTERNATIONAL ASSOCIATION FOR FOOD PROTECTION, INC.

JUNE 2000



- Affiliate Officers
- 2000 Annual Meeting Preliminary Program

www.foodprotection.org

ADVANCE NOTICE OF AVAILABILITY OF RESEARCH FUNDS

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Food and Drug Administration

Research Studies on Produce Safety, Development of Viral Extraction Methods from Foods, and Food Service, Transportation, and Consumer Practices; Availability of Cooperative Agreements; Advance Notice of Request for Applications

AGENCY: **Food and Drug Administration, HHS.**

ACTION: **Advance Notice.**

SUMMARY: The Food and Drug Administration (FDA), Center for Food Safety and Applied Nutrition (CFSAN) is planning to publish a request for applications (RFA) in the Federal Register announcing the availability of research funds for fiscal year (FY) 2000. These funds will support cooperative agreements to study efficacy of antimicrobials using standard inoculation techniques and surrogates, development of extraction methods for viruses from foods, and cooking and food storage practices from processing to consumption. Approximately $600,000 will be available in FY 2000. FDA anticipates making three to six Cooperative Agreement awards at $100,000 to $200,000 per award per year (direct and indirect costs). Support for these agreements may be for up to three years. The number of agreements funded will depend on the quality of the applications received and the availability of Federal funds to support the projects.

DATES: We anticipate that the RFA will publish in the Federal Register in June 2000. FDA will not accept any materials prior to the actual published due date for submission. This is only an advance notice and no activity should be taken by any organization prior to the submission and award of an application.

FOR FURTHER INFORMATION CONTACT:

Marianne Miliotis, Ph.D., Office of Plant, Dairy Food, and Beverages, Center for Food Safety and Applied Nutrition (HFS-327), Food and Drug Administration, 200 C Street, SW, Washington, DC 20204 Tel. (202) 205-4824, FAX (202) 205-4939.

If you wish to receive a copy of the RFA after publication in the Federal Register please contact: Maura Stephanos, Grants Management Specialist, Grants Management Office (HFA-520), Division of Contracts and Procurement Management, Office of the Director, Food and Drug Administration, 5600 Fishers Lane, rm. *2129,* Rockville, MD 20857, Tel. (301) 827-7183.

ABOUT THE COVER...

Photo courtesy of the California Milk Advisory Board.

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DAIRY, FOOD AND ENVIRONMENTAL

Sanitation

International Association for Food Protection

Articles

Association News

Departments

Extras

THE BLACK PEARL AWARD

RECOGNITION FOR CORPORATE EXCELLENCE IN FOOD SAFETY AND QUALITY

Black Pearl Recipients

2000 Zep Manufacturing Company
Atlanta, Georgia

1999 Caravelle Foods
Brampton, Ontario, Canada

1998 Kraft Foods, Inc.
Northfield, Illinois

1997 Papetti's of Iowa Food Products, Inc.
Lenox, Iowa

1996 Silliker Laboratories Group, Inc.
Homewood, Illinois

1995 Albertson's, Inc.
Boise, Idaho

1994 HEB Company
San Antonio, Texas

The Black Pearl Award is given annually to a company for its efforts in advancing food safety and quality through consumer programs, employee relations, educational activities, adherence to standards and support of the goals and objectives of the International Association for Food Protection. We invite you to nominate your company for this prestigious recognition. Contact the Association office for nomination information.

Presented by
The International Association for Food Protection

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International Association for Food Protection
6200 Aurora Avenue, Suite 200W
Des Moines, IA 50322-2863, USA
Phone: 800.369.6337 • 515.276.3344
Fax: 515.276.8655
E-mail: info@foodprotection.org
Web site: www.foodprotection.org

DAIRY, FOOD AND ENVIRONMENTAL

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A PUBLICATION OF THE INTERNATIONAL ASSOCIATION FOR FOOD PROTECTION

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LOOK

The Membership Directory is available at

www.foodprotection.org

Members Only!!!

To access the Membership Directory, click on the "Member Directory" button on the IAFP home page and input your Member ID and password (your last name). The Directory is searchable by first or last name, company, city, state/province or country and any combination of the above categories. To send a colleague a message, just click on their E-mail address.

Go explore this new Member benefit!

Future Annual Meetings

2000

August 6-9

Hilton Atlanta
Atlanta, Georgia

2001

August 5-8

Hilton Minneapolis
Minneapolis, Minnesota

2002

June 30-July 3

Hyatt Regency
San Diego
San Diego, California

DAIRY, FOOD AND ENVIRONMENTAL
Sanitation

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

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QUOTATIONS

FROM JACK

By JACK GUZEWICH
President

"If you are not involved in your local affiliate, I encourage you to take an active role"

As President of IAFP I had the opportunity to visit the Korea, Carolinas and British Columbia affiliates over the past few months. All three have great promise of growing and increasing the value of their organizations for their members.

In Korea I participated in an all-day symposium discussing their food safety system. This system is undergoing many changes as their economy grows and food export and import becomes more important. The changes they are experiencing are not unlike those in the United States. In simple terms, the old way of doing things needs to change with new demands. Government, industry and academia need to find new ways to work together to achieve common food safety goals. The Korean affiliate provides a valuable forum for its members to meet and share information that will help them reach those goals. My thanks to the affiliate, especially Dr. Deog-Hwan Oh, Dr. Jong-Hyun Park and Dr. Kook Hee Kang for their hospitality and introduction to Korean culture and cuisine.

The Carolinas meeting addressed HACCP and its application in various segments of the food system. Speakers covered retail, food processing and dairy applications of HACCP. It was particularly interesting to me to see the differences in HACCP between the retail and dairy segments. In retail there are complexities of many menu items being prepared everyday resulting in no one system fitting best. In dairy we have an industry that has operated under strict command and control regulations for decades trying to cope with the less prescriptive concepts of HACCP (e.g., how do you design a HACCP system where extensive regulations cover the details already?). My thanks to Program Chairperson, Beth Johnson and CAMFES President Susan Grayson for their invitation and hospitality.

The British Columbia affiliate held their first annual speakers evening. Mrs. Anne Nickerson described her young daughter's infection with *E. coli* O157:H7, which included full-blown HUS. Mrs. Nickerson believes her daughter got the infection from eating a meat product. She made a powerful argument for all of us to work together to prevent such devastating infections from occurring. I spoke on what we are learning about foodborne illness and the new and emerging pathogens and vehicles. A lively question and answer period followed. Thanks to Clive Kingsbury, President, and the British Columbia affiliate for their invitation and the opportunity to see beautiful Vancouver.

To conclude I would like to congratulate these affiliates on conducting excellent meetings! I was honored to be a part of them. If you are not involved in your local affiliate, I encourage you to take an active role. The affiliate meetings cover some of the same topics that are covered at the IAFP Annual Meeting. Therefore, if you are not able to take advantage of going to the Annual Meeting, your local affiliate meeting is a great opportunity to keep up-to-date on current food safety issues. To find out more about an affiliate in your area, contact an affiliate officer listed on page 440.

2000 IAFP Awards

Presented at the International Association for Food Protection 87th Annual Meeting

Black Pearl

Zep Manufacturing Company

Honorary Life Membership

William Arledge
Robert L. Sanders

Fellows

John C. Bruhn, Cameron R. Hackney, Bruce E. Langlois, and Lloyd O. Luedeeke

Harry Haverland Citation

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Educator

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Harold Barnum Industry

Kenneth Anderson

NFPA Food Safety

Elmer H. Marth

2000 Affiliate Awards

C.B. Shogren Memorial

Michigan Environmental Health Association

Best Affiliate Communication Materials

New York State Association of Milk and Food Sanitarians

Best Affiliate Annual Meeting

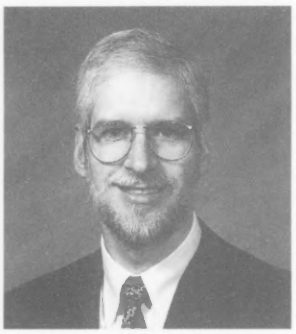
Florida Association of Milk, Food and Environmental Sanitarians, Inc.

Best Affiliate Educational Conference

Associated Illinois Milk, Food and Environmental Sanitarians

COMMENTARY

FROM THE EXECUTIVE DIRECTOR



By DAVID W. THARP, CAE
Executive Director

"There is no limit to what can be accomplished when it does not matter who gets the credit"

Not too long ago, I attended the Missouri Milk, Food and Environmental Health Association's meeting in Columbia, MO. This was an extensive two and a half-day meeting and was the second consecutive year I attended. It was nice to see many familiar faces and a good number of International Association for Food Protection Members, too! The presentations were excellent, timely and certainly pertinent to food safety professionals. The program carried individual sessions on institutional, environmental, milk and food topics.

One of the presentations, "Microbial Challenges of the New Millennium" was given by Harold Bengsch, Director for the Springfield/Green County Health Department in Missouri. Harold is a Past President of the International Association for Food Protection and of the Missouri Association. As Harold presented his information and challenges to the audience, I thought about what an excellent role model he is for health professionals in this country and worldwide. Now, with over 40 years of public health experience, his resume of experience and accomplishments would surely fill this journal. He has given willingly of his time to serve on many national task forces, working groups, state boards, association committees, and association boards of directors. All of this "volunteer" work is in addition to his daily responsibilities of providing the public with educational information and administering the Health Department.

Upon conclusion of Harold's presentation, he left the audience with an anonymous quote. It reads, "There is no limit to what can be accomplished when it does not matter who gets the credit." What a concept! You can tell by watching and talking with Harold that he truly lives his professional life with this quote as a guiding force. He is a true leader in the public health profession.

Have you thought about how you operate in a leadership role? Do you push a project through to its conclusion with help from your team, then boast with pleasure to everyone about the results that "YOU" achieved? Certainly, we all need to be proud of our accomplishments and do what is best for our own well being, but I encourage you to experiment with the power of using "WE" when speaking on behalf of a group. You will be amazed at how good it makes you feel when you share the credit with the whole team! Of course, the team will feel much more a part of the results, too.

Think about the anonymous quote and how you may use it to improve your own life along with the lives of your colleagues. Over the three years I have had the pleasure of serving as Executive Director, I learned the power of "we." Working closely with our Executive Board and staff, it is imperative to share credit with the team as accomplishments are achieved. Our staff is small, only 12 in total, but what we achieve is huge!

On that note, I want to make you aware of our special team of

individuals who work together each day to operate your Association. Our staff is multi-talented and produces great volumes of work daily to benefit you in your positions of responsibility. Donna Bahun, Julie Cattanach, Lucia Collison, Bev Corron, Lisa Hovey, Karla Jordan, Didi Loynachan, Beth Miller, Pam Wanninger, Tanya Wheeler, and Frank Zuehlke all are dedicated employees of the Association. Staff titles are shown on page 408.

The major functions for our staff include planning and operating the Annual Meeting for more than 1,100 attendees, managing and producing the *Journal of Food Protection* and *Dairy, Food and Environmental Sanitation* on a monthly basis and facilitating off-site educational workshops. Each staff member wears multiple hats in order to achieve goals for our individual project timelines. We are proud of the work we do and everyone shares a sense of pride in carrying out our responsibilities professionally. We hear many encouraging remarks from Members and Annual Meeting attendees that really help us to know our work is appreciated!

Everyone on our staff posesses traits that make them admirable. Look around at your co-workers. Do you see colleagues you want to learn from?

As this column comes to a close for this month, I encourage you to do one of two things: (1) find a role model who you can watch and emulate, or (2) become a role model for other colleagues. Then, as you assume leadership roles, remember "There is no limit to what can be accomplished when it does not matter who gets the credit!"

Dairy, Food and Environmental Sanitation, Vol. 20, No. 6, Pages 418-425

(This is the last of a two-part series. Part I ran in the May 2000 issue of *DFES.*)

Reducing Transmission of Infectious Agents in the Home

Part II: Control Points

Michael P. Doyle,[1] Kathryn L. Ruoff,[2] Merle Pierson,[3] Winkler Weinberg,[4] Barbara Soule,[5] and Barry S. Michaels[6]

SUMMARY

Americans spend an estimated 90% of their lives indoors, and during this time they are continually exposed to a variety of substances, ranging from viruses to chemical byproducts, that can cause illness. According to the Centers for Disease Control and Prevention (CDC), at least 250 disease-causing organisms can be transmitted by food or drink, and several hundred more are transmitted via the respiratory tract through sneezes, coughs, etc.

The actual likelihood of illness after exposure to household pathogens varies considerably. Exposure to even a small dose of some disease-causing organisms can initiate serious infection, whereas massive exposure to others is required to overcome the body's natural defenses. In some individuals, however, even comparatively benign organisms can lead to serious illness. These vulnerable, high-risk groups are believed to comprise approximately 25% of the population in the United States, and their numbers will increase in the coming years.

The prevalence of potential disease-causing microorganisms in the home environment, coupled with the rapid rise of antibiotic-resistant microbes and the growing numbers of at-risk individuals, make effective household hygiene critical to the maintenance of a healthy family.

CONTROL POINTS IN THE HOME

In any given household, certain areas are more likely than others to harbor disease-causing microorganisms. Implementing effective strategies to control pathogens in these areas provides the best opportunity for protecting household members from illness.

Many pathogens can survive for extended periods of time on fabrics and household surfaces, increasing the risk of pathogen transmission. For example:

- *Staphylococcus* spp. can survive on clothing and handkerchiefs for up to a month *(66).*
- Influenza A and B viruses can remain viable for about eight hours on cloth, and at low relative humidity can survive for days *(7, 59).*
- Adenovirus can survive at least eight weeks on common environmental surfaces *(62).*

Some household features are particularly conducive to bacterial survival and transmission, regardless of where in the home they are located.

- Research on dispersal of microbial contaminants within households revealed that 24% of door handles were contaminated with *E. coli* after meals were prepared *(27)*.
- Dust can harbor infectious particles and allergenic material, potentially contributing to cross-contamination *(6)*.
- Air can contain a variety of respiratory irritants and pathogens, including bacteria, molds, lead dust, and pollens *(60, 79)*. Improved insulation and increased use of air conditioning, with a resulting decline in air exchange in many homes, have increased the level of airborne pollutants in the home environment *(75)*.
- Carpets and dust can harbor large numbers of microorganisms, compared with hard-surface flooring *(73)*; even hard flooring, however, can become a reservoir for infectious material if not cleaned thoroughly following family illness *(4, 74)*.

THE KITCHEN

As a center of household activity, the kitchen is arguably one of the most important areas for hazard control in the home. As the site of food preparation and storage, it is an ideal area for microbial pathogen transmission. Inadequate hygiene or improper food handling procedures by the primary food preparer can lead to widespread illness among household members. The food handler is considered the main cause of cross-contamination of surfaces, equipment, and utensils in kitchens *(78, 82, 87)*.

Contaminants in the kitchen environment can be remarkably resilient. In one study, investigators using *Salmonella*-contaminated eggs found that everything contacting these eggs could easily become contaminated. When spread onto a Formica work surface, the *Salmonella*-laden eggs dried quickly into a thin, invisible film, with the bacteria surviving on the surface for at least 24 hours. Utensils used to mix these eggs were contaminated even after washing *(44)*.

Sponges, dishcloths, and dish towels

Kitchen sponges and dishcloths are ideal environments for bacterial survival and growth, because these objects are continually moist and supplied with nutrients in the form of food drippings and scraps *(27, 64)*. In one study, 28 different types of bacteria, *Enterobacteriaceae*, *Pseudomonas* spp., and *Burkholderia* spp., were isolated from cellulose sponges and dishcloths. *Salmonella* spp. were detected in 14% to 15% of sponges and dishcloths, and *Staphylococcus aureus* was present in about 20% *(80)*. More recently, a two-year study of "normal" US kitchens revealed that 67% of tested sponges were contaminated with fecal coliforms *(46)*. Hand contact with such contaminated sponges or dishcloths can easily lead to cross-contamination, as liquid wrung from sponges and dishcloths sometimes has extremely high microbial counts *(27, 30, 80)*.

The use of contaminated dish towels to dry recently washed dishes can lead to significant re-contamination of previously clean dishes. Studies have revealed increased bacterial levels on dishes wiped with contaminated dish towels *(10, 25)*.

The sink

The kitchen sink, much like the cloths and sponges used in it, can be an important reservoir of microbial contamination. Bacteria isolated from kitchen sinks include *E. coli*, *Klebsiella pneumoniae*, *Salmonella* spp., *Enterobacter cloacae*, and *Citrobacter freundii (46, 84)*. The use of dishcloths to wipe sink surfaces can lead to the spread of microorganisms to other kitchen surfaces, when contaminated rags are used to wipe counters, stoves, and other surfaces *(30, 80, 97)*.

The area in and around the sink is easily contaminated during food preparation and is often recontaminated during attempts at cleaning. Bacterial contamination is particularly common – and preventable – in the following areas:

- An estimated 82% of sink faucet handles are contaminated during food preparation *(27)*.
- Epidemiologic investigations revealed that drain boards and sink drain areas are frequently contaminated with *E. coli* and other coliforms and can pose a health hazard to consumers *(12, 65, 84)*.

The refrigerator

Perhaps nowhere in the home is there a greater challenge to cleaning than in the refrigerator. The average household refrigerator is the perfect environment for the formation of biofilms, which are invisible protective layers (composed of bacteria and their byproducts) that can shield bacterial cells from the destructive effects of physical or chemical agents *(109)*. For example, microorganisms in biofilms have been found to be 150 to 3,000 times more resistant to free chlorine than are unprotected cells *(54)*.

The pantry

A 1991 study of 30 pantries in the northeastern United States revealed that many foods were stored beyond the recommended "best use by" date. Many insects, including cockroaches, were found, product rotation was poor, cleaning was irregular, and many purchases were not dated *(22)*.

Canned foods generally remain safe because they are sealed and are almost totally free of bacteria, with pathogens having been killed by the canning process *(31)*. Only a few thermophilic and thermoduric sporeformers may remain *(77)*. If

these few survivors are anaerobic, however, the spores can grow when temperatures are sufficiently warm, causing spoilage within the can *(77)*. Improper storage (>40°F) or too-long storage can lead to this form of spoilage. In the United States, approximately two dozen cases of foodborne botulism, usually due to contaminated home-canned foods that were improperly processed, are reported to the CDC each year *(88)*.

Cutting boards

Cutting boards are a significant source of cross-contamination in the home, partly because of practices such as cutting salad ingredients on a board previously used to cut raw meat *(52, 108)*. Several surveys have revealed that a high percentage of consumers are unaware of the basics of cutting-board safety *(106, 107)*, as seen from the following survey results as examples:

- Up to 60% of people do not wash the cutting board after cutting raw meat or poultry and before cutting fresh vegetables for a salad.
- 37% rinse, but do not wash, the cutting board after cutting raw meat or poultry and before cutting fresh vegetables for a salad.
- 9% do not wash the work surface at all after cutting raw chicken and removing meat from bones.

Hazard reduction methods

The kitchen is one of the most significant hazard zones in the home for the growth and transmission of a variety of microbial pathogens. Fortunately, the likelihood of contamination can be substantially reduced with proper handwashing techniques and other appropriate hygiene procedures.

When working with food in the kitchen, all surfaces and utensils should be cleaned frequently with hot, soapy water to prevent cross-contamination. Contamination of cutting boards can be prevented by cutting animal products on disposable waxed paper or parchment paper, or by using separate cutting boards for meat and produce (boards can be labeled or color-coded to avoid mix-ups). To ensure removal of disease-causing microorganisms, cutting boards should be cleaned regularly with hot water and detergent *(88)*. Plastic cutting boards may be washed in the dishwasher.

Because dishcloths and cloth towels provide a highly favorable environment for survival and growth of disease-causing microbes, many experts recommend the use of paper towels along with disinfectant chemicals to effectively reduce microbial counts on kitchen surfaces *(45, 57, 85, 87)*. Indeed, the simple act of drying a wet surface can help reduce hazards, as microorganisms thrive on wet surfaces such as countertops, sponges, and towels. Wiping surfaces to dryness reduces microorganisms on laminate surfaces and minimizes the likelihood of microbial growth *(32, 86)*. This is due in part to physical removal of microorganisms, as well as the elimination of moisture that would otherwise enhance the growth of bacteria *(18)*. If cloth towels must be used, they should be washed frequently. Sponges should not be used in the kitchen.

To prevent microbial growth, all surfaces in the refrigerator should be thoroughly cleaned on a regular basis. Results of recent studies indicate that efficient cleaning, sanitizing, and dry-wiping is an effective combination for removing microbial contaminants from biofilms *(32)*.

Regarding the pantry, consumers should never taste food from cans in which the contents appear questionable. Leaky, corroded, rusty, bulging, or spurting cans are signs of problems. If the contents of a can appear bubbly, slimy, moldy, putrid, sulfurous, or decomposed, the entire can with contents should be discarded *(9, 99)*.

THE LAUNDRY ROOM

Many studies have revealed the long-term persistence of various bacteria and viruses on certain textile materials *(26, 61, 89, 90, 92, 104, 105)*. For example, staphylococci can survive on clothing and handkerchiefs for at least one month *(66)*, and laboratory studies have revealed that *Salmonella* Typhimurium can persist for up to 24 weeks on wool and cotton sheeting, even at low humidity *(28, 105)*.

Dissemination of bacteria and other microorganisms from cloth surfaces can occur without great difficulty *(61, 63, 66)*, and damp cloth surfaces can support the growth of microorganisms *(86, 105)*. The persistence of microorganisms on damp cloth surfaces increases the potential for cross-contamination when laundry is handled *(55, 63, 91)*.

Workers handling laundry without the advantage of protective barriers have become infected after incidental exposure to infectious materials present in laundry *(63, 71, 94, 96, 98)*. Exacerbating this problem is the fact that microorganisms can survive on inner surfaces of washing machines and are capable of being transferred into later loads *(3, 16, 100)*.

Hazard reduction methods

Hot water (165°F) greatly reduces the microbial load of laundered fabric, particularly when combined with the use of 1% bleach *(3, 93)*. Drying in an automatic dryer also greatly reduces the number of viable microorganisms in laundry, as does ironing *(3, 93, 103, 104)*. Finally, the laundry of sick family members always should be done separately, at the highest possible water temperature and the longest, most vigorous wash cycle, preferably with bleach.

THE DINING ROOM

In homes in the United States, dining room tables, eating utensils, and dishes are potential areas that can become contaminated, particularly by sick family members or those who are asymptomatic carriers of infection *(12, 58)*. Cloth napkins, still featured in many homes, are sometimes subject to repeated uses prior to laundering *(1, 40)*. Although cloth napkins traditionally are considered more formal than single-use paper napkins, they can

serve as a reservoir for many potentially pathogenic organisms *(74)*. In the European Community, napkins are seen as such a formidable source of potential infection that even disposable paper mealtime napkins and paper handkerchiefs are considered "non-recyclable biowaste" *(34, 83)*.

Even laundered napkins may be of doubtful sanitary state. The laundering process frequently is inadequate at removing microbial contaminants from napkins, particularly when napkins are used to wipe infective material from the area of the mouth and nose. In both a recent study *(70)* and an earlier study *(69)*, it was shown that laundering did not significantly reduce bacterial counts in colored fabric napkins. In the earlier study, the average bacterial count of 10 laundered fabric napkins was 600,000 bacterial colony-forming units per square inch *(69)*.

Hazard reduction methods

To prevent the spread of infectious material in the dining room, sharing of utensils and improper food handling should be avoided as much as possible. When using cloth napkins, limit use to a single meal, and wash napkins in hot water (165°F) with bleach following each use. The use of paper napkins at the dinner table is one of the most effective ways to interrupt the transmission of the potential pathogens that can occur with the reuse of cloth napkins.

THE BATHROOM

It is natural to assume that the bathroom would be one of the more high-risk zones in the home. Yet the well-recognized risks of fecal-oral contamination have sensitized most adults to the importance of at least some attempt at proper hygiene, making the bathroom a relatively sanitary region – possibly even more sanitary than the kitchen, in some cases. However, many objects and surfaces in the bathroom can serve as reservoirs for disease-causing microorganisms. For example, the bacterial content of bar soaps increases dramatically after use, and remains high as long as the soaps are wet *(15, 47)*.

The toilet

Proper use of toilet paper is the first barrier against contamination of the hands and bathroom surfaces. Yet as a public-health advance, toilet paper has long been underestimated. In several studies of diarrheal disease, improved toilet hygiene reduced morbidity by 33% *(21, 49)*. Indeed, there have been reported instances in which outbreaks of diseases such as hepatitis A have been associated with the lack of toilet paper *(76)*.

Despite the barrier protection afforded by toilet paper, the toilet and its immediate environs are usually contaminated. Aerosols laden with microorganisms have been shown to emanate from toilets after normal flushing *(13, 24, 35, 68)*, and bacteria, viruses, and protozoa capable of causing disease have been found in these aerosols. While flushing seems to reduce by a thousandfold the bacteria remaining in a toilet, the fresh aerosol remains in the air for up to 12 minutes if the toilet is flushed with the lid open *(35)*.

Hepatitis, rotavirus, *E. coli*, and *Salmonella* may be transmitted via the airborne route *(23, 48)*, and the flushing of an open household toilet could cause infectious particles from feces to be deposited in the nose, mouth, or eyes, or on bathroom surfaces *(11)*. If hands touch these surfaces, self-inoculation can occur by touching the eyes, nose, mouth, or other areas of the body that are susceptible to infectious agents *(43)*. Aerosols settle close to the toilet bowl, on the bathroom floor and on nearby objects, with objects at toilet height being the most prone to contamination. Children are most at risk of picking up infectious material because of their close proximity to contaminated sites and because of their lack of understanding of and training in hygiene practices. Frequent cleaning of the toilet area with disinfectant and paper towels will reduce potential exposure to fecal contaminants. Cleaning the toilet bowl regularly is also important *(11)*.

Toilet tanks are frequently contaminated with coliforms, which could become a problem for the immunocompromised *(11, 36, 84)*. The flushing of the toilet reduces the microbial load substantially (3 logs) every time it is flushed *(35)*; however, residual bacteria are usually present. In addition, if the tank remains contaminated, every flush fills the bowl and air with contaminated material. In communities with chlorinated water, the residual chlorine level of 0.1 to 0.5 ppm will kill bacteria in the water, given time.

Towels

Communal cloth hand towels have been identified as sources of infective pathogens in restaurants *(26, 41)*, hospitals *(26, 41, 50)*, general medical practices *(37)*, dental laboratories *(67)*, day-care centers *(18)*, schools *(20)*, laundry facilities *(71)*, and family households *(38)*. To reduce the risk of cross-contamination, communal towels have been replaced by disposable paper towels or sterile cloths in some hospitals *(39)*.

Bathroom towels can be a significant source of microbial pathogens, due to the presence of body secretions that are inevitably present on communal towels *(26, 38, 42)*. *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *P. maltophilia*, *P. coppice*, *P. putrifaciens*, *P. putida*, *P. fluorescens*, alpha- and beta-hemolytic *Streptococcus*, *Corynebacterium* spp., and *Acinetobacter lwoffi*, as well as *E. coli*, *Salmonella* spp., *Enterobacter agglomerans*, and various other *Enterobacteriaceae* have been isolated from bathroom towels *(33, 51, 81, 95, 103)*. While many of these bacteria do not cause disease in healthy people, the presence of these organisms is an indication of skin, nasopharyngeal, or fecal contamination. Thus, bathroom towels may play a role in the dissemination of microorganisms and the spread of infection in the home *(11)*.

Hazard reduction methods

It is advisable to flush toilets with the seat down, to prevent the spread of potentially infective microorganisms. In addition, periodic cleaning of the bowl and outside of the tank, as well as the use of toilet tank cleaners, can reduce bacterial contaminants and help prevent droplet contamination *(11)*.

All exposed surfaces in the bathroom should be cleaned regularly with a disinfectant, with particular care taken when a member of the household is ill. The toilet flush handle carries risk of fecal contamination; hence it should be cleaned frequently to prevent cross-contamination *(11, 65, 84)*.

Paper towels can be substituted for communal hand towels in the bathroom to reduce the risk of pathogen transmission. While this is always a good practice for everyday use, it can be especially effective when someone in the household is ill.

THE BEDROOM

The bedroom is the primary retreat of ill family members and as such represents a significant hazard zone during times of illness. Soiled bedding can be a source of pathogenic organisms. Although only a few instances of cross-contamination associated with soiled linen have been reported, the hazard clearly exists *(102)*. Bed stripping has been reported to increase microbial release into the immediate environment of the bedroom *(19, 56)*. Even individuals with no outward signs of illness may be asymptomatic excretors of pathogens such as *Salmonella (29, 56)*.

Hazard reduction methods

When handling bedclothes or bedding of sick family members, it is advisable to sort laundry and wash the infected person's linens separately, to prevent the spread of disease *(102)*. Sheets should not be shaken, as this can further disperse infectious particles into the air. Hands should be washed after handling potentially contaminated bedding or bedclothes.

THE NURSERY

The average preschool child often has six to eight colds and other infections annually, each of which can spread to other members of the household *(101)*. Attendance at day-care facilities can increase this illness rate substantially *(2, 5, 101)*. Conscientious toy cleaning and general environmental sanitation in the preschool setting, however, can reduce the rate of respiratory illness, physician visits, and missed school days by nearly 50% *(53)*.

Contamination of baby lotions can occur if microorganisms are introduced into the lotion bottle, and several illness outbreaks have been associated with contaminated lotion *(8, 72)*. Use of small bottles can help reduce the risk of contamination, as well as use of bottles with pump-top closures *(14)*.

Hazard reduction methods

To prevent transmission of pathogens among children, the CDC recommends that infants and toddlers not be encouraged to share toys, and that their toys be washable *(17)*. Weekly dishwasher cleaning or disinfectant treatment with bleach solution is advised for hard plastic toys, and stuffed toys should be washed in the washing machine weekly (or at more frequent intervals if heavily soiled) *(17)*. It is recommended that even toys used by older children be washed on a weekly basis.

Because changing tables are easily contaminated by infant fecal matter, changing areas should be as far as possible from the kitchen and food-preparation areas. Changing tables should be covered with a waterproof, disposable barrier cloth or should be disinfected after every use. Alcohol gel products are ideal for this purpose because of the rapid microorganism kill rate (15-30 seconds). In addition, wiping with a paper towel can help remove heavy soil, as well as removing excess alcohol gel, to prevent inhalation of alcohol fumes by the infant.

CONCLUSIONS

Not even the most scrupulous hygiene will completely eliminate infectious disease hazards from the home or guarantee the health of all family members. But the use of basic prevention techniques in areas known to contain the most infective hazards – such as the kitchen, bathroom and bedroom/sickroom – can do much to prevent infection and limit the spread of illness in the home.

Handwashing and the other hazard-reduction techniques discussed in this report are especially important when one or more members of the household are ill or are in a high-risk group. Whenever an ill person is in the home, it is advisable to consider not only his or her body but also the entire surrounding environment as contaminated – including clothing, bedclothes, furniture, and common surfaces such as doorknobs. Fabrics that come in contact with ill family members should always be washed separately, preferably in hot water with bleach, and all surfaces should be regularly cleaned with disinfectant and single-use paper towels, to prevent cross-contamination.

Household sanitation involves every aspect of family life and every room and every member of the household. Use of effective measures can, in many instances, prevent disease transmission among family members. Thus, through preventive sanitation and other good hygiene practices, chains of contagion can be broken.

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Proposed Changes to Heat Exchanger Cooling System Operating Requirements

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SUMMARY

In December 1998, pasteurized fluid milk was epidemiologically linked to an outbreak of foodborne illness caused by *Yersinia pseudotuberculosis* in British Columbia. During the subsequent in-depth investigation of the implicated dairy plant, it was observed that under current design and operating standards for heat exchanger cooling systems, including HTST pasteurizers, chilled water medium could leak into the pasteurized product section under certain conditions. Chilled water medium can be a potential reservoir for psychrotrophic environmental pathogens such as *Listeria monocytogenes, Yersinia enterocolitica,* and *Yersinia pseudotuberculosis.* To protect pasteurized dairy products from a potential source of contamination, this paper recommends modifying the requirements for both HTST pasteurizers and non-HTST pasteurized product heat exchanger cooling systems, to ensure that chilled water medium cannot, under any condition, leak into the pasteurized product section.

INTRODUCTION

In December 1998, pasteurized fluid milk was epidemiologically linked to an outbreak of foodborne illness caused by *Yersinia pseudotuberculosis* in British Columbia. The outbreak began in October 1998 and continued into November 1998. The subsequent in-depth investigation of the implicated dairy plant revealed no evidence linking the dairy plant to the outbreak. However, during the course of the investigation, a number of questions were raised regarding the current design and operating standards for heat exchanger cooling systems, including HTST pasteurizers. The purpose of this paper is to present these questions and to propose recommendations regarding the current design and operating standards for these systems.

THE FOODBORNE ILLNESS OUTBREAK

The first individual associated with the suspected outbreak reported having symptoms on October 25, 1998. Over the next 4 weeks, 73 confirmed cases would be identified. Culture tests of the affected individuals confirmed that *Yersinia pseudotuberculosis* was causing the outbreak. The normal rate of cases of *Yersinia pseudotuberculosis* in British Columbia is four per year. The last reported date of illness onset was November 24, 1998, and the peak date for reported illness onsets was November 14, 1998 *(9)*.

Yersiniosis is an infection with *Yersinia* species, other than *Yersinia pestis*, namely, *Yersinia pseudotuberculosis* and *Yersinia enterocolitica (6). Yersinia pseudotuberculosis* is identified much less frequently than *Yersinia enterocolitica* in British Columbia and elsewhere. Reported cases of *Yersinia* have been associated with ingestion of raw or undercooked pork, contaminated milk, preparation of chitterlings, and tofu *(5, 13). Yersinia pseudotuberculosis* has been iden-

tified in several species of domestic mammals and in several wild mammals, including deer, rabbits, and rodents; wild and domestic birds are also reservoirs of *Yersinia pseudotuberculosis (5)*. In most cases of *Yersinia* infections, symptoms appear four to seven days after infection *(5)*. Among non-compromised individuals, children are at greatest risk, with infants less than one year being most susceptible *(13)*.

The majority of cases resided in the Lower Mainland Region of British Columbia, with a small cluster of cases also present in Prince George, British Columbia. Based on the dates of illness onset and the organism's range of incubation periods, it was surmised that the food product that could have been responsible for the outbreak was first consumed in mid to late October and could have been consumed until just prior to the date of the last illness onset (November 24, 1998). A questionnaire was developed by public health officials to aid in interviewing affected individuals regarding their eating and personal habits in the time period prior to their date of illness onset. By early December 1998, the results of the interviews had revealed an epidemiological linkage to two food products: pork and pasteurized fluid milk *(9)*. In addition to product testing and an investigation of the pork linkage, an in-depth investigation of the suspect dairy plant was immediately initiated.

THE IN-DEPTH INVESTIGATION OF THE DAIRY PLANT

The dairy plant epidemiologically linked to the outbreak is large, relatively modern, and federally registered. The dairy plant operates six days per week, and its primary production lines are for pasteurized fluid milk in a variety of sizes and containers. Additional products, including cultured products, fluid ice cream/milkshake mixes, butter, and juices, are also produced. The bulk of the products are pasteurized through one of three HTST pasteurizers, although some of the byproducts are pasteurized with vat pasteurizers.

The product line that was epidemiologically linked to the outbreak was homogenized milk in 4- liter jugs. The milk used for this product could have been processed only through one of the HTST pasteurizers. Because all current evidence strongly indicates that *Yersinia* is destroyed by pasteurization *(2, 12)*, the primary focus of the investigation was this HTST pasteurizer and all operations "downstream" from it up to and including the jug filler and the jug/caser equipment. As will be discussed later, this HTST pasteurizer became the focus of the inspection and is the subject of the subsequent discussion in this paper.

Based upon the outbreak's first and last dates of illness onset (October 25 and November 24, respectively), the investigation focused on the dairy plant's production from October 1 to November 21, 1998. Although this window of time may appear to be overly wide, it was felt that this would provide a thorough overview of events and records prior to and after the most probable date(s) of production that could be responsible for the outbreak. The most probable date(s) would have been between mid and late October. An overview of events prior to and after the probable date of production could facilitate the identification of an abnormal event that could constitute a possible cause of the outbreak.

The in-depth investigation, initiated on December 11, 1998, was made up of four components:

- testing for *Yersinia pseudotuberculosis* in the dairy plant's quality control shelf-life samples and in samples obtained from the marketplace;
- observation of daily operating procedures;
- in-depth examination of all equipment associated with the processing, storage, and packaging of the 4-liter jug homogenized milk;
- examination of the dairy plant's records for the time period involved.

The results of the investigation revealed no links of this dairy plant to the outbreak; all finished product samples tested negative for *Yersinia pseudotuberculosis*, and all aspects of the daily operating procedures were satisfactory. All equipment was dismantled and found to be in good mechanical, operating, and sanitary condition. Several bacterial swabs were taken of equipment, and all were negative for *Yersinia pseudotuberculosis*. The dairy plant's records for the time period were complete and revealed no areas of concern. There was, however, one inconsistency, which refocused the attention of the investigation on the HTST pasteurizer.

The high temperature short time pasteurizer and the chilled water medium

The HTST pasteurizer, which met all provincial (British Columbia) *(1)*, federal (Canada) *(4)*, and 3-A Standards *(3)*, was a typical HTST pasteurizer capable of processing 60,000 lbs per hour. It included a booster pump, a separator/clarifier, a homogenizer as the timing device, a dual divert device, and a plate pack that consisted of four sections: regeneration, heating, chilled water cooling, and glycol cooling. All public health safety controls and interwiring had been tested in July and on November 22, 1998, and had been found to be operating satisfactorily on both occasions.

In July 1998, a dye test of the HTST pasteurizer plate pack was performed as part of the annual required HTST pasteurizer maintenance program. Six plates were considered defective because of cracks and/or pinholes. These plates were repaired and/or replaced, and the HTST pasteurizer resumed operation the following day. Because of this relatively high plate failure rate, combined with the age of the plate pack (8 years), dairy plant management made the decision to replace the plate pack, which was then replaced on October 4, 1998.

On October 2, 1998, an unexplained divert event occurred while the homogenized milk was being pasteurized. The divert event continued for several minutes, after which the product temperature was raised to above the cut-in temperature, and forward flow resumed. Before and after the diversion event, homogenized milk from the HTST pasteurizer had been directed to the same pasteurized milk holding tank from which the 4-liter jug filler had been drawing.

In the investigation, it was observed that during forward flow, the pressure of the pasteurized product was higher than the pressure of the raw product. The pressure of the pasteurized product was also higher than the pressure of both the chilled water and glycol cooling media. This is to be expected, as these are basic HTST pasteurizer requirements.

During diverted flow, the pressure on the pasteurized side of the regenerator was at least 2 psi above the pressure on the raw side of the regenerator. Again, this is to be expected in view of the deactivation of the booster pump, the minimum of 12 inches of differential height between the pasteurized and raw sections of the HTST pasteurizer, and the presence of a vacuum breaker on the pasteurized product discharge (as per *3-A Accepted Practices for the Sanitary Construction, Installation, Testing and Operation of High-Temperature-Short-Time and Higher-Heat-Shorter-Time Pasteurizer Systems,* Revised, Number 603-06). However, during diverted flow, the pressure in the pasteurized product discharge section dropped to approximately 2 psi. During this time, the pressure of the chilled water medium in the chilled water cooling section remained constant at 30 psi. Thus any pinholes or cracks in any of the plates in the chilled water cooling section could allow chilled water to leak into the pasteurized product section during diverted flow. Upon forward flow, this leaked chilled water would be directed to a pasteurized milk holding tank.

Based on these observations, the theory that chilled water may have entered the pasteurized product section during diverted flow was pursued. This portion of the investigation had two components:

(a) An examination of the records regarding the chilled water medium revealed that on September 14, 1998, the brand of sanitizer used to control bacterial growth in the chilled water medium was changed. Federal (Canadian) standards require monthly testing of the chilled water medium as part of the routine environmental quality control testing. However, federal standards do not specify a maximum acceptable level. The dairy plant's records for testing the chilled water media showed a gradual rise in the total bacterial count (Standard Plate Count) of the chilled water media after the sanitizer was changed in September. Prior to the change in sanitizer, the total chilled water bacterial count (Standard Plate Count) ranged from <1 per ml to 85 per ml. The gradual rise in the total bacterial count of the chilled water media after the sanitizer was changed would make it appear that the sanitizer used prior to the outbreak and during the investigation was not as effective as the former sanitizer. At the time of the investigation, the total count (Standard Plate Count) was >300 colonies per ml. When samples of the chilled water collected during the investigation were tested for *Yersinia pseudotuberculosis*, test results were negative.

(b) The chilled water cooling section plates of the HTST pasteurizer used prior to October 4, 1998, were dye tested for perforations to test the theory that perforations may have been present in the plates prior to replacement. Upon dye testing these plates, no cracks or pinholes were present.

DISCUSSION

The HTST pasteurizer was found to be in compliance with all current provincial and federal HTST pasteurizer equipment and operating requirements. However, the scenario outlined above demonstrates the potential vulnerability of heat exchanger cooling systems, including HTST pasteurizers, to psychrotrophic environmental pathogens. Because corrosion and metal fatigue can result in perforations of plate heat exchangers, the potential exists for entry of pathogens into food products processed in plate heat exchangers.

Dairy plant chilled water reservoirs can contain several thousand gallons of water. The chilled water is contained in large tanks or vats, and the water is obtained from private or public water systems. As the chilled water is depleted, the chilled water tanks are "topped off" by the water system. In general, chilled water reservoirs require, and therefore receive, little maintenance, and therefore they are drained and cleaned infrequently.

Typical dairy plant chilled water reservoirs are not closed systems; they are open to possible environmental contaminants, including birds, rodents, and insects. Several animal species have been identified as carriers of *Yersinia pseudotuberculosis (5)*. In addition, naturally occurring listeriosis has been reported in several animal species, including birds, rodents, and insects. It is therefore reasonable to expect these animals also to carry *Listeria monocytogenes* in their feces *(10)*. In addition, private and public water systems, which supply water to chilled water reservoirs, have been found to contain *Yersinia* species *(8)*, including *Yersinia pseudotuberculosis (7, 11)*, so it is possible for environmental pathogenic bacteria to

gain entry into the chilled water reservoir. As demonstrated from the dairy plant's monthly quality control testing of the chilled water, the chilled water is capable of supporting bacterial growth. Because of the chilled water's temperature, the only bacteria that could grow would be psychrotrophic bacteria. Although most psychrotrophic bacteria are not harmful to humans, several species are considered pathogens, including *Listeria monocytogenes*, *Yersinia enterocolita*, and *Yersinia pseudotuberculosis (10, 13)*.

As has been mentioned, this possible scenario was pursued during the course of this investigation. The cooling media systems were tested and found to be negative for *Yersinia pseudotuberculosis*. In addition, the HTST pasteurizer chilled water section heat exchanger plates were tested for perforations. No perforations were found. In summary, no evidence was found linking this potential scenario to this outbreak.

However, under current HTST pasteurizer mechanical and operating requirements, the possibility does exist for this route of pathogen entry into products processed through plate heat exchangers. Current HTST pasteurizer regulations do not require that the pasteurized product discharge section be at a higher pressure than cooling sections during diverted flow and under shutdown conditions. In the possible scenario outlined above, during diverted flow or shutdown conditions, chilled water media could leak into the pasteurized product discharge section through perforations in the plates. If the chilled water contained psychrotrophic pathogens, then these organisms would also leak into the pasteurized product discharge section. Upon resumption of forward flow, milk from the pasteurized product discharge section, containing chilled water with psychrotrophic pathogens, would be directed to pasteurized milk holding tanks for subsequent packaging.

A similar possibility also exists in non-HTST pasteurized product heat exchanger cooling systems used in dairy plants. Non-HTST heat exchanger cooling systems are used extensively in dairy plants for quick chilling of pasteurized product (e.g., hot pasteurized product exiting vat pasteurizers). Current regulations for non-HTST pasteurized product heat exchanger cooling systems do not require higher pressure of the pasteurized product than of the cooling media under all conditions. As a result, chilled water could leak into the pasteurized product through perforations in the heat exchanger in these situations as well.

In the possible scenarios outlined, the actual volume of chilled water that leaked into the pasteurized product would be relatively small. However, because most or all of the bacteria in the chilled water would be psychrotrophic bacteria, significant microbial growth could occur in the subsequent refrigerated product. Psychrotrophic pathogenic bacteria such as *Listeria monocytogenes*, *Yersinia enterocolitica*, and *Yersinia pseudotuberculosis* are capable of reproduction at refrigeration temperatures of ≤4°C *(2, 10, 13)*. Consequently, if the chilled water contained psychrotrophic pathogenic bacteria, they could multiply to the point where consumption of the product could cause illness.

RECOMMENDATIONS

HTST pasteurizer cooling sections

Requirements for pressure differentials under all conditions between the HTST pasteurizer pasteurized product section and the cooling media section(s) should be modified. Requirements should be such that a pressure differential of at least 2 psi be present between the pasteurized product section and the cooling media section(s) under all conditions, including forward flow, diverted flow, and shutdown conditions. This is particularly relevant for chilled water cooling systems in which survival and growth of psychrotrophic bacteria is demonstrable. This author has not seen evidence of a similar condition in glycol cooling systems. Thus, additional information regarding glycol cooling systems and the survival and growth of psychrotrophic bacteria in them would need to be obtained prior to including these systems in the proposed requirement of a pressure differential.

Non-HTST pasteurized product heat exchanger cooling systems

A requirement similar to that for HTST pasteurizer cooling sections should be made for non-HTST pasteurized product heat exchanger cooling systems. Again, requirements should be such that a pressure differential of at least 2 psi be present between the product section and the cooling media section(s) under all conditions.

CONCLUSION

No physical evidence links the outbreak to the dairy plant studied. However, the possible scenario outlined regarding the presence of chilled water containing psychrotrophic pathogenic bacteria in pasteurized product requires that the proposed recommendations be seriously considered. These recommendations, if implemented, would ensure this possible scenario could not occur in any dairy plants.

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Reflections from the Past

Presidential Address

Robert L. Sanders

78th Annual Meeting of the International Association of Milk, Food and Environmental Sanitarians, Inc.
July 21-24, 1991
Louisville, Kentucky

I would like to take this opportunity again to welcome you to the 78th annual meeting of the International Association of Milk Food and Environmental Sanitarians.

I will take a few moments to review with you some highlights of the past year's accomplishments. We successfully published 12 issues of the *Journal of Food Protection* and 12 issues of *Dairy, Food and Environmental Sanitation.* All issues were on time, in fact many issues were ready for the printer ahead of schedule. We also reduced our printing costs for these journals. Both journals continue to be the outstanding journals in their field. We do need to encourage our colleagues and fellow authors to continue to submit their papers for publication in these journals. We still have a backlog of articles waiting for publication, however, it is not as long as it has been in the past.

Membership has remained stable over the past year, about 3,500 Members. We currently have 78 Sustaining Members. That is an increase of two new Sustaining Members over last year.

We have not added any new affiliates this year. The Oregon affiliate was disbanded during the past year. However, there is a group of IAMFES Members in Oregon who are working toward reorganizing to form a new Oregon affiliate. Several other groups are working to form new affiliates. The European group under Mike Stringer in England is getting close and will be ready for presentation of their charter soon. Another group that is calling themselves the Chesapeake Area affiliate are from Maryland, Delaware, Northern Virginia and the District of Columbia are working to get their constitution and bylaws in order for submission. A group from New Jersey currently known as the Metropolitan Dairy Tech Society is about ready with their application for affiliation.

About four months ago I received a letter from the President of the South Africa Health Officers Association inquiring about possible affiliation. I responded to him and the Ames office also followed up with a letter but so far we have received no further response from them.

The Membership has voted not to change the name of the Association at this time. We will continue to be known as International Association of Milk, Food and Environmental Sanitarians (IAMFES). Over 60% of the votes were not to change the name. Mike Doyle will have more to say about the activities of the name change committee in his report that will be published in this journal.

As usual many of our committees have been very active this past year. I will name a few of their highlights. The Committee on Communicable Diseases Affecting Man has completed its work on a new booklet on HACCP. This has been sent to the printer and should be available in the month of August. If you wish to place an order for a copy of this booklet you can order one from the registration desk. The Dairy Quality and Safety Committee has just issued a "Pocket Guide to Dairy Sanitation." Single copies are available to Members at the registration desk or multiple copies can be purchased through the Ames office. The committee on Sanitary Procedure, commonly called the 3-A committee has completed the revision of the 3-A Accepted Practice for HTST and HHST Pasteurization Systems. Plans are under way to publish this document as a separate or 13th edition of *Dairy, Food and Environmental Sanitation* next year. In addition 3-A has revised or amended 12 other standards this past year. They will be published in *Dairy, Food and Environmental Sanitation* next year. The Food Sanitation Committee has been working on Temporary Food Service Guidelines. They will be available in the next 60 days.

The Audiovisual Library has remained a popular service to our Members. They have had over 1,000 requests for use of materials this past year. Unfortunately because of the large demand for some material, we could not fill all requests. The IAMFES Foundation has agreed to provide additional funding to purchase additional copies of some of the more popular tapes so that next year you won't have to wait so long to get the material you have requested. We also request that when you have completed the use of the material that you return it as soon as possible. That way someone else can use it.

IAMFES participated, with 20 other societies, in an IFT-sponsored workshop on "Food Packaging, Food Protection and the Environment." You will find additional details in Clarlie Felix's report. (The Membership later voted to endorse the recommendations of this report and send it to IFT for action.)

The Ames office staff has continued to function smoothly under the leadership of Steve Halstead, Executive Manager and Margie Marble, Assistant Executive Manager. We have purchased four new Macintosh computers and are networking them together to perform the desktop publishing for the journals. We have attained complete control of both journals through the desktop publishing. This has resulted in considerable savings in printing costs. We no longer need to pay the printer fees for typesetting. We just send them the computer disks and the final printed copy is made from the disks. This feature alone has saved the Association over $50,000 this past year.

We have changed accountants to a new firm; one that is familiar with and has worked with other non-profit associations. We have purchased a new IBM compatible computer and the software recommended by the new accountant. We are now converting all accounting to the new computer system. When completed we can determine our financial condition at any point we wish to see it. Because of this change-over, the accountants have not completed the annual audit. We do know that our income has exceeded our expenses during the past year. The audit should be completed in the month of August.

We are planning a Membership recruitment and retention campaign for the coming year. We will be working with the affiliates to get more affiliate members to become Members of IAMFES. We hope to gain several hundred new Members by this time next year.

By your ballots you have chosen Dee Clingman as your new Secretary for the coming year. Welcome aboard, Dee, we are glad to have your experience to add to the Executive Board for the next five years.

Don't forget, next year's Annual Meeting will be in Toronto, Ontario, Canada July 26-28, 1992. The program committee and local arrangements are already hard at work to make that meeting an outstanding success.

In closing I want to thank each and every Member, the Executive Board, our Committee Chairs and Members for the fine cooperation that I have received during the past year. Serving the past year as your President has truly been one of the highlights of my career in the Public Health Service. As I approach retirement I will cherish this year. Thank you all.

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Presidential Address

Michael Doyle

80th Annual Meeting of the International Association
of Milk, Food and Environmental Sanitarians, Inc.
August 1-3, 1993
Atlanta, Georgia

FY92-93 – It Was a Very Good Year! As IAMFES becomes an international forum for food safety, the organization has introduced several nuances to meet Members' professional needs and strengthen its position as a leading professional society addressing food safety issues. Included were: acquisition of new headquarters offices in Des Moines, restructuring committees, reorganization of editorial management of the *Journal of Food Protection*, initiating strategic, long-range planning, and involving the International Life Sciences Institute in the Association's Annual Meeting.

The IAMFES office in Ames, Iowa served the Association well for many years. However, as our need for a larger staff to provide better Membership services and enhance our publication capabilities increased, we outgrew the facilities. The new home of IAMFES in Des Moines not only better provides our space and office needs, but also is readily accessible to an airport. Members are invited to visit their Association offices when in the Des Moines area.

Committees within IAMFES had evolved to include a variety of working groups with very different goals and functions. Some were short-term and had very specific goals that once accomplished resulted in dissolution of the committee. Some others, like the Affiliate Council and Foundation Fund, were inappropriately identified as committees because they did not function as such. There clearly was a need to better structure our committees. Thanks to the efforts of Harold Bengsch and Dee Clingman, a new organizational structure for our working groups was developed and implemented. Our new organizational structure includes: Committees which are identified in the IAMFES Bylaws and are led by a Chairman, Professional Development Groups which are established to address ongoing projects that promote Members' professional development or further the Association's goals and are led by a Group Director, and Task Forces which are established to address single task projects which normally can be accomplished in 2 years and are led by a Task Leader. The IAMFES Foundation Fund and Affiliate Council will be separate organizational units functioning within IAMFES under established bylaws. Leaders of each of these new organizational units will have designated terms of appointment. It is anticipated that these changes will lead to greater involvement of the Membership in IAMFES activities and affairs.

One of the major strengths of IAMFES has been its highly regarded *Journal of Food Protection* that rates among the best of publications on the microbiological safety of foods. The success of this journal is largely attributable to Elmer Marth and Lloyd Bullerman who, as editors, have set the direction and scientific standards for its publication. The importance of the journal to IAMFES Members is reflected in a recent Membership survey which identified their subscription to *JFP* as one of the principal reasons many Members belong to IAMFES.

To reduce the administrative distractions of handling and publishing manuscripts of the *JFP* editor, a new approach to handling papers will be introduced in January 1994. Details will be provided elsewhere but this new system will allow *JFP* editors to focus their talents on evaluating the scientific merits of manuscripts rather than having to manage all aspects form secretarial responsibilities of posting papers to be received to copy editing. In addition, a second editor will be added to the journal's scientific staff to reduce the manuscript load for a single editor and allow editors the opportunity to commit to set-term appointments rather than indefinite terms.

Membership in IAMFES peaked in 1989, with 3,152 Members and has decreased to 3,000 in 1993. Considering the many benefits and services IAMFES provides to meet the food safety professional's needs and the emphasis being placed by consumers, regulatory agencies, and the industry on the safety of foods, Membership in IAMFES should be growing at an unprecedented rate. In July 1992, a Strategic Planning Task Force was established to address this and other issues affecting the long-term viability of IAMFES. The Task Force met at the 1992 Annual Meeting with a representative of Lawrence Leiter and Company that specializes in strategic planning for professional

societies and non-profit associations. Ideas were provided that formed the basis for questionnaires to be used in a telephone survey of the Membership.

The survey involved interviewing 300 individuals that include: 100 Members of both IAMFES and an Affiliate, 100 Members of IAMFES only (not an Affiliate), and 100 members of an Affiliate only (not IAMFES). Some very revealing and informative results were obtained. Highlights of this study included:

IAMFES and Affiliate Members —

- 58% joined IAMFES to receive one of its journals. 86% retain their Membership to receive one or both journals
- 73% subscribe to the *Journal of Food Protection*
- The overall value of Membership was highly-rated (3.3/5.0) for the dues dollar; many said IAMFES Membership is a bargain
- 42% identify IAMFES as their primary professional society
- 52% have never attended an Annual Meeting

IAMFES Members Only —

- 56% joined IAMFES to receive one of its journals; 77% retain their Membership to receive one or both journals
- 84% subscribe to the *Journal of Food Protection*
- The overall value of Membership is highly rated (3.8/5.0) for the dues dollar; Lawrence-Leiter indicated that rarely have they received so many comments about the good value for the price
- 22% identify IAMFES as their primary professional society
- 76% have never attended an Annual Meeting
- There were many indications that barriers (very narrow scope; milk only) discourage Affiliate membership

Affiliate Members Only —

- 83% are familiar with IAMFES; 56% have been asked to join IAMFES
- 57% work for a government/regulatory agency
- 51% are not members of a national professional organization
- Many indicate their interests are different, i.e., either narrower or only tangentially related to IAMFES
- Some respondents did not know their Affiliate is associated with IAMFES; they thought it was associated with the National Environmental Health Association

Some of the general observations and recommendations of the Lawrence-Leiter report included:

1. Pay attention to the journals; the number one concern of IAMFES is the quality of its journals
2. Pay attention to the needs of the International Members
3. Develop white papers on food safety issues (4.2/5.0)
4. Publish symposia, organize special interest sections, hold regional educational programs (3.8-3.9/5.0)
5. The Affiliates attract a somewhat different member than IAMFES, making it unreasonable to assume that all Affiliate members will join IAMFES

The Strategic Planning Task Force will now use the results of this study to provide recommendations on what should be done to increase Membership and provide the best in professional services and benefits.

A major contribution to the 1993 Annual Meeting was the participation of the International Life Sciences Institute (ILSI) that sponsored several timely symposia of international significance. ILSI is a highly respected, internationally-recognized organization that sponsors food safety-related research. The involvement of ILSI in our Annual Meeting was mutually beneficial, providing a forum for presentation of ILSI-sponsored research and an opportunity for IAMFES to involve internationally-recognized food safety scientists in its program.

Financially, IAMFES has made tremendous strides during the past five years in balancing its budget. Profits or losses from 1988-1992 were as follows:

1988	-$ 53,766
1989	-$ 49,459
1990	$ 8,324
1991	$ 14,341
1992	$108,783

In 1992 the fiscal year was changed to July 1 – August 31 in order to include the income and expenses of the most recent Annual Meeting in the fiscal year annual financial statement. Hence, FY 92 has two additional months and the income and expenses for two Annual Meetings instead of one. Much of the credit for this financial turn around goes to Steve Halstead who has astutely increased the profitability of our Annual Meetings. The Executive Board and Steve have worked diligently to keep expenses in check and erase the Association's debt. Although expenses continue to increase, the Executive Board has chosen not to increase dues for FY 94. The estimated profit for FY 94 is less than $10,000; a dues increase for FY 95 may be needed unless IAMFES experiences a major increase in Members and greater attendance at its Annual Meeting.

All in all, FY 92-93 was a very good year for IAMFES. Let's work together to make FY 93-94 even better.

Reprinted from *Dairy, Food and Environmental Sanitation*, Vol. 13, Pages 656-657.

Highlights of the Executive Board Meeting
March 31-April 2, 2000
Des Moines, Iowa

The following is an unofficial summary of actions from the Executive Board Meeting held March 31 to April 2, 2000 in Des Moines, Iowa:

Approved the following:

- Minutes of January 23-24, 2000 Executive Board Meeting
- Minutes of January 24, 2000 Executive Session Board Meeting
- To allow exhibitors to discretely take orders on the floor of the exhibit hall
- Budget for fiscal year end August 31, 2001
- Dues increase effective September 1, 2000
- Subscription rate increase effective September 1, 2000
- Registration and exhibitor fees for 2001 Annual Meeting
- Issuance of Affiliate charter to the Mexico Association for Food Protection (AMEPA) as the 35th Affiliate
- Honorary Life Memberships for Bill Arledge and Bob Sanders
- P.C. Vasavada as Chairperson for the 2001 Nominating Committee
- Adding 3 new Members to the *JFP* Management Committee

Discussed the following:

- Communication Update: Reports on *DFES, JFP* and the Web site were accepted. Journal production remains on schedule and Web development continues to progress with E-commerce capabilities and online Membership directory
- Membership Update: Membership increased 3% over same period one year ago. Interest in new name continues, new Member materials were reviewed
- Advertising Update: Ad sales continue to grow, Exhibit Hall sales strong, sponsorship for Annual Meeting out-pace last year
- Financial Update: January and February financial statements reviewed, second quarter ends ahead of budget
- Limitations of 401(k) plan, will continue to research
- Affiliate Newsletter to mail mid-April
- Revised Affiliate Operating Guidelines
- Prospective new Affiliate organizations in United Kingdom, D.C. area, Portugal, Quebec, and Manitoba
- Need to have a local leader to promote International Association for Food Protection at Affiliate meetings
- Annual Reports received from 21 of 34 Affiliates
- Conclusion of the Awards selection process for 2000 Awards
- Establishment of an Award to recognize laboratorians — the *Maurice Weber Laboratorian Award*
- New 3-A Web site: www.3-A.org
- Committee Member appointments for 2000
- Military Food Safety PDG—organizational meeting at Annual Meeting
- Student PDG—plans progressing well
- Secretary election results
- Progression of preparations for the 2000 Annual Meeting in Atlanta
- Planning for 2001 and 2002 Annual Meetings
- Future Annual Meeting sites
- Encouraged Annual Meeting attendees to obtain CEU's directly from issuing authority. Association cannot monitor all possible issuing bodies efficiently
- Annual Meeting Workshops
- Produce Safety Workshop to be held late fall of 2000 in Mexico
- Co-sponsorship of Japan PC2000 and ASAE 2000
- Planning session with staff/goals for the Association
- Revised Policy Manual distributed
- Sponsorship of IFT student reception
- Declined offer to exhibit at IFT Food Safety Conference
- Update on written Association history project
- Agreed to exhibit at the United Fresh Fruit & Vegetable Association Conference
- Request attorney's letter to International Association of Food Safety Professionals — name confusion

Next Executive Board meeting: August 4-10, 2000, Atlanta, Georgia

CALL FOR SYMPOSIA

2001 Annual Meeting

August 5–8, 2001

Minneapolis, Minnesota

The Program Committee invites International Association for Food Protection Members and other interested individuals to submit a symposium proposal for presentation during the 2001 Annual Meeting, August 5–8, 2001 in Minneapolis, Minnesota.

WHAT IS A SYMPOSIUM?

A symposium is an organized, half-day session emphasizing a central theme relating to food safety and usually consists of six 30-minute presentations by each presenter. 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.

SUBMISSION GUIDELINES

To submit a symposium, complete the Symposium Proposal form. The title of symposium; names, telephone numbers, fax numbers, and complete mailing addresses of the person(s) organizing the symposium and convenors of the session; topics for presentation, suggested presenters, affiliations; description of audience to which this topic would be of greatest interest; and signature of organizer. 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 FORMAT

Symposium sessions are 3 and 1/2 hours in length including a 30-minute break. A typical format is six 30-minute presentations. However, variations are permitted as long as the changes fit within the allotted time frame. If varying from the standard format, be sure to indicate this on the Symposium Proposal form.

SYMPOSIUM PROPOSAL DEADLINE

Proposals may be submitted by mail to the International Association for Food Protection office for receipt no later than July 17, 2000 or by presenting the proposal to the Program Committee at its meeting on Sunday, August 6, 2000 in Atlanta, Georgia. Proposals may be prepared by individuals, committees, or professional development groups.

The Program Committee will review submitted symposia and organizers will be notified in October 2000 as to the disposition of their proposal.

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 Assocation 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. 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. 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 inform the Program Committee Chairperson as soon as possible. Symposia topics are among the most valuable contribution an Association Member can make to assure the quality of our Annual Meeting.

WHO TO CONTACT:

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Fax: 515.276.8655
E-mail: bcorron@foodprotection.org

SYMPOSIUM PROPOSAL

2001 Annual Meeting

August 5–8, 2001

Minneapolis, Minnesota

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 17, 2000 to:

International Association for Food Protection
Symposium Proposal
6200 Aurora Ave., Suite 200W
Des Moines, IA 50322-2863, USA

Submit in person
on August 6, 2000 to:

Program Committee
International Association for Food Protection 87th Annual Meeting
Atlanta, Georgia

or Contact:

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New Members

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Wallsend, NSW

Alan Fagerland
Quality Assurance Services
Strathfield, NSW

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Quebec Ministry of Agriculture
Quebec City, Quebec

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3-A Sanitary Standards Now Available Online — New Web Site Includes Online Store, Spanish Language Standards

The International Association of Food Industry Suppliers (IAFIS), in cooperation with the International Association for Food Protection (IAFP), announced the launch of its new Web site, www.3-A.org. The site is designed to promote awareness of the 3-A Sanitary Standards Program and to distribute the standards online.

The 3-A Program formulates standards and practices for the sanitary design, fabrication, installation and cleanability of dairy and food equipment or systems used to handle, process and package consumable products where a high degree of sanitation is required. The standards are developed through the cooperative efforts of industry experts, including IAFIS, which represents the interests of equipment manufacturers, and IAFP, which represents sanitarians, as well as USDA and FDA.

"This Web site is an important step forward for the 3-A Program in that it uses the latest technology to make the 3-A Standards available to a global audience," said IAFIS Technical Director Tom Gilmore. "As international markets open up, the 3-A Standards are playing a key role in food safety. Making the 3-A Standards available in Spanish gives the food processing industry in Latin America and beyond greater access to the standards."

The online store offers 3-A Program participants a new level of convenience in standards ordering. Order fulfillment and customer service will be handled through a special arrangement with CSSINFO, a leading technical information and standards fulfillment house.

Users can choose to have printed copies delivered, or they can instantly download electronic PDF files right to their desktop. Multi-user access to PDF standards is also available for corporate networks.

The Web site and online store feature a broad selection of industry information, particularly from standards bodies such as NSF International, ASTM and ISO.

The site features sophisticated keyword searching to facilitate information gathering. It provides background information on the history of the 3-A Standards, how the standards are used, administration of the program, 3-A policies and procedures, and more.

The full text of the standards is available in both English and Spanish, which was made possible by a grant from the US Department of Commerce.

NEWS

IFT Announces 2000 Fellows of Food Science

The Institute of Food Technologists (IFT) will recognize 10 new Fellows at its 2000 Annual Meeting and Food Expo® in Dallas, TX, on June 10. Fellows are professional members of IFT noted for their achievements in food science, technology or related areas. The following is a list of individuals who will be honored.

- **Robert Bernard Gravani*,** Cornell University;
- Todd Robert Klaenhammer, North Carolina State University;
- Jozef J. Kokini, Rutgers University;
- S. Suzanne Nielsen, Purdue University;
- Anna V. A. Resurreccion, University of Georgia;
- Syed S. H. Rizvi, Cornell University;
- Karen M. Schaich, Rutgers University;
- R. Paul Singh, University of California-Davis;
- John G. Surak, Clemson University; and
- Pamela D. Tom, University of California-Davis.

***Member of the International Association for Food Protection.**

Governor of Missouri Proclaims Environmental Health Week

Governor Mel Carnahan proclaimed April 3 - 7, 2000, Environmental Health Week in the state of Missouri. Representatives from Missouri's two major environmental health professional societies, the Missouri Milk, Food and Environmental Health Association and Missouri Society for Professional Sanitarians, were in attendance as the Governor signed the proclamation commending the Missouri Milk, Food and Environmental Health Association for its dedication to the welfare of the people of the state by promoting educational and technological developments that result in improved sanitation of milk, food, institutional and environmental conditions; and providing its members with unique opportunities to develop valuable professional relationships with personnel in numerous food and dairy industries, public health agencies, educational institutions and trade associations.

Missouri Proclaims Environmental Health Week

Left to right: Don Falls, Greg Fast (hidden), Jonet Murray, Charles Sanders, Grace Steinke, Gala Jaramilla, Debbie Seeck, Dr. Robert Marshall, Governor Mel Carnahan, Steve St. Cloir, Pat Shannon (hidden), Phillip Shatzer, Andy Hoffman, Terry Lang, Bob Kulp, and Jerry Brown.

Long-time friend of the Governor, Dr. Robert Marshall, Professor Emeritus, University of Missouri-Columbia, praised the Governor for his recognition of environmental health professionals in the state of Missouri and the job they do in protecting Missouri's quality of life. After Dr. Marshall's remarks, Phillip Shatzer, representing Missouri Society of Professional Sanitarians and Steve St. Clair, representing Missouri Milk, Food and Environmental Health Association, presented Governor Carnahan with honorary memberships in their respective organizations and small tokens of appreciation for his recognition of environmental health workers.

Unwashed Hands, Undercooked Meat Possible Health Hazards

Your mother always said to wash your hands before meals. She was right. Failure to carefully wash your hands, especially after working around and with cattle, can lead to infection with a type of *E. coli* bacteria, called verocytotoxigenic *Escherichia coli* (VTEC). The resulting illness occasionally causes kidney failure and, in rare cases, death. Although not all animals carry this strain of the bacteria, there is no way to tell without extensive lab testing.

Dairy farm families are exposed to high levels of bovine VTEC through direct contact with cattle and cattle manure. A 1992-93 study of 80 dairy farms in southern Ontario revealed that a substantial number had evidence of current or past infection on the basis of stool cultures. In addition, 53.8 percent of participants had antibodies for VTEC in their blood, indicating a past infection.

Recent studies show that VTEC is also transmitted through consumption of unpasteurized milk and other dairy products, and improperly washed vegetables from a garden fertilized with fresh (uncomposted) manure. The bacteria may also spread from person to person, particularly in households and institutions such as nursing homes or daycare centers. Careful washing of hands, utensils and other personal objects is necessary to avoid spreading the bacteria from cattle to humans and among people.

E. coli is found in the intestines of a number of animals, including cattle and humans. When ingested, usually in the form of improperly cooked ground beef contaminated with bovine feces at slaughter, VTEC bacteria cause "hamburger disease" with symptoms of stomach cramps and bloody diarrhea appearing two to eight days later. These symptoms last seven to ten days. In Canada, five cases of hamburger disease per 100,000 people were reported in 1995, the most recent year for which complete data are available. In some cases, especially among people with immature or weakened immune systems, such as children or the elderly, infection with this bacteria leads to hemolytic uremic syndrome – kidney failure.

Listeriosis Cases Suspected to Have Been Caused by Vacuum-Packed Fish Products in Finland

Twenty-three cases of listeriosis were identified throughout Finland between June 1999 and February 2000. The overall number of cases is no higher than in recent years (34, 29, 53, 46, and 42 cases each year from 1995 to 1999), but ten of the cases (8 sepsis, 1 meningitis, and 1 peritonitis) were caused by *Listeria monocytogenes* serotype 1/2 and were indistinguishable by pulsed field gel electrophoresis (PFGE). Half of the cases were male and half female, and they were 29 to 84 years old. One was pregnant and the rest had predisposing underlying conditions, four of which were malignant. Four elderly patients (>70 years of age) died within one month of the positive *Listeria* culture, two of them within one week. *L. monocytogenes* of the same PFGE type has also been identified in vacuum-packed fish products and the association is being investigated. A previous outbreak of listeriosis in Finland was caused by contaminated butter in 1998 and 1999, and outbreaks in France this year have been associated with eating ready-to-eat ham and pork tongue in jelly. From 1996 to 1998, *L. monocytogenes* was identified in between 8% and 25% of samples of Finnish vacuum-packed smoked and cold-salted fish products. The levels were usually low (<100 CFU/g) but high levels (1,000-20,000 CFU/g) were sometimes detected. Hot-smoked products were rarely contaminated. Data from 1999 are not yet available, but the Finnish food control laboratories have sent their isolates of *L. monocytogenes* to the

National Veterinary and Food Research Institute (EELA) for serotyping and PFGE typing. A computer-based network set up by EELA and the National Public Health Institute (KTL) in 1999 has shown that the PFGE pattern isolated from the 10 human cases has been found only in several vacuum-packed fish products and their production establishments. This suggests that the fish products may have been the vehicle of the human infections, and epidemiological investigations are testing the association. Municipal food control authorities have been asked to report *L. monocytogenes* isolated from fishery establishments in their areas so that such establishments – and especially those where the implicated PFGE pattern has been identified – can be checked thoroughly and further sampling can be performed. Inspection of the hygiene of fishery establishments is one of the main topics in Finland's annual food control plan for the year 2000. The National Food Administration and the EELA have begun an intensified project to assess the occurrence of *L. monocytogenes* in vacuum-packaged fish products at retail level, which includes the checking of storage temperatures.

Food Safety; FDA's Use of Faster Tests to Assess the Safety of Imported Foods

More than 150 rapid tests may be used to screen foods for bacterial pathogens such as *Salmonella*, according to FDA and scientific literature. Many of these tests have been borrowed from clinical settings, although their use with food requires a preparation step of 24 hours or more to cause a bacterial pathogen to reproduce to detectable levels. Rapid tests employ a wide variety of technologies. For example, some measure chemical substances unique to a bacterium, while others identify a specific genetic sequence associated with a bacterium or a toxin it produces. In general, rapid tests to identify parasites and viruses in foods do not exist because of technological limitations.

FDA uses dozens of rapid tests to screen food samples for bacterial pathogens. FDA's decision to use a rapid test is based on such factors as the agency's testing priorities and needs and the cost and reliability of available tests. Currently, FDA uses rapid tests in its laboratories but not at food inspection sites such as ports of entry. Testing occurs in laboratories primarily because of the need to enrich bacterial pathogens in foods, a process that should be done under the controlled conditions laboratories provide. In addition, although some rapid tests come in self-contained kits, others require specialized equipment and materials found only in laboratories. Furthermore, a laboratory technician, such as a microbiologist, may be needed to administer and/or interpret the results of some rapid tests. An FDA research plan for fiscal years 1999 through 2001 includes provisions for developing a number of additional rapid tests. Several factors can limit FDA's expanded use of rapid tests for foodborne pathogens. For example, various ingredients and/or additives in certain foods may interfere with a test's reliability. In addition, with regard to fresh foods such as fruits and vegetables, harmless bacteria in the food may mask the presence of pathogenic bacteria. Furthermore, rapid tests, like conventional laboratory tests, are subject to sampling limitations. Specifically, the food samples tested may not be representative of the health risks of an entire food shipment or of all shipments from a particular exporter.

Infection Risks from Contact with Farm Animals and Poultry

As the season for farm visits gets underway, England's chief medical officer has warned parents, teachers, and children to take extra precautions to avoid contracting *Escherichia coli* serotype O157 infection from farm animals. The incidence of *E. coli* O157 infections rises in young children during the summer, with around half of all reported cases occurring between July and September. Almost a third of infected patients have to be admitted to a hospital and, from 1992 to 1996, 3.7% of cases died. Young children may develop haemolytic uraemic syndrome (HUS) after *E. coli* O157 infection: between 1994 and 1999, seven of 25 children under the age of five years developed HUS after acquiring the infection when visiting farms. Visitors are advised to clean their shoes thoroughly after a farm visit.

Parents and teachers are advised to ensure that children wash their hands thoroughly after touching an animal or its feces; that they don't eat or drink while visiting a farm; and that they don't put their hands into their mouths after animal contact.

Further evidence of infection risks associated with domestic animals comes from a recent report in the Morbid. Mortal. Weekly Report (MMWR), which describes outbreaks of salmonellosis associated with the handling of chicks and ducklings in the American states of Michigan and Missouri in 1999. Twenty-one cases of *Salmonella infantis* infection were reported between April and July 1999, 17 of whom had had direct or indirect contact with baby birds beforehand. There were eight reported contacts with chicks, two with ducklings, and six with chicks, ducklings, and other species. Of the trace-

able sources, 88% of the birds had come from one hatchery. A case control study of 19 patients and 37 controls showed that three quarters of the patients had direct contact with birds or lived in a household that raised poultry. In several households, birds were kept inside the home. A similar spate of 40 cases of *S.* Typhimurium infection reported in Missouri in the spring of 1999 showed that exposure to young fowl had preceded infection in 32 of the 33 patients interviewed. Eighteen had had direct or indirect contact with chicks and 10 had been exposed to ducklings. The report advises handwashing with soap and water after contact with chicks, ducklings, and other young fowl and their feces, to avoid infection. It recommends that young farmyard birds should not be kept in households with infants, children under the age of five years, or people with impaired immunity.

IFT Announces 2000 Food Science Achievement Award Winners

The Institute of Food Technologists (IFT) will present awards for outstanding achievement in food science and technology at its 2000 Annual Meeting and Food Expo® in Dallas, TX, on June 10. These Achievement Awards are presented annually to individuals who pioneer new food research or commercial applications.

Two of the award winners are Members of the International Association for Food Protection. These recipients are as follows:

Dane T. Bernard, Vice President of Food Safety Programs, National Food Processors Association (Washington, D.C.) has been awarded the Carl R. Fellers Award. The Carl R. Fellers Award honors an IFT member who has enhanced the profession of food science through activities other than teaching, research, development, or technology transfer covered by other IFT awards. Dane has designed documents for improving the microbiological quality and safety of food, assuring the safety of food processing systems, and reducing the risk of foodborne illness. He has on many occasions acted as "the voice of the food industry," teaching workshops and short courses, providing Congressional testimony, and speaking to the news media.

John B. Luchansky, Research Leader, Microbial Food Safety Research Unit, Eastern Regional Research Center of the US Department of Agriculture (Wyndmoor, PA), will be honored with the Research and Development Award for contributing to the understanding of food microbiology through his research on foodborne pathogens, with emphasis on molecular characterization and typing of *Listeria monocytogenes* and *Escherichia coli* O157:H7; use of lactic acid bacteria as a biopreservative and biotherapeutic agent; and control of pathogens and spoilage bacteria in fresh and fermented meats and dairy products.

NCGA Calls Kellogg Shareholders Biotech Vote Grrreat!

The National Corn Growers Association (NCGA) applauds a decision by Kellogg Co. shareholders on April 28, 2000 directing the company to continue using biotech crops in its food products. A company spokesman said the vote was 97 percent against a proposal to force the cereal maker to stop using biotech crops in the United States.

"Biotech commodities have passed stringent federal regulatory processes, and US farmers are committed to producing the safest and most abundant food supply in the world," said NCGA President Lynn Jensen, a farmer from Lake Preston, SD.

According to an Associated Press (AP) report released on April 28th, Kellogg is in the process of removing biotech ingredients from its products in Europe and Australia in response to consumer trends. However, the company has no intention of doing the same in the United States. "We interpret this as a sign that thereis a market in the United States for biotech crops," said Jensen.

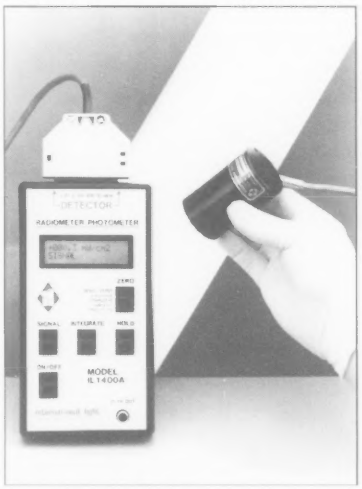
In the Company FAQ section of the Kellogg Web site, www.kelloggs.com/, Kellogg answers the question, "Do you use GMO (biotech) grains in any Kellogg products in the United States?" As follows: In the United States, Kellogg uses only grains approved by the United States government for food manufacturing, and our on-package labeling for these grains is in compliance with current US Food and Drug Administration (FDA) requirements. The products we sell in the US market are made with grains from a number of suppliers, so our supply includes biotechnology produced grains in the same proportion that they occur in the US grain supply.

The company also notes that Kellogg products offered around the world comply with food labeling requirements of the markets in which they are sold. The ingredients used to create our foods are, likewise, approved by the appropriate regulatory authorities in which they are sold.

"This statement underscores the confidence farmers and the American public in general have for our strict regulatory process in the United States, Kellogg and its shareholders are responding to what consumers want – not what special interests want," NCGA's Jensen added.

Through its "Know Before You Grow" program, the NCGA offers growers the tools to make informed decisions when they plant and market their grain.

More information is available at NCGA's Web site: www.ncga.com.



Venmark International

Portable Radiometer Verifies Germicidal Lamp Operation

A hand-held radiometer that is designed for testing germicidal lamps used in air handling systems to verify their proper operation, especially in dirty and dusty environments which can adversely affect their performance, is available from International Light, Inc. of Newburyport, MA.

The IL1470 Germicidal Radiometer provides an effective method for testing the dose intensity of germicidal and bacterial UV lamps and is designed for use by non-technical personnel. Featuring a detector which automatically programs the instrument, this hand-held radiometer is self-prompting with simple push-button operation and provides direct readouts on an LCD display.

Supplied with a handy carrying case, the IL1470 Germicidal Radiometer operates on 4 AA batteries and measures the dose intensity of bacteria killing UV lamps operating from 0.3 $\mu W/cm^2$ to 15 mW/cm^2. This versatile instrument accommodates a wide range of detector/filter combinations for performing many different types of light measurements.

Venmark International, Newburyport, MA

Reader Service No. 270

Biolog MicroPlates for Metabolic Characterization

Biolog, Inc. has launched the second generation MT MicroPlate called MT2. Originally developed as a tool for laboratorians interested in doing metabolic studies of cells, the unique 96 well microtiter-based format is used primarily in microbiology laboratories. The MT2 MicroPlate is designed to assist the researcher in evaluating cell metabolic function. The MT2 MicroPlate is filled with the patented Biolog nutrient base and color chemistry. The laboratorian has the flexibility of adding a wide variety of test substrates. Using this single MicroPlate, studies can be performed on aspects of cell metabolism ranging from cell utilization of metabolites to inhibition and sensitivity of microbes to biocides. Cells are directly inoculated into the MT2 MicroPlate test panels and incubated. After incubation, a "metabolic fingerprint" develops that is characteristic of that cell's ability to metabolize the test substrate. The results are recorded either manually or via the MicroLog™ MicroStation™ System.

Biolog Inc., Hayward, CA

Reader Service No. 271

Performax Millennium™ Series High Performance Cooling Water Treatments Available

Ashland Specialty Chemical Company's Drew Industrial Division announces a major advancement in water treatment technology through the commercialization of the Performax Millennium series of cooling water treatment programs. Performax Millennium treatment products are revolutionary, multi-functional formulations that typically provide ninety-percent reduction in corrosion and scale in open recirculating and once-through cooling water systems.

The Performax Millennium series of treatment programs includes a complete line of high performance products containing highly effective, innovative components. Newly developed bio-

degradable and oxidant-stable organic compositions protect against fouling and scaling of plant equipment under severe (stressed) operating conditions, and are designed to achieve maximum performance in a wide range of system water chemistries ranging from very soft to highly alkaline waters having high levels of scale forming ions.

In addition to providing maximized performance, the Performax Millennium products were designed to minimize the environmental impact of treated cooling water. The Performax Millennium™ treatment product formulations include biodegradable components and have very low total phosphorus levels.

Ashland Specialty Chemical Co., Dublin, OH

Reader Service No. 272

ESRI's GIS Software Demonstrates Visualization and Cost Benefit Capabilities for Environmental Contamination Problems

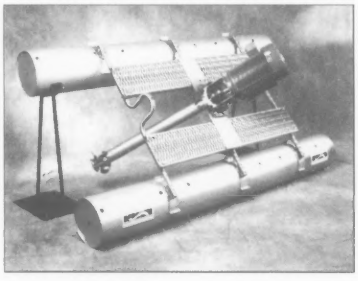
The US Environmental Protection Agency's (EPA) Environmental Technology Verification (ETV) program recently subjected three of ESRI's GIS software products to a series of exacting tests. ArcView GIS and its extensions, ArcView Spatial Analyst and ArcView 3D Analyst, successfully demonstrated their capabilities in performing visualization and cost-benefit analysis of complex soil and groundwater contamination problems.

The ETV was established by the EPA to further environmental protection by substantially accelerating the acceptance and use of improved and cost-effective technologies.

The evaluation team concluded that "the main strength of ArcView GIS, ArcView Spatial Analyst, and ArcView 3D Analyst is their ability to easily integrate data and maps in a single platform to allow spatial visualization of the data. The visualization output was clear and easy to understand. The ability to sort and query data makes examination of a subset of the data easy to perform. ArcView GIS has the ability to manage data files from a wide range of sources making it suitable for managing complex environmental contamination problems. The ease of use makes ArcView and its extensions accessible for the occasional user who wants to view the spatial correlation between data. For the more advanced user, the scripting language, Avenue, makes the ArcView products extremely flexible and customizable for problem-specific applications. ArcView GIS is a mature product with a large customer base."

ESRI, Redlands, CA

Reader Service No. 273



Aeromix Systems, Inc.

Aerator Passes Freeze-in Test

To prove the Tornado Aspirating aerator from Aeromix Systems, Inc. could be turned on and off in winter conditions, a 15 horsepower unit was frozen in an outdoor basin in January for three weeks. The test, designed to simulate a winter power outage, was performed in the Aeromix test facility in Minneapolis, MN using their 20 feet (6.1 m) by 30 feet (9.1 m) test pool. With the water 10 feet (3 m) deep, the aerator was positioned at the recommended operating angle of 45°.

The goal was to prove the theory that the sealed bearing support tube allows the shaft to spin freely after being frozen in, and that after a short time, heat generated from the bearings melts the ice blockage in the draft tube and the aerator aspirates normally.

The Tornado aerator was installed in an outdoor tank and allowed to freeze in for 3 weeks during a cold Minnesota winter. Completely standard in every way, the aerator had no special heaters, preparation or procedure to facilitate a successful restart. The aerator was started after three weeks of shut down. Normal aspiration resumed within three hours. Photos (taken every 15 to 30 minutes) and a video were taken to document the results.

The design of the Tornado aerator features an electric motor coupled to a solid rotating shaft with a propeller attached to the end. The shaft is supported by two tapered roller bearings and sealed into a bearing support tube by two seal modules. A draft tube, attached to the bearing support tube, allows air to move between the draft tube and the bearing support tube.

Available in sizes up to 100 horsepower (75 kW), the Tornado aerators employ high-efficiency standard C-face motors for increased system versatility. Vibration dampeners are standard on large models to prevent vortexing and extend life by preventing fatigue failures. Each unit is tested at the factory for proper assembly and operation before shipment.

Other standard features on the Tornado aerator include a non-fouling subsurface propeller, tapered roller bearings, and corrosion- and UV-resistant stainless steel construction. Float systems are all stainless steel for maximum corrosion and weather resistance.

Aeromix Systems, Inc., Minneapolis, MN

Reader Service No. 274

Labconco's Purifier® PCR Enclosures Offer a Controlled Environment to Perform Polymerase Chain Reaction Experiments

Labconco Corporation offers the Purifier® PCR Enclosures. Integral blower(s) and a 99.9% efficient HEPA filter constantly circulate filtered, Class 100 air down across the work area, providing a particulate-free work space to minimize the risk of contamination of the samples.

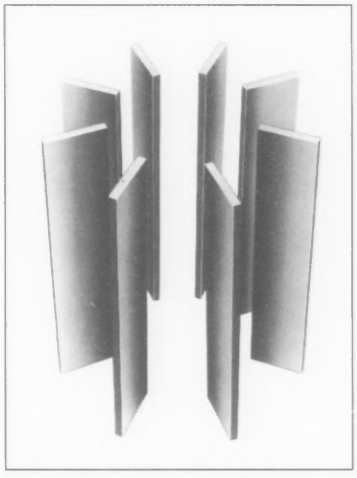
Available in 2' and 3' widths, the Purifier PCR Enclosures feature a self-contained UV lamp with solid state timer which provides a five minute exposure to deactivate DNA and RNA contaminants. The UV light then automatically switches off, in preparation for the next experiment. Front mounted switches for fluorescent and UV lights and blower are located within easy reach of the operator on a durable, low-maintenance exterior that stays cleaner than surfaces with exposed bolts and fasteners. Made of 3/16" thick safety glass, the side panels permit additional illumination to the work surface.

The variable speed blower(s) with solid state speed control maintains proper air velocities through the HEPA filter, removing 99.9% of all particles 0.3 micron or larger. Held in place by spring loaded clamps which apply even pressure across the filter, the HEPA filter is easily accessible for replacement by certified technicians when the two-light indicator shows the need for servicing. A replaceable pre-filter traps larger particles to extend the life of the HEPA filters.

The benchtop design can be used on existing casework, or an optional gray solid epoxy work surface and stand are available.

Labconco Corporation, Kansas City, MO

Reader Service No. 275



General Magnaplate Carporation

General Magnaplate's Goldenedge™ Surface Enhancement Increases Machine Speeds by Improving Blade Efficiency

General Magnaplate Corporation announces its new ultrahard, micro-thin Goldenedge™ surface enhancement treatment for blades and other sharp-edge cutting tools. The coating provides a precise thickness control, increasing the service life of razor sharp edges dramatically, by as much as 20 times, while maintaining their sharpness. Because of the fine-grain structure of Goldenedge, surface tension is reduced, which in turn decreases cutting resistance while improving operational speeds of equipment.

The new coating creates a dense, smooth golden surface with increased hardness (up to an equivalent of Rc85). A thin, uniform coating ranges in thickness from 0.00004" to 0.00006" or 1.0 to 1.5 microns. The non-stick surface meets USDA/FDA codes for food and drug contact, cleans easily with just water, and resists most chemicals and solvents. The service temperature ranges; from -300°F (184°C) to +1000°F (538°C) and the process temperature is from +450°F (232°C) to +932°F (500°C). General Magnaplate's engineers are experienced in methods to prevent the substrate from annealing.

Sharp-edged cutting tools coated with Goldenedge may be of almost any size or shape. Permanent mechanical interlocking with the substrate metal insures less downtime for blade replacement, faster machine feeds and speeds, lower blade costs, and increased productivity. Applications include die cutting, flaking, forming, filleting, gutting, grinding, pulverizing, scaling, sawing, shredding, and slicing.

General Magnaplate Corporation, Linden, NJ

Reader Service No. 276

New Orion Aplus pH, ISE, Dissolved Oxygen and Conductivity Meters

Orion Research is pleased to introduce the new Aplus meter line. These newly designed meters for pH, ISE, Dissolved

Oxygen (DO), and Conductivity are all offered with a three-year meter warranty. All Aplus meters are easy to use and feature premier Orion technology to make measurements accurate and reproducible. Several pH and ISE meters are available in packages with new Sure-Flow® electrodes. Conductivity and DO meter packages include new Orion probe technology.

Additionally, new software features make measurement of ORP and pH easier in the field or lab. Models 230Aplus and 250A plus offer an enhanced ORP mode to automatically correlate readings to the Normal Hydrogen Electrode. This is accomplished using the new ready-to-use Orion ORP standard and new Orion ORP Triode™ electrodes. The Model 250Aplus portable meter also features updated 3-point autocalibration and manual calibration capabilities. The new Aplus meters include benchtop and portable meters, making them ideal for field, plant, or laboratory use. With models having features ranging from basic to advanced, one is perfectly suited for any measurement requirements.

Orion Research, Inc., Beverly, MA

Reader Service No. 277

UV Cleans Up Industrial Effluent

Disinfection of industrial effluent without using environmentally damaging products can be achieved using ultraviolet technology. Aquionics makes a range of UV systems to suit the needs of manufacturers who are required to conform to ever-stricter regulations limiting their discharges.

UV is used by water companies and factories for the disinfection of treated effluent, and by industries such as food processing and pharmaceutical manufacturers to bring levels of microbial contamination within statutory limits. While some treatments, such as microfiltration, are unable to tackle viruses, UV is effective against all known microorganisms. In addition, unlike chlorination, UV treatment produces no toxic byproducts and does not pose a threat to aquatic life.

Aquionics units pass contaminated water or effluent through a stainless steel treatment chamber where arc tubes emit high intensity UV at frequencies that destroy waterborne microorganisms. Bacteria, spores, and viruses are eliminated by the process, which is not affected by either temperature or pH.

The system requires little maintenance, and the arc tubes can be easily replaced by on-site personnel. Automatic wipers can be installed to prevent build up of deposits around the quartz sleeves that protect the tubes, ensuring that the optimum intensity of UV light is maintained.

Aquionics Inc., Erlanger, KY

Reader Service No. 278

New Null-Kote™ Self-Diagnostic Two-Wire RF Level Transmitter Receives FM Approval for Intrinsic Safety

Princo Instruments, Inc. has developed a new self-diagnostic two-wire RF level transmitter and has received FM (Factory Mutual) approval of the transmitter for use in hazardous locations when used with an appropriate power source with safety barriers. The Model L2631-IS, with its Null-Kote™ circuitry, ignores the buildup of conductive coatings on the sensor element. This advantage makes it ideal for a wide range of level measurement applications and conditions. It provides accurate and reliable measurement with process materials ranging from low dielectric substances such as refined oils to conductive slurries and even sticky, viscous materials that can get to the sensor. As with all Princo level transmitter and control products, it has the industry's only 10-year warranty – indicative of the unit's high quality and reliability.

Superior temperature stability and noise immunity, conformally coated (tropicalized) circuit boards for extra protection, and vibration-proof design help make the L2631-IS an extremely reliable and rugged instrument. The transmitter offers simple two-wire design for low installation cost and compatibility with standard control systems. Once in operation, the built-in self-diagnostic circuitry ensures that the system is functioning properly; LED indicators provide visual conformation of proper system operation.

Princo offers instrument (factory) pre-calibration as a no-cost option. Field calibration, if needed, is quick and easy. There is no interaction between span and zero setting (set it and forget it). Installation is quick; the probe and electronics install as a single unit. No special cable, delicate connectors, or separate enclosures are required. The probe element can be connected or disconnected very simply, just by screwing it on or off the unit.

Princo Instruments, Inc., Southampton, PA

Reader Service No. 279

NOTIFICATION OF PROPOSED AMENDMENTS
TO THE INTERNATIONAL ASSOCIATION FOR FOOD PROTECTION BYLAWS

to be voted on at the Association Business Meeting held at the Annual Meeting in Atlanta, Georgia August 8, 2000 – 4:00 p.m.

The following four proposals to amend the International Association for Food Protection's Bylaws will be voted on at the Association's Business Meeting in Atlanta, Georgia on August 8, 2000 at 4:00 p.m. A majority affirmative vote of the Members present is required for acceptance.

Proposal 1: To change Bylaws Section VI, B, 1.2.1 to read as follows:

IAFP Awards:

The Awards Committee is responsible for selecting recipients for IAFP awards, from nominations received by the Executive Director, unless otherwise designated by the Bylaws. Selection guidelines are established and approved by the Executive Board. The following awards are under the purview of the Awards Committee:

Sanitarian
Educator
Harold Barnum Industry
Maurice Weber Laboratorian
Harry Haverland Citation

Each of the above individual award selection committees consists of three members. The Awards Committee Chairperson (Immediate Past Affiliate Council Chairperson) will recommend members for 3-year appointments with staggered terms to be confirmed by the Executive Board. In their third year of service, a member is designated to serve as chairperson of the individual award selection committee.

Rational: This change with the addition of "Maurice Weber Laboratorian" establishes a new award intended for laboratorians.

Proposal 2: To change Bylaws Section VI, B, 1.8 to read as follows:

Foundation Fund Committee

The Foundation Fund Committee shall consist of the President, President-Elect and Vice President of IAFP and a chairperson, and vice chairperson recommended by the President-Elect for confirmation by the Executive Board. The Chairperson shall recommend other individuals to the President-Elect for confirmation by the Executive Board. Appointed membership (including the chairperson and vice chairperson) shall be balanced with equal representation from industry, government and education. All appointments shall be for 2-year renewable terms. The Foundation Fund Committee shall:

1.8.1 Oversee IAFP Foundation monies;
1.8.2 Solicit gifts to the Foundation; and
1.8.3 Identify and fund programs which further the goals and objectives of the Foundation and IAFP.

Rational: This change removes a comma after chairperson and inserts "and" to make the sentence read correct.

Proposal 3: To replace Bylaws Section VI, B, 1.12 to read as follows:

Tellers Committee

~~The chairperson of the Nominating Committee will also serve as the chairperson of the Tellers Committee and shall appoint a Tellers Committee composed of three persons for the purpose of certifying the results of each election and other membership votes.~~

The Tellers Committee shall consist of a chairperson recommended by the President-Elect and confirmed by the Executive Board. The chairperson, subject to the Executive Board's review, shall appoint three other committee members. All appointments shall be for 1-year terms. The Tellers Committee shall:

1.12.1 Count and certify the results of each election and other membership votes.

Rational: This change segregates the duties of nominating candidates and counting ballots.

Proposal 4: To change Bylaws Section VI, C, 1.3 to read as follows:

Current PDGs include, Applied Laboratory Methods, Dairy Quality and Safety, Food Safety Network, Food Sanitation, Fruit and Vegetable Safety and Quality, Meat and Poultry Safety and Quality, Microbial Food Safety Risk Assessment, Retail Food Safety and Quality, Seafood Safety and Quality, Student, Viral and Parasitic Foodborne Disease.

Rational: This change updates the PDG section of the Bylaws to add a Student PDG.

International Association for
Food Protection

Paul A. Hall Elected IAFP Secretary

The International Association for Food Protection welcomes Paul A. Hall to the Executive Board as Secretary. Mr. Hall will take office at the conclusion of the Awards Banquet at the 87th Annual Meeting in Atlanta, Georgia. By accepting this position, Mr. Hall has made a five-year commitment to the Association and will serve as President in 2004.

Mr. Hall is Director of Microbiology and Food Safety for Kraft Foods where he is responsible for developing and directing strategic microbiological safety and research programs including microbiological risk management, control of pathogens and spoilage organisms, HACCP implementation and regulatory compliance. Prior to joining Kraft in 1989, he held corporate microbiology positions for Anheuser Busch Companies and Ralston Purina Company.

During his 25-year career, Mr. Hall has published and lectured extensively in the area of microbiological food safety and has served on a number of microbiological trade and professional association technical committees. He is an active member and past-chair of the International Life Sciences Institute's (ILSI) Technical Committee on Food Microbiology and was instrumental in forging the highly successful Annual Meeting collaboration between IAFP and ILSI. Mr. Hall has been an active Member of IAFP since 1987. He is currently vice-chair of the Annual Meeting Program Committee and is also a member of the *Journal of Food Protection* Management Committee, past editorial board member of the *Journal of Food Protection* and past Black Pearl Award Jury Committee member. Mr. Hall has organized and chaired numerous Annual Meeting symposia and programs over the past twelve years.

Congratulations

IAFP Committee Meetings

Sunday, August 6, 2000

Hilton Atlanta

Atlanta, Georgia

7:00 A.M. – 10:00 A.M.

Affiliate Council

10:00 A.M. – 5:00 P.M.

Communicable Diseases Affecting Man

10:00 A.M. – 12:00 P.M.

Applied Laboratory Methods
Audiovisual Library
Awards
Constitution and Bylaws
Food Safety Network
Microbial Food Safety Risk Assessment
Retail Food Safety & Quality
Sanitary Procedures

12:00 P.M. – 1:30 P.M.

Student

1:30 P.M. – 3:00 P.M.

DFES Management
Food Sanitation
Foundation Fund
Military

1:30 P.M. – 3:30 P.M.

Dairy Quality & Safety
Fruit and Vegetable Safety & Quality
Meat and Poultry Safety & Quality
Seafood Safety & Quality

3:00 P.M. – 4:30 P.M.

JFP Management
Nominating
Past Presidents'

3:30 P.M. – 5:00 P.M.

HACCP Task Force
Viral and Parasitic Foodborne Disease

4:30 P.M. – 5:30 P.M.

Program

Committee Chairpersons

Professional Development Groups, Task Forces, and Support Groups

STANDING COMMITTEES

Dairy, Food and Environmental Sanitation Management Committee

Linda J. Harris
Phone: 530.754.9485 Fax: 530.752.4759
E-mail: ljharris@ucdavis.edu

Journal of Food Protection Management Committee

Donald E. Conner
Phone: 334.844.2639 Fax: 334.844.2641
E-mail: dconner@acesag.auburn.edu

Program Committee

David A. Golden
Phone: 865.974.7247 Fax: 865.974.2750
E-mail: dgolden@utk.edu

SPECIAL COMMITTEES

Audiovisual Library Committee

John H. Christy
Phone: 608.388.3524 Fax: 608.388.2542

Awards Committee

Elizabeth M. Johnson
Phone: 803.896.0872 Fax: 803.896.0983
E-mail: johnsoem@columb68.dhec.state.sc.us

Black Pearl Selection Committee

Robert Brackett
Phone: 202.205.8139 Fax: 202.205.4422
E-mail: Robert.Brackett@cfsan.fda.gov

Committee on Communicable Diseases Affecting Man

Frank L. Bryan
Phone: 770.760.1569

Constitution and Bylaws Committee

Michael H. Brodsky
Phone: 905.889.8092 Fax: 905.889.2276
E-mail: mhbrodsky@home.com

Developing Scientist Awards Committee

Donna M. Garren
Phone: 703.836.3410 ext. 103 Fax: 703.836.2049
E-mail: donna@uffva.org

Fellows Selection Committee

Robert Brackett
Phone: 202.205.8139 Fax: 202.205.4422
E-mail: Robert.Brackett@cfsan.fda.gov

Foundation Fund Committee

Harry Haverland
Phone: 513.851.1810

Nominating Committee

C. Dee Clingman
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Past Presidents' Committee

Gale Prince
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Committee on Sanitary Procedures

Dan Erickson
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Tellers Committee

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PROFESSIONAL DEVELOPMENT GROUPS

Applied Laboratory Methods Professional Development Group

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Dairy Quality and Safety Professional Development Group

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Meat and Poultry Safety and Quality Professional Development Group

Norman Stern

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Microbial Food Safety Risk Assessment Professional Development Group

Donald W. Schaffner

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Retail Food Safety and Quality Professional Development Group

O. Peter Snyder

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Seafood Safety and Quality Professional Development Group

Carlos Abeyta

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Student Professional Development Group

Scott L. Burnett

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E-mail: sburnett@cfsqe.griffin.peachnet.edu

Viral and Parasitic Foodborne Disease Professional Development Group

Daniel J. Maxson

Phone: 702.437.4376 Fax: 702.437.5941

TASK FORCES

HACCP Task Force

Peter J. Slade

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E-mail: pslade@iit.edu

SUPPORT GROUPS

Affiliate Council

Randall Daggs

Phone: 608.266.9376 Fax: 608.267.3241
E-mail: daggsra@dhfs.state.wi.us

Visit our Web site
www.foodprotection.org

Ivan Parkin Lecture

Presented by: Douglas Powell, Ph.D.

Reclaiming Dinner: Enhancing Food Safety and Consumer Confidence

Sunday, August 6, 2000

Opening Session – 7:00 p.m.

Lecturer:

Douglas Powell, Ph.D.
University of Guelph
Guelph, Ontario, Canada

In 1986, the International Association for Food Protection (IAFP) established the Ivan Parkin Lecture to honor Ivan Parkin, a Dairy Extension Specialist at Pennsylvania State University. Dr. Parkin was IAFP President from 1954 to 1955 and remained active in the Association for many years following. He served as an example to others as a loyal Member, a professional, and an educator dedicated to protecting the food supply. Dr. Parkin is remembered by those who knew him as a kind and warm person.

This year, Dr. Douglas Powell, Assistant Professor in the department of plant agriculture at the University of Guelph, will deliver the lecture. As Director of the five-year Agri-Food Risk Management and Communication project at Guelph, he leads a diverse research team that integrates scientific knowledge with public perceptions to garner the benefits of a particular agricultural technology or product while managing and mitigating identified risks.

Dr. Powell led the development and implementation of an on-farm food safety program for the Ontario Greenhouse Vegetables Growers Association, a producer-led program to minimize microbial risks in fresh produce. He also led research to better understand producer perceptions that could impede adoption of refugia guidelines to mitigate the development of resistance when growing genetically engineered Bt-corn. Dr. Powell is now helping the Ontario Cattlemen's Association implement good production practices for the use of antimicrobials in cattle. He also teaches and conducts research into the broader public discussions involving technology and society, which shape public attitudes and policy decisions. Such work included the creation and daily editing of the listserve, the Food Safety Network (FSnet).

Dr. Powell completed a BSc (honors) in molecular biology and genetics at the University of Guelph in 1985. After two years of graduate work he entered journalism through the student press. He has served as editor of several community newspapers, has written for a diverse range of magazines, and continues as a freelance journalist. His book, *Mad Cows and Mother's Milk,* co-authored with Bill Leiss of Queen's University, was published by McGill-Queen's University Press in 1997.

Dr. Powell completed a doctoral degree in the department of food science at the University of Guelph in 1996. His thesis concerned applying risk communication theory to issues of food safety and agricultural biotechnology.

International Association for
Food Protection
87th Annual Meeting

Preliminary Program

SUNDAY EVENING – AUGUST 6, 2000

7:00 p.m. – 8:00 p.m.

Opening Session

- Presentation of the International Assocation for Food Protection Fellows Awards
- Ivan Parkin Lecture – **Reclaiming Dinner: Enhancing Food Safety and Consumer Confidence,** Douglas Powell, Ph.D., University of Guelph, Guelph, Ontario, Canada

Cheese and Wine Reception will follow in the Exhibit Hall

MONDAY MORNING – AUGUST 7, 2000

S1 *Listeria monocytogenes*: Current Issues and Concerns — Session I: Pathology, Virulence, and Risk Assessment of *L. monocytogenes*

(Sponsored by ILSI-NA)

Co-Convenors: Jean E. Anderson and Don L. Zink

8:30 · Relevance of Animal Models to Study Virulence of *L. monocytogenes* – JEFFREY M. FARBER, Health Canada, Microbiology Research Division, Ottawa, Ontario, Canada

9:00 · Primates as a Model for *L. monocytogenes* Infective Dose: A Progress Report – MARY ALICE SMITH, University of Georgia, Athens, GA, USA

9:30 · Relationship between Virulence in *L. monocytogenes* Genotypes – MARTIN WIEDMANN, Cornell University, Ithaca, NY, USA

10:00 · Break

10:30 · Risk Assessment of *L. monocytogenes*: Prevalence in the Food Supply – BENTE OJENIYI, The Royal Veterinary and Agricultural University, Stigbojlen, Frederiksberg C, Denmark

11:00 · Risk Assessment of *L. monocytogenes*: Impact of Cooking and Food Handling Procedures in the Home – CHRISTINE M. BRUHN, University of California-Davis, Davis, CA, USA

11:30 · Update on FDA's Risk Assessment of *L. monocytogenes* – RICHARD C. WHITING, FDA, Washington, D.C., USA

S2 Safer Production of Sprouts from Seeds

Co-Convenors: Peter J. Slade and Larry Beuchat

8:30 · Overview: Outbreaks Associated with Consumption of Sprouts and the Response from Government, Industry and Academia – MICHELLE SMITH, FDA-CFSAN, Washington, D.C., USA

9:00 · Pathogen Monitoring during Sprouting of Alfalfa Seeds – T. J. FU, NCFST/FDA, Summit-Argo, IL, USA

9:30 · Effectiveness of Chemical Sanitizers Applied to Seeds and Sprouts – LARRY BEUCHAT, University of Georgia, Griffin, GA, USA

10:00 · Break

10:30 · Sanitizing Laboratory Inoculated and Naturally Contaminated Alfalfa Seed with Chemicals – BILL FETT, USDA-ARS, Wyndmoor, PA, USA

11:00 · Elimination of *E. coli* O157:H7 and Control of *Salmonella* on Alfalfa Seed by Gamma Irradiation – DON THAYER, USDA-ARS, Wyndmoor, PA, USA

11:30 · What Have We Learned, and Where Do We Go from Here? Implications for the Sprout Industry and Others – PETER J. SLADE, NCFST/IIT, Summit-Argo, IL, USA

S3 Cook-chill/Sous Vide Technology

Co-Convenors: O. Peter Snyder, Jr. and Kristel Hauben

8:30 · European Cook-chill Technology – KRISTEL HAUBEN, Alma University Restaurants, Leuven, Belgium

9:00 · US Processor Cook-chill Technology – ERIC CARRE, Erdatek, Inc., Chicago, IL, USA

9:30 · Commercial Cook-chill in Europe – LUC PAEPE, Hot Cuisine, Gent, Belgium

10:00 · Break

10:30 · US Institutional Cook-chill – MARY COTTER, OHM, Cook Chill Production Center, Orangeburg, NY, USA

11:00 · Cook-chill Equipment Technology – LEN BUNDY, George E. Bundy and Associates, Seattle, WA, USA

11:30 · The Microbiological Safety of Cook-chill Foods – JOHN AUSTIN, Banting Research Center, Microbiology Research Division, Ottawa, Ontario, Canada

S4 The Role of Molecular Techniques for *Vibrios* and Viruses in Making Risk Management Decisions

Co-Convenors: Carlos Abeyta, Jr. and Custy F. Fernandes

8:30 · Infective Dose for *Vibrio parahaemolyticus*, *V. vulnificus* and Viruses, in Raw Oysters and Its Correlation to counts with Oysters during Harvesting – KEN MOORE, Interstate Shellfish Sanitation Conference, Columbia, SC, USA

9:00 · Molecular Approaches for the Detection of Bacteria with Special Reference to *Vibrios* in Seafood – ASIM K. BEJ, University of Alabama-Birmingham, Birmingham, AL, USA

9:30 · Molecular Techniques for Viruses and Their Limitations: New Frontiers in Non-molecular Methods – GARY P. RICHARDS, USDA, Dover, DE, USA

10:00 · Break

10:30 · Risk Assessment on the Public Health Impact of *Vibrio parahaemolyticus* in Oysters – MARIANNE MILIOTIS, FDA, Office of Seafood, Washington, D.C., USA

11:00 · Industries Perspective on Use of Molecular Biological Techniques as a Preventive Tool – CHRIS NELSON, Bon Secour Fisheries Inc., Bon Secour, AL, USA

11:30 · Panel Discussion

T1 Foodborne Pathogens

8:30 T1 · Survival and Heat Resistance of Alkali-stressed *Listeria monocytogenes* – PETER J. TAORMINA, and Larry R. Beuchat, University of Georgia, Griffin, GA, USA

8:45 T2 · *Listeria monocytogenes* in UHT Milk: A Case Study – CHARLES N. CARVER, Karen Kinnberg, and Ronald Johnson, Land O'Lakes/R-Tech Laboratories, Arden Hills, MN, USA

9:00 T3 · The Ability of Sublethally Heat-injured *Listeria monocytogenes* Cells to Compete with a Commercial Mesophilic Lactic Acid Starter Culture during Milk Fermentation – FINNY P. MATHEW, and Elliot T. Ryser, Michigan State University, East Lansing, MI, USA

9:15 T4 · Growth of *Listeria monocytogenes* and *Escherichia coli* O157:H7 is Enhanced in Ready-to-eat Lettuce Washed in Warm Water – PASCAL J. DELAQUIS, P. M. Toivonen, and S. Stewart, Agriculture and Agri-Food Canada, Pacific Agri-Food Research Centre, Summerland, British Columbia, Canada

9:30 T5 · A Survey of US Orchards to Identify Potential Sources of *Escherichia coli* O157:H7 – DENISE C. R. RIORDAN, G. M. Sapers, and B. A. Annous, USDA-ARS-ERRC, Wyndmoor, PA, USA

9:45 T6 · Attachment of *Escherichia coli* O157:H7 to the Epidermis and Internal Structures of Apples as Demonstrated by Confocal Scanning Laser Microscopy – SCOTT L. BURNETT, Jinru Chen, and Larry R. Beuchat, University of Georgia, Griffin, GA, USA

10:00 · Break

10:30 T7 · Quinolone Resistance among Clinical and Food Isolates of *Campylobacter* spp. – JEFFREY M. FARBER, Diane Medeiros, Greg Sanders, John Austin, Catherine Graham, Health Canada, Ottawa, Ontario, Canada

10:45 T8 · The Survival and Culturability of *Campylobacter jejuni* Micro-colonies under Modified Atmospheres at 4°C and 8°C Using a Model Food System – WENDY HARRISON, Adrian Peters, and Louise Fielding, University of Wales Institute, Cardiff, Wales, UK

11:00 T9 · Survival of *Campylobacter jejuni* in Biofilms Isolated from Chicken Houses – NATHANON TRACHOO, Joseph F. Frank, and Norman J. Stern, University of Georgia, Athens, GA, USA

11:15 T10 · Comparative Tolerance of *Salmonella* Typhimurium DT104 to Heat and Desiccation – ARTHUR J. MILLER, and Marsha H. Golden, Center for Food Safety and Applied Nutrition, FDA, Washington, D.C., USA

11:30 T11 · Routes of Infiltration, Survival, and Growth of *Salmonella enterica* Serovar Hartford and *Escherichia coli* O157:H7 in Oranges – MARK O. WALDERHAUG, Sharon G. Edelson-Mammel, Antonio J. DeJesus, B. Shawn Eblen, Arthur J. Miller, and Robert L. Buchanan, US FDA CFSAN, Washington, D.C., USA

11:45 T12 · A Descriptive Analysis of *Giardiasis* Cases Reported in Ontario, 1990-1997 – JUDY D. GREIG, Pascal Michel, Jeff B. Wilson, Scott A. McEwen, and Dean Middleton, Ontario Veterinary College, University of Guelph, Guelph, Ontario, Canada

P1 Inactivation and Control Methods I

10:00 a.m. – 1:00 p.m.
(Authors present 10:30 a.m. – 12:30 p.m.)

P1 · Cleaning Practices and the Cleanliness of Food Surfaces – CARYS DAVIES, Chris Griffith, and Adrian Peters, University of Wales Institute, Cardiff, UK

P2 · Evaluation of Household Cutting Board Clean-up Techniques – Vidhya Gangar, Eric Meyers, Heidi Johnson, Michael S. Curiale, and BARRY MICHAELS, Georgia Pacific Corp., Palatka, FL, USA

P3 · Ozone: An Alternative Disinfectant for the Food Industry – GINNY MOORE, Chris Griffith, and Adrian Peters, Food Safety Research Group, University of Wales Institute, Cardiff, UK

P4 · Removal of Microorganisms from Industrial Surfaces Using Peracetic Acid – LEO KUNIGK, Maria O. Portella, Maria C. B. Almeida, and Bernadette D.G.M. Franco, Escola de Engenharia Maua, Sao Caetano do Sul, Sao Paulo, Brazil

P5 · Efficacy of Two Sanitizers against Food Spoilage *Bacillus* Isolates – ESTER PETA, Denise Lindsay, and Alex von Holy, University of the Witwatersrand, Wits, South Africia

P6 · Effects of Cleaners of Biofouled Stainless-steel Surfaces in Yogurt Manufacturing Equipment – GUN WIRTANEN, Sami Kontulainen, and Satu Salo, VTT BioTech., Espoo, Finland

P7 · Influence of Processing Flow Velocity on Attachment Rates of *Pseudomonas fluorescens* Isolated from the Egg Industry – FABRICE BOURION, and T. Benezech, ASEPT, LAVAL cedex 9, France

P8 · Comparative Biocidal Capacities of Oxidative and Non-oxidative Sanitizers vs. *Listeria monocytogenes*, *Escherichia coli* O157:H7, and *Salmonella* Typhimurium Using a Modified Surface-dried Film Assay Method – CHARLES J. GIAMBRONE, George Diken, and Jonathan Lalli, FMC Corp., Princeton, NJ, USA

P9 · Ultrasound Cleaning in Cheese Mold Hygiene – GUN WIRTANEN, Antti Heino, and Satu Salo, VTT BioTech., Espoo, Finland

P10 · Evaluation of Cetylpyridinium Chloride Immersion as a Method to Reduce Pathogenic Bacteria in Fresh Vegetables – HONG WANG, Ming Ji, and Michael F. Slavik, University of Arkansas, Fayetteville, AR, USA

P11 · Attachment and Survival of *Salmonella stanley* on Cantaloupe Surface: Efficacy of Washing Treatments and Possibility of Transfer to Fresh-cut Tissues – D. O. UKUKU, and G. M. Sapers, USDA-ARS-ERRC, Wyndmoor, PA, USA

P12 · Combination of Chemical Treatments with Gamma Irradiation for Elimination of Foodborne Pathogens from Fresh Produce – DONALD E. CONNER, S. A. Berry, C. A. Sundermann, C. I. Wei, S. J. Weese, and F. M. Woods, Auburn University, Auburn, AL, USA

P13 · Inactivation of Bacterial Foodborne Pathogens on Fresh Produce Using Water-based Chemical Treatments – DONALD E. CONNER, S. A. Berry, C. A. Sundermann, C. I. Wei, S. J. Weese, and F. M. Woods, Auburn University, Auburn, AL, USA

P14 · Growth of *Escherichia.coli* O157:H7 and Naturally Present Microorganisms in Heated Fresh-cut Lettuce – YUE LI, and Robert E. Brackett, University of Georgia, Griffin, GA, USA

P15 · Bactericidal Effect of Chlorine Dioxide against *Salmonella* spp., *Escherichia coli* O157:H7, and *Listeria monocytogenes* Inoculated on Apples and Lettuce – CHEN I-HSUAN, J. Kim, T. S. Huang, D. E. Conner, S. J. Weese, F. M. Woods, and C. I. Wei, Auburn University, Auburn, AL, USA

P16 · Modeling UV Inactivation of *Escherichia coli* in Apple Cider for Quantitative Risk Assessment – SIOBAIN MARIE DEIRDRE DUFFY, John Churey, Randy Worobo, and Donald Schaffner, Food Risk Analysis Initiative, Rutgers University, New Brunswick, NJ, USA

P17 · Efficacy of Surface Heat Treatment on Apples in the Production of Apple Cider – SUSANNE E. KELLER, Robert Merker, Stuart Chirtel, Carla Bator, and Tan Hsu Ling, FDA-CFSAN-DFPP, Summit-Argo, IL, USA

P18 · Fate of *Yersinia enterocolitica* on Sanitized Apples – María Esther Escudero, and ANA MARÍA STEFANINI DE GUZMÁN, Area Microbiologia, Facultad de Química, Bioquímica y Farmacia, San Luis, Argentina

P19 · Assessment of the Microbial Efficacy of a Prototype GRAS Produce Wash on Apples – LINDA J. HARRIS, Charles A. Pettigrew, and Charles H. Taylor, University of California-Davis, Davis, CA, USA

P20 · Inactivation of *E. coli* O157:H7 and *Salmonella* in Apple Cider and Orange Juice by Ozone – ROBERT C. WILLIAMS, C. A. Lakins, D. A. Golden, and S. S. Sumner, University of Tennessee, Knoxville, TN, USA

P21 · Efficacy of Allyl Isothiocyanate in Killing Enterohemorrhagic *Escherichia coli* O157:H7 on Alfalfa Seeds – Chung-Myeon Park, PETER J. TAORMINA, and Larry R. Beuchat, University of Georgia, Griffin, GA, USA

P22 · Evaluation of Chemicals for Their Effectiveness in Killing *Salmonella* on Alfalfa Seeds –WILLIAM R. WEISSINGER, and Larry R. Beuchat, University of Georgia, Griffin, GA, USA

P23 · Factors Affecting the Thermal Inactivation of Bacteria in Poultry Products during Air Convection Cooking – Rong Y. Murphy, BRADLEY P. MARKS, Ellen R. Johnson, and Michael G. Johnson, Michigan State University, East Lansing, MI, USA

P24 · Fate of *Salmonella* spp. during Heating at Different Rates in Sous-vide Cooked Beef – VIJAY K. JUNEJA, and H. M. Marks, ERRC-USDA-ARS, Wyndmoor, PA, USA

P25 · Survival of Inoculated *Escherichia coli* O157:H7 on Beef Jerky Dried at 62.5°C Following Four Preparation Treatments – S. N. Albright, JOHN N. SOFOS, and P. A. Kendall, Colorado State University, Fort Collins, CO, USA

P26 · Physical Variables and Yeast Inactivation during Thermo-ultrasonication – AURELIO LOPEZ-MALO, Universidad de las Americas-Puebla, Puebla, Mexico

P27 · Effects of Pulsed Electric Field Processing Using a Static Chamber on the Survival of *Listeria monocytogenes* – SADHANA RAVISHANKAR, Gregory J. Fleischman, Robert Tetzloff, Kenneth Ghiron, V. M. Balasubramaniam, and Rukma N. Reddy, The National Center for Food Safety and Tech., Illinois Institute of Tech., Summit-Argo, IL, USA

P28 · Inactivation of *Listeria monocytogenes* in Brine Chiller Water for Thermally Processed Meat Products Using a Recirculating Electrochemical Treatment System – JIANMING YE, Hong Yang, Hoi-Kyung Kim, Carl Griffis, and Yanbin Li, University of Arkansas, Fayetteville, AR, USA

P29 · Influence of Gamma Irradiation on *Salmonella* spp. Incorporated into Oysters – M. Jakabi, D. S. Gelli, M. T. Destro, and MARIZA LANDGRAF, Faculty of Pharmaceutical Sciences, University of Sao Paulo, Sao Paulo, Brazil

P30 · Loss of Crystal Violet Binding Activity in *Yersinia enterocolitica* Following Gamma Irradiation – CHRISTOPHER H. SOMMERS, USDA-ARS-NAA-ERRC-FS, Wyndmoor, PA, USA

P31 · Efficacy of Disinfectants in Killing Spores of *Alicyclobacillus acidoterrestris* and Performance of Media for Enumerating Survivors – LARRY R. BEUCHAT and Rachel V. Orr, University of Georgia, Griffin, GA, USA

P32 · Efficiency of Sanitation Procedures against *Listeria monocytogenes*: Application to Cold-smoked Fish Industry in France – M. Gay, and FABRICE BOURION, ASEPT, LAVAL cedex 9, France

P33 · Influence of Sodium Pyrophosphate on Thermal Inactivation of *Listeria monocytogenes* in Pork Slurry and Ground Pork – MAKUBA AIME LIHONO, Aubrey F. Mendonca, and James S. Dickson, Iowa State University, Ames, IA, USA

P34 · Aerobic Microflora and *Yersinia enterocolitica* Reductions on Eggs Treated with Different Sanitizers – Gabriela Favier, Maria Esther Escudero, and ANA MARIA STEFANINI DE GUZMAN, Area Microbiologia, Facultad de Química, Bioquímica y Farmacia, San Luis, Argentina

P35 · Evaluation of Spray Application of Acidified Sodium Chlorite on Frankfurters and Its Effect on Reduction of *Listeria monocytogenes* – MAHA N. HAJMEER, James L. Marsden, Harshavardhan Thippareddi, Randall K. Phebus, Nahed Kotrola, and Kere Kemp, Kansas State University, Manhattan, KS, USA

P36 · Bactericidal and Bacteriostatic Effect of Bovine Lactoferrin and Its Pepsin Hydrolysate for Foodborne Pathogens – CHRISTOPHER ALLEN MURDOCK, and Karl R. Matthews, Rutgers University, New Brunswick, NJ, USA

P37 · Limitations in the Use of Ozone to Disinfect Maple Sap – RONALD LABBE, M. Kinsley, and J. Wu, University of Massachusetts, Amherst, MA, USA

ALL DAY POSTER SYMPOSIUM – MONDAY, AUGUST 7, 2000

8:30 a.m. – 5:00 p.m.

S5 Aproaches to Control Pathogens in the Next Millennium

Co-Convenors: Kathleen T. Rajkowski and Jim Dickson

- Consumer Expectations and Response to Food Safety Technology – CHRISTINE BRUHN, University of California-Davis, Davis, CA, USA
- Beam Irradiation – JIM DICKSON, Iowa State University, Ames, IA, USA
- Gamma Irradiation – KATHLEEN T. RAJKOWSKI, USDA-ARS-ERRC, Wyndmoor, PA, USA
- Pasteurization of Intact Shell Eggs – W. J. STADELMAN, Purdue University, W. Lafayette, IN, USA
- Competitive Exclusion – J. STAN BAILEY, USDA, ARS, RRC, Athens, GA, USA
- Decontamination of Beef Carcass Surface Tissue by Steam Vacuuming Alone and Combined with Hot Water and Lactic Acid Sprays – GARY ACUFF, Texas A & M University, College Station, TX, USA
- Inactivation of Microorganisms by Pulsed Electric Fields: A Critical Review – G. V. BARBOSA-CANOVAS, Washington State University, Pullman, WA, USA
- Factors Affecting Ability of Microorganisms to Survive Microwave Cooking – SUSAN S. SUMNER, Virginia Tech, Blacksburg, VA, USA
- Integration of Semi-continuous High Pressure Processing with Aseptic Packaging – CHUCK SIZER, National Center for Food Safety and Technology, Summit Argo, IL, USA
- Plasma – Destruction of Foodborne Pathogens – DAVID GOLDEN, University of Tennessee, Knoxville, TN, USA

MONDAY AFTERNOON – AUGUST 7, 2000

S6 *Listeria monocytogenes*: Current Issues and Concerns — Session II: Detection, Enumeration, and Intervention Strategies for *L. monocytogenes*

(Sponsored by ILSI-NA)

Co-Convenors: Jean E. Anderson and Don L. Zink

1:30 · A Comparison of Rapid Genetic Methods for the Detection of *L. monocytogenes* – ROY BETTS, Campden & Chorleywood Food Research Association, Gloucestershire, UK

2:00 · Ecology of *L. monocytogenes*: Studies on Incidence, Growth and Microbial Competition in Primary Production – DAVID R. FENLON, Scottish Agricultural College, Bucksburn, Aberdeen, Scotland

2:30 · Production Intervention Strategies to Control *L. monocytogenes*: Prospects for the Use of Irradiation (or Pasteurization) for Packaged Ready-to-Eat Meats – JAMES S. DICKSON, Iowa State University, Ames, IA, USA

3:00 · Break

3:30 · Production Intervention Strategies to Control *L. monocytogenes*: Barrier Technology and High Risk Production Area Control – JOHN T. HOLAH, Campden & Chorleywood Food Research Association, Gloucestershire, UK

4:00 · Panel Discussion

S7 Current International Issues in Produce Safety

Co-Convenors: Randy Worobo and Donna Garren

1:30 · Current Issues in Produce Safety – LINDA J. HARRIS, University of California-Davis, Davis, CA, USA

2:00 · Domestic and International Traceback Farm-Level Investigations – ART MILLER, FDA, CFSAN, Washington, D.C., USA

2:30 · Produce Safety – A Canadian Perspective – MARIE-CLAUDE THIBAULT, Canadian Produce Marketing Association, Ottawa, Ontario, Canada

3:00 · Break

3:30 · Government and Private Sector Programs to Improve Produce Safety in Mexico – ALEJANDRO CASTILLO, University of Guadalajara, Guadalajara, Jal., Mexico

4:00 · Education of US Growers/Packers in Good Agricutural Practices – BOB GRAVANI, Cornell University, Ithaca, NY, USA

4:30 · Consumer Education/Perceptions of Produce Safety – CHRISTINE BRUHN, University of California-Davis, Davis, CA, USA

S8 Relevance of Testing to Reduce Risk

Co-Convenors: Donald Schaffner and Richard C. Whiting

1:30 • Legal and Regulatory Implications of Testing – A Company Perspective – To be announced

2:00 • Statistical Sampling – An Overview – RUSSELL FLOWERS, Silliker Labs, Inc., Homewood, IL, USA

2:30 • Scientific Advances to Improve Testing Strategies – LEE-ANN JAYKUS, North Carolina State University, Raleigh, NC, USA

3:00 • Break

3:30 • Statistical Sampling for Specific Foodborne Pathogens – TODD MCALOON, Cargill, Inc., Minneapolis, MN, USA

4:00 • The Impact of Sampling Strategies on Risk Analysis and Risk Mitigation – DONALD SCHAFFNER, Rutgers University, New Brunswick, NJ, USA

4:30 • Panel Discussion

S9 HACCP-based Strategies for Cooked Ready-to-eat Seafoods Based on Quantitative Risk Assessment

Co-Convenors: Bob Collette and Custy F. Fernandes

1:30 • CDC Data on Infection and Diseases Caused by Cooking and Ready-to-eat Seafoods – ROBERT TAUXE, CDC, Atlanta, GA, USA

2:00 • FDA's Update on Compliance with Seafood HACCP Regulations and Their Policy for Handling and Storing Cooked and Ready-to-eat Seafoods – ROBERT BECK, FDA, Mobile, AL, USA

2:30 • HACCP-based Post-cook Handling and Storage Options for Cooked Ready-to-eat Seafood Products – MIKE MOODY, Louisiana State University, Baton Rouge, LA, USA

3:00 • Break

3:30 • Growth Patterns of Pathogenic Microbes in Cooked and Ready-to-eat Seafoods Using Optional Processing Strategies – GEORGE J. FLICK, Virginia Tech., Blacksburg, VA, USA

4:00 • Gulf Blue Crab HACCP Economics: Proposed and Actual Effects – BRIAN PERKINS, Auburn University, Mobile, AL, USA

T2 Microbiological Methods

1:30 T13 • Development of a Standard Method to Detect Parasitic Protozoa on Fresh Vegetables – Noreen Wilkinson, C. A. Paton, R. A. B. NICHOLS, N. COOK, and H. V. Smith, Central Science Laboratory, York, UK

1:45 T14 • Development of Custom Identification Patterns for *Salmonella* Based on the Use of the Restriction Enzyme PvuII with an Automated Ribotyping System – JAMES L. BRUCE, Elizabeth Mangiaterra, and Timothy R. Dambaugh, Qualicon, Inc, Wilmington, DE, USA

2:00 T15 • The Development and Testing of an Instrument for the Homogeneous Detection of PCR Products – George Tice, and W. MARK BARBOUR, Qualicon Inc., Wilmington, DE, USA

2:15 T16 • Evaluation of Immuno-concentration Procedure to Detect Salmonellae in Poultry Samples – J. STAN BAILEY, and Doug E. Cosby, USDA-ARS-RRC, Athens, GA, USA

2:30 T17 • Rapid Enumeration of *Lactobacillus* spp. in Salad Dressings Using the BioSys – LORALYN H. LEDENBACH, and Paul A. Hall, Kraft Foods, Inc., Glenview, IL, USA

2:45 T18 • Paper Kits for the Rapid Enumeration of Total and Coliforms/*E. coli* – Sujira Maneerat, Kooranee Tuitemwong, PRAVATE TUITEMWONG, and Warapa Mahakarnchanakol, Food Science & Tech., KMUT Thonburi, Bangkok, 10140, Thailand

3:00 • Break

3:30 T19 • Inoculum Size of *Clostridium botulinum* 56A Spores Influences Time-to-detection and Percent Growth-positive Samples – LIHUI ZHAO, Thomas J. Montville, and Donald W. Schaffner, Cook College/Rutgers University, New Brunswick, NJ, USA

3:45 T20 • Estimating the Growth of *Listeria monocytogenes* and *Yersinia enterocolitica* Microcolonies under Modified Atmospheres at 4°C and 8°C Using a Model Food System – WENDY ANNE HARRISON, Adrian Peters, and Louise Fielding, Food Safety Research Group, University of Wales Institute, Cardiff, South Glamorgan, Wales, UK

4:00 T21 • The Development of a Quantitative Assay for the Detection of Genetically Modified Soy Protein – Mark A. Jensen, Susan Y. Tseng, SCOTT J. FRITSCHEL, and Gregory Elliott, Qualicon, Inc., Wilmington, DE, USA

4:15 T22 · A Comparison of the Traditional Three-tube Most Probable Number (MPN) Method with the Petrifilm, SimPlate, Bactometer Conductance, and BioSys Optical Methods for Enumerating *Escherichia coli* from Broiler Carcasses and Ground Beef – SCOTT M. RUSSELL, University of Georgia, Athens, GA, USA

4:30 T23 · Evaluation of the BioSys Optical Method for Rapidly Enumerating Populations of Aerobic Bacteria, Coliforms, and *Escherichia coli* (*E. coli*) from Ground Beef – SCOTT M. RUSSELL, University of Georgia, Athens, GA, USA

4:45 T24 · A Survey of *Campylobacter* Diversity in Poultry Samples Using a Network of Automated Ribotyping Systems with the Restriction Enzyme PstI – JAMES L. BRUCE, S. J. Fritschel, N. J. Stern, J. Van Der Plas, M. Havekes, H. Rahaoui, D. Koster, P. De Boer, J. Wagenaar, and W. Jacobs-Reitsma, Qualicon Inc., Wilmington, DE, USA

P2 Inactivation and Control Methods II

3:00 p.m. – 6:00 p.m.
(Authors present 3:30 p.m. – 5:30 p.m.)

P38 · Effect of Freezing on the Isolation and Survival of Plasmid-bearing Virulent *Yersinia enterocolitica* in Pork – SAUMYA BHADURI, USDA-ARS-NAA-ERRC, Wyndmoor, PA, USA

P39 · Effect of Growth Temperature or Starvation on the Radiation Resistance of *Escherichia coli* O157:H7 in a Model System and Ground Beef – ELAD I. STOTLAND, A. F. Mendonca, J. S. Dickson, and D. G. Olson, Iowa State University, Ames, IA, USA

P40 · Susceptibilities of *Staphylococcus aureus*, *Listeria* and *Salmonella* Isolates Associated with Poultry Processing to Six Antimicrobial Agents – Ifigenia Geornaras, and ALEX VON HOLY, University of the Witwatersrand, Wits, South Africia

P41 · Invasive Ability and Tolerance of Acid-adapted and Non-adapted *Salmonella* Typhimurium DT104 to Stress Conditions – PINA M. FRATAMICO, USDA-ARS-ERRC, Wyndmoor, PA, USA

P42 · Heat Adaptation Induced Cross-protection against Osmotic Stress in *Salmonella* Typhimurium DT104 – SUREE NANASOMBAT, and Joseph Frank, University of Georgia, Athens, GA, USA

P43 · Multiple Stress Studies in *Arcobacter* Species – D'SA ELAINE M., M. A. Harrison, and V. K. Juneja, University of Georgia, Athens, GA, USA

P44 · Influence of Fruit Variety, Harvest Technique, Culling, and Storage on the Microbial Composition and Patulin Contamination of Unpasteurized Apple Cider – ROBERT I. MERKER, Suzanne Keller, Hsu Ling Tan, Stuart Chirtel, Kirk Taylor, Lauren Jackson, and Arthur Miller, FDA/CFSAN/OSRS, Washington, D.C., USA

P45 · Organic Acids and Hydrogen Peroxide Inhibit Microbial Viability in Fresh Juices – KALI KNIEL PHELPS, J. Koontz, S. S. Sumner, D. A. Golden, C. R. Hackney, and B. W. Zoecklin, Virginia Tech., Blacksburg, VA, USA

P46 · Survival of Enterohemorrhagic *Escherichia coli* O157:H7 Strains in Wounded Apple Tissue during Temperature Abuse – MARLENE E. JANES, Shoreh Kooshesh, Rama Nannapaneni, and Michael G. Johnson, University of Arkansas, Fayetteville, AR, USA

P47 · Loss of Fumonisin during the Corn Flake Process with and without Sugars – MAURICIO M. CASTELO, and Lloyd B. Bullerman, University of Nebraska-Lincoln, Lincoln, NE, USA

P48 · Peroxidative Stress Adaptation and Thermal Cross-resistance in *Escherichia coli* O157:H7 933 Subjected to Sublethal Doses of Peroxyacetic Acid Sanitizer – C. D. ZOOK, F. F. Busta, and L. J. Brady, University of Minnesota, St. Paul, MN, USA

P49 · Effect of Inhibitors of Branched-chain Keto Acid Dehydrogenase on the Growth, Fatty Acid Composition, and Enzyme Activity of *Listeria monocytogenes* – Tonia Wooldridge, Thanoja Sirimanne, Pascal Drouin, David Labeda, Philip D. Morse II, and BRIAN JAMES WILKINSON, Illinois State University, Normal, IL, USA

P50 · *Zygosaccharomyces bailii* Time-to-growth as Affected by Temperature, Water Activity, pH and Antimicrobials – ENRIQUE PALOU, and A. Lopez-Malo, Universidad de las Américas-Puebla, Puebla, Mexico

P51 · Effect of Salt on Survival of *Shigella flexneri* as Affected by Temperature and pH – LAURA L. ZAIKA, USDA-ARS-NAA-ERRC, Wyndmoor, PA, USA

P52 · Use of Polystyrene Foam Net Containing Silver-coated Ceramic to Extend Shelf Life of Longissimus Steaks from Korean Cattle – Hyung Jung Kim, Chanyoung Park, JONG-BANG EUN, and Chonnam National University, Kwangju, South Korea

P53 · Impact of Heating Stress on the Behavior of Two *Listeria monocytogenes* Strains in a Broth which Mimics the Camembert Cheese Composition – EMMANUELLE HELLOIN, Marielle Gay, and Françoise Ergan, ASEPT, 53020 Laval Cedex 9, France, France

P54 · Unrelatedness of Nisin Resistance and Antibiotic Resistance in *Listeria monocytogenes* – Michael Chikindas, Jennifer Cleveland, Jie Li, and THOMAS J. MONTVILLE, Cook College, New Brunswick, NJ, USA

P55 · Changes in Populations and Acid Tolerance of *Listeria monocytogenes* in Fresh Beef Decontamination Fluids – JOHN SAMELIS, J. N. Sofos, P. A. Kendall, and G. C. Smith, Colorado State University, Fort Collins, CO, USA

P56 · Evaluation of *Listeria monocytogenes* in Vaccum-packed Gravad Salmon – E. M. Kinoshita, F. A. Silvestre, MARIZA LANDGRAF, and M. T. Destro, University of Sao Paulo, Sao Paulo, Brazil

P57 · Fate of *Escherichia coli* O157:H7 in Channel Catfish Pond Water – RICO SUHALIM, Y. W. Huang, and G. Burtle, University of Georgia, Athens, GA, USA

P58 · Internalization of *Escherichia coli* Outside Laboratory Conditions – BROOKE SEEMAN, K. K. Phelps, and S. S. Sumner, Virginia Tech, Blacksburg, VA, USA

P59 · Localization and Tissue Damage Induced by Enterohemorrhagic *Escherichia coli* O157:H7 in Apple Tissue – MARLENE E. JANES, Rama Nannapaneni, and Michael G. Johnson, University of Arkansas, Fayetteville, AR, USA

P60 · Modeling the Survival of Enterohemorrhagic *Escherichia coli* in Uncooked Fermented Salami – DIANE S. WOOD, Mansel W. Griffiths, Shai Barbut, and Trevor Pond, Canadian Research Institute for Food Safety, Guelph, Ontario, Canada

P61 · Growth of *Escherichia coli* O157:H7 in Biofilms with Microorganisms Isolated from Meat Processing Environments – DONG KWAN JEONG, K. Y. Park, and J. S. Lee, Kosin University, Pusan, Korea

P62 · Growth and Survival of *Escherichia coli* O157: H7 and Nonpathogenic *E. coli* in Cheddar Cheese Curds – KATHLEEN A GLASS, Ann Larson, Angelique Smith, Kendra Thornton, and Eric A. Johnson, University of Wisconsin-Madison, Madison, WI, USA

P63 · Survival of Enterohemorrhagic *Escherichia coli* O157:H7 in Retail Mustard – CAROLYN M. MAYERHAUSER, Reckitt Benckiser, Montvale, NJ, USA

P64 · Environmental Conditions Affecting Survival of *Escherichia coli* O157:H7 and *Salmonella* Typhimurium DT104 in Land-spread Manure – ANTHONY RICHARD ARMENT, and Steven C. Ingham, University of Wisconsin-Madison, Madison, WI, USA

P65 · Effect of Antacid on Survival of *Vibrio vulnificus* and *Vibrio vulnificus* Phage in a Simulated Gastrointestinal Model – JAHEON KOO, Angelo DePaola, and Douglas L. Marshall, Virginia Seafood Agricultural Research and Extension Center, Hampton, VA, USA

P66 · Survival of *Vibrio vulnificus* in Raw and Fried Mussels (*Mytilus galloprovincialis*) being Consumed as Traditionally in Turkey – GURHAN CIFTCIOGLU, and Acar M. Susur, Istanbul University, Avcilar, Istanbul, Turkey

P67 · Microbial Population, Chemical Status and Shelf Stability of Smoked and Non-smoked Country-cured Hams – SUSANA M. PORTOCARRERO, M. Newman, B. Mikel, and B. Moody, University of Kentucky, Lexington, KY, USA

P68 · Fate of Bacterial Pathogens Inoculated on Fresh Pork during Simulated Temperature Abuse at Distribution – K. Segomelo, M. L. Kain, G. Bellinger, K. E. Belk, J. Scanga, JOHN N. SOFOS, and G. C. Smith, Colorado State University, Fort Collins, CO, USA

P69 · Cooling Rate Effect on Outgrowth of *Clostridium perfringens* in Cooked Turkey Products – FROST M. STEELE, and Kevin H. Wright, Brigham Young University, Provo, UT, USA

P70 · Comparing Attachment Strength, Heat Tolerance and Alkali Resistance of Pathogenic and Non-pathogenic Bacteria on Orange Surfaces – STEVEN PAO, and Craig L. Davis, Florida Dept. of Citrus, Lake Alfred, FL, USA

P71 · Potential for Transference of Inoculated and Indigenous Bacteria from the Non-wounded Rind of Melons to the Interior Edible Flesh – TREVOR V. SUSLOW, M. Zuñega, J. Wu, L. J. Harris, and T. Parnell, University of California-Davis, Davis, CA, USA

P72 · Survival of Poliovirus on Fresh Produce – A. S. Kurdziel, N. Wilkinson, and NIGEL COOK, Central Science Laboratory, York, UK

TUESDAY MORNING – AUGUST 8, 2000

S10 *Campylobacter* Performance Standards: Implementation and Control

(Sponsored by IAFP Foundation Fund)

Co-Convenors: Anne Marie McNamara and Norman J. Stern

8:30 · Update on FSIS *Campylobacter* Programs – GERALDINE RANSON, USDA Food Safety and Inspection Service, Washington, D.C., USA

9:00 · Control of *Campylobacter* in Poultry from Farm to Table – ERIC LINE, USDA-ARS-RRC, Athens, GA, USA

9:30 · Control of *Campylobacter* in Pork from Farm Through Slaughter – JAMES S. DICKSON, Iowa State University, Ames, IA, USA

10:00 · Break

10:30 · Current *Campylobacter* Research Needs on Behalf of Public Health – F. J. (ERIC) BOLTON, Central Public Health Laboratory, London, UK

11:00 · Perspectives and Possibilities for *Campylobacter* Performance Standards – NORMAN J. STERN, USDA-ARS-RRC, Athens, GA, USA

11:30 · Panel Discussion

S11 Genetic Methods to Track Microoganisms in Food Production and Processing

Co-Convenors: Stan Bailey and Paul Hall

8:30 · Advantages and Disadvantages of Different Genetic Techniques – MARTIN WIEDMANN, Cornell University, Ithaca, NY, USA

9:00 · Interpreting Genetic Results – What do the Results Mean? – TIM BARRETT, CDC, Atlanta, GA, USA

9:30 · Tracking *E. coli* O157:H7 in Wisconsin Dairy Farms – JACK SHERE, University of Wisconsin, Madison, WI, USA

10:00 · Break

10:30 · Tracking *Campylobacter* in Poultry Production and Processing – KELLI HIETT, USDA-ARS-RRC, Athens, GA, USA

11:00 · Using Genetic Tests to Understand Microbial Ecology of Food Production Systems – JOSEPH MEYER, Kraft Foods, Glenview, IL, USA

11:30 · Using Genetic Methods to Identify/Detect Microoganisms that Effect Quality in the Brewing Industry – MIKE BARNEY, Miller Brewing Company, Milwaukee, WI, USA

S12 Issues Facing Today's Large Dairy Producers

Convenor: John C. Bruhn

8:30 · Management Issues of Expanding an Operation – RON ST. JOHN, Producer, Trenton, FL, USA

9:00 · Nutrient Management and Waste Issues – JOHN WORLEY, University of Georgia, Athens, GA, USA

9:30 · Design of Milking Center and Other Buildings – BILL BICKERT, Michigan State University, East Lansing, MI, USA

10:00 · Break

10:30 · Decisions in Choosing a Milking System – BILL BICKERT, Michigan State University, East Lansing, MI, USA

11:00 · Employee and Labor Issues – WILLIAM THOMAS, University of Georgia Extension Service, Athens, GA, USA

11:30 · Dairy Farming and Environment Regulatory Issues – CARISSA ITLE, National Milk Producers Federation, Arlington, VA, USA

S13 Approaches to Food Safety in Latin America and Caribbean Countries

Co-Convenors: Ewen Todd and James Estupian

8:30 · Surveillance of Foodborne Diseases in Countries of Latin America and the Caribbean with Emphasis in Emerging Pathogens – JAMES ESTUPIAN, Pan America Health Organization/WHO, Buenos Aires, Argentina

9:00 · Food Safety Approaches in Latin America and the Caribbean – JAIRO ROMERO, Ingeniero en Alimentos, Bogata, Colombia

9:30 · Latin America Network of Food Analysis Laboratories – MARITZA COLLON PULANO, FDA, Rockville, MD, USA

10:00 · Break

10:30 · Food Safety Initiative in Caribbean Countries – RONALD GORDON, CARICOM Secretariat, Georgetown, Guyana

11:00 · Food Safety Aspects of Meat Exporation from Latin America and the Caribbean – To be announced

11:30 · Food Safety Aspects fo Fruits and Vegetables Exportation from Latin America and the Caribbean – JAIME ALMONTE

T3 Inactivation and Control Methods I

8:30 T25 · Inactivation of Bacterial Foodborne Pathogens on Fresh Produce by Low-dose Gamma Irradiation – DONALD E. CONNER, S. A. Berry, C. A. Sundermann, C. I. Wei, S. J. Weese, and F. M. Woods, Auburn University, Auburn University, AL, USA

8:45 T26 · Effect of Irradiation Temperature on Inactivation of *E. coli* O157:H7 and *Staphylococcus aureus* – DONALD W. THAYER, and Glenn Boyd, USDA-ARS-ERRC, Wyndmoor, PA, USA

9:00 T27 · Non-thermal Processing Alternatives for the Effective Elimination of *E. coli* O157:H7 in Apple Cider – NESE BASARAN, John Churey, and Randy W. Worobo, Cornell University, Geneva, NY, USA

9:15 T28 · Inactivation of *Escherichia coli* O157:H7 and *Listeria monocytogenes* on Apples and in Fresh Apple Cider Using Sonication and Copper Ion Water – STEPHANIE L. RODGERS, J. N. Cash, and E. T. Ryser, Michigan State University, East Lansing, MI, USA

9:30 T29 · Influence of Environmental Stresses on Biocide Susceptibility of *Escherichia coli* O157:H7 – KAREN ELIZABETH MIDDLETON, Michael P. Whitehead, David J. Hill, John T. Holah and Hazel Gibson, University of Wolverhampton, School of Applied Sciences, Wolverhampton, England

9:45 T30 · Inhibition of *Listeria monocytogenes*, *Salmonella* Typhimurium DT104 and *Esherichia coli* O157:H7 on Bologna and Summer Sausage Using Whey Protein Isolate-based Edible Films Containing Antimicrobials – ARZU CAGRI, Z. Ustunol, and E. Ryser, Michigan State University, East Lansing, MI, USA

10:00 · Break

10:30 T31 · Disinfection of Bacterial Pathogens and Selected Viruses on Fresh Romaine Lettuce – MICHAEL LEE BRADLEY, George Lukasik, and Samuel Farrah, University of Florida, Gainesville, FL, USA

10:45 T32 · The Antimicrobial Efficacy of Herbs in Marinated Chicken – MONDONNA F. CATE, F. A. Draughon, J. R. Mount, and D. A. Golden, University of Tennessee, Knoxville, TN, USA

11:00 T33 · Effect of Fat Content, Evaporative Cooling and Food Type on Pathogen Survival during Microwave Heating – APRIL HIX, S. Sumner, K. Mallikarjunan, and C. Hackney, Virginia Tech, Blacksburg, VA, USA

11:15 T34 · Microbiological Evaluation and Manufacturing Practices of Sprouts in Canada – MARIA NAZAROWEC-WHITE, F. Veillette, and I. Laberge, Canadian Food Inspection Agency, Nepean, Ontario, Canada

11:30 T35 · Effect of Blanching Cucumbers on the Microflora of Non-acidified Refrigerated Pickles – FREDERICK BREIDT, JR., L. Reina, and H. P. Fleming, USDA-ARS, Raleigh, NC, USA

11:45 T36 · Effects of Water Washing and Rinsing Temperature on Handwashing Efficacy – Vidhya Gangar, Maria Arenas, Ann Schultz, Daryl Paulson, and BARRY MICHAELS, Georgia Pacific Corp., Palatka, FL, USA

P3 General Food Microbiology and Education

10:00 a.m. – 1:00 p.m.
(Authors present 10:30 a.m. – 12:30 p.m.)

P73 · Cytotoxicity and Buffering Capacity of an Alkaline Tolerant Dairy-associated *Bacillus* Isolate – DENISE LINDSAY, Volker Brözel, and Alex von Holy, University of the Witwatersrand, Wits, South Africia

P74 · Two Novel Genes Related to Low Temperature Growth of *Listeria monocytogenes* as Identified Using Transposon-induced Cold Sensitive Mutants cld-14 and cld-27 – SIQING LIU, Philip D. Morse II, and Brian J. Wilkinson, Illinois State University, Normal, IL, USA

P75 · Transposon Insertions in Branched-chain Alpha-keto Acid Dehydrogenase Region of Two Cold-sensitive *Listeria monocytogenes* Mutants – KUN ZHU, Anming Xiong, R. K. Jayaswal, Philip D. Morse II, and Brian J. Wilkinson, Illinois State University, Normal, IL, USA

P76 · A Risk-based Evaluation of Traditional and Social Marketing Methods of Food Hygiene Education – ELIZABETH CLAIRE REDMOND, C. Griffith and A. Peters, Food Safety Research Group, University of Wales Institute, Cardiff, Cardiff, South Glamorgan, Wales, UK

P77 · Foodborne Disease Reporting in America: Closing the Gaps in Our Federal Food-safety Net – CAROLINE SMITH DEWAAL, Lucy Alderton, and Michael Jacobson, Center for Science in the Public Interest, Food Safety Program, Washington, D.C., USA

P78 · Food Handlers' Beliefs about Food Safety Procedures and Risks – DEBBIE CLAYTON, Chris Griffith, Adrian Peters, and Patricia Price, University of Wales Institute, Cardiff, UK

P79 · The Repeatability and Reproduiability of Food Safety Behavior in the Domestic Environment – ELIZABETH CLAIRE REDMOND, C. Griffith, and A. Peters, Food Safety Research Group, University of Wales Institute, Cardiff, South Glamorgan, Wales, UK

P80 · Prevalence of Unsafe Practices during Preparation of Homemade Food in Argentina – ALICIA NOEMÍ CALIFANO, Graciela De Antoni, Leda Gianuzzi, and Rodolfo Mascheroni, CIDCA, Universidad Nacional de La Plata, Facultad de Ciencias Exactas, La Plata, Buenos Aires, Argentina

P81 · Evaluation of a Targeted Intervention Food Safety Program for Women Who are Pregnant and/or Have Young Children – JODI R. BUNDE, and Virginia N. Hillers, Oregon State University, Corvallis, OR, USA

P82 · Cost, Benefits and Attitudes Towards HACCP Implementation in English Butchers' Shops – Matthew Mortlock, ADRIAN PETERS, and Chris Griffith, University of Wales Institute, Cardiff (UWIC), Cardiff, England

P83 · Development of a Competitive Exclusion Product to Reduce *Escherichia coli* O157:H7 in Cattle – DIVYA JARONI, Mindy Brashears and Joy Trimble, University of Nebraska-Lincoln, Lincoln, NE, USA

P84 · Isolation and Selection of Lactic Acid Bacteria from Meat Products to Inhibit Foodborne Pathogens – ALEJANDRO AMEZQUITA, Mindy Brashears, and Joy Trimble, University of Nebraska-Lincoln, Lincoln, NE, USA

P85 · Biocontrol of Mold Growth Using *Bacillus pumilus* and *Lactobacillus* Species Isolated from Foods – JITKA STILES, C. Munimbazi, M. Plockova, J. Chumchalova, and L. B. Bullerman, University of Nebraska-Lincoln, Lincoln, NE, USA

P86 · Employing *Citrobacter rodentium* as a Surrogate for *Escherichia coli* O157:H7 in a Mouse Model to Investigate the Effects of the Probiotic *Lactobacillus acidophilus* on Pathogen Binding in the Large Intestine – JEFFREY J. VARCOE, Frank Busta, and Linda Brady, University of Minnesota, St. Paul, MN, USA

P87 · Purification and Characterization of an Anti-listerial Bacteriocin Produced by *Leuconostoc* sp. W65 – SEJONG OH, John J. Churey, Saehun Kim, and Randy W. Worobo, Cornell University, Geneva, NY, USA

P88 · Resistance of *Listeria monocytogenes* to Bacteriocins of Lactic Acid Bacteria – ANNE BOUTTEFROY, and Jean-Bernard Milliere, ASEPT, 53020 Laval Cedex 9, France, France

P89 · Botulinal Toxin Production in Reduced-fat and Fat-free Pasteurized Process Cheese Products – KATHLEEN A. GLASS, and Eric A. Johnson, Food Research Institute, UW-Madison, Madison, WI, USA

P90 · Antimicrobial Activity of Several Spices and Organic Acid Solutions Tested against *Arcobacter butzleri* – ROBERT TODD HANCOCK, and Mark A. Harrison, University of Georgia, Athens, GA, USA

P91 · Trans-2-Hexenal, as an Antimicrobial Agent – M. A. Anandappa, and MELISSA C. NEWMAN, University of Kentucky, Lexington, KY, USA

P92 · Carvacrol, Citral, Eugenol, Thymol, Vanillin, Potassium Sorbate and Sodium Benzoate Inhibitory Concentrations for *Aspergillus flavus* at Selected Water Activities and pHs – AURELIO LÓPEZ-MALO, and S. M. Alzamora, Universidad de las Americas-Puebla, Puebla, Mexico

P93 · Antimicrobial Effect of Honey on Hydrated Batter Mix – YAO-WEN HUANG, H.Y. Chu and M. Harrison, University of Georgia, Athens, GA, USA

P94 · Natural Antimicrobials as Potential Replacements for Calcium Propionate in Bread – Tracey-Lee Pattison, and ALEX VON HOLY, University of the Witwatersrand, Wits, South Africia

P95 · Effect of Natural Antimicrobials on Bakers' Yeast – Tracey-Lee Pattison, and ALEX VON HOLY, University of the Witwatersrand, Wits, South Africia

P96 · Prevalence of *Pseudomonas* spp. in Process Water, Recycled Water and Dairy Products – JILL GEBLER, Murray Goulburn Co-op Co. Ltd, Yarram, VICTORIA, Australia

P97 · Population Changes of Pathogenic Bacteria Inoculated in Fresh Pork Following Chilled Storage and Simulated Consumer Temperature Abuse – K. Segomelo, M. L. Kain, G. Bellinger, K. E. Belk, J. Scanga, JOHN N. SOFOS, and G. C. Smith, Colorado State University, Fort Collins, CO, USA

P98 · Prevalence of *Listeria monocytogenes*, *Salmonella* Typhimurium and *Yersinia enterocolitica* on Incoming Hogs and Fresh Pork during and after Slaughter – RAJESH K. SHARMA, Elliot T. Ryser, and Wesley N. Osburn, Michigan State University, East Lansing, MI, USA

P99 · Levels of Microbial Contamination in United States Pork Retail Products – ELIZABETH ANNE DUFFY, G. R. Bellinger, A. Pape, K. E. Belk, J. N. Sofos, and G. C. Smith, Colorado State University, Fort Collins, CO, USA

P100 · Microbial Contamination Occurring on Lamb Carcasses Processed in the United States – ELIZABETH ANNE DUFFY, S. B. LeValley, M. L. Kain, K. E. Belk, J. N. Sofos, J. D. Tatum, G. C. Smith, and C. V. Kimberling, Colorado State University, Fort Collins, CO, USA

P101 · Sampling of Dairy Cattle for *Listeria monocytogenes* – MATTHEW R. EVANS, Valerie W. Ling, F. Ann Draughon, and Stephen P. Oliver, University of Tennessee, Knoxville, TN, USA

P102 · Incidence and Antibiotic Resistance of *Salmonella* spp. Cultures Isolated from Animal Hide and Beef Carcasses – RICHARD TODD BACON, John N. Sofos, Keith E. Belk, and Gary C. Smith, Colorado State University, Fort Collins, CO, USA

P103 · Surveillance of *Arcobacter* in Various Environmental Sources – LEE G. JOHNSON, and Elsa Murano, Texas A&M University, College Station, TX, USA

P104 · Presence of *Campylobacter*, *Escherichia coli* and *Salmonella* in Retail Meats – CUIWEI ZHAO, B. Ge, J. De Villena, R. Sudler, E. Yeh, and J. Meng, University of Maryland, College Park, MD, USA

P105 · Antibiotic Resistance Pattern of *Campylobacter* spp. Isolated from Boilers Processed in Air and Immersion Chill Processing Facilities – MARCOS XAVIER SANCHEZ, W. M. Fluckey, M. Brashears, and S. R. McKee, University of Nebraska-Lincoln, Lincoln, NE, USA

P106 · Characterization of Antibiotic Resistance in Shiga Toxin-producing *Escherichia coli* – SHAOHUA ZHAO, D. White, S. Ayers, S. Friedman, B. Ge, J. Meng, L. English, D. Wagner, and S. Gaines, FDA, Laurel, MD, USA

P107 · Evidence of Toxin Production by *Bacillus* Strains Isolated from Street-vended Foods in Johannesburg, South Africa – Francina Mosupye, Denise Lindsay, and ALEX VON HOLY, University of the Witwatersrand, Wits, South Africia

P108 · Microbiological Quality of Bottled Water – HASSAN GOURAMA, Lynette Heffner, and Lauren Anton, Pennsylvania State University, Reading, PA, USA

P109 · Identification and Molecular Characterization of Amine-producing Strains of *Stenotrophomonas maltophilia* Isolated from White Muscle of Fresh and Frozen Albacore Tuna (*Thunnus alalunga*) – Begoña Ben-Gigirey, Juan M. Vieites, Tòmas G. Villa, and JORGE BARROS-VELÁZQUEZ,University of Santiago de Compostela, Lugo, Lugo, Spain

P110 · Microbial Ecology of Muffins Based on Cassava and Other Non-wheat Flours – Shobna Chauhan, Christine Rey, Denise Lindsay, and ALEX VON HOLY, University of the Witwatersrand, Wits, South Africia

TUESDAY AFTERNOON — AUGUST 8, 2000

General Session

S14 Bioterrorism and Food Protection

Co-Convenors: F. Ann Draughon and Richard V. Lee

1:30 · Strategic Bioterrorism and the Food Supply – RAYMOND HARBISON, University of South Florida, Tampa, FL, USA

1:50 · Bioterrorism as a Public Health Event – SCOTT LILLIBRIDGE, CDC, Atlanta, GA, USA

2:10 · Bioterrorist Targets in the Agricultural Industry – DALE HANCOCK, Washington State University, Pullman, WA, USA

2:30 · Medical Implications of a Foodborne Bioterrorist Event – RICHARD LEE, Suny, Buffalo, NY, USA

2:50 · Responding to a Bioterrorist Event – GARY HURST, US Army, USA

3:10 · The Role of Food Protection Organizations in Contributing to Preparedness Against Bioterrorist Events – ANN DRAUGHON, University of Tennessee, Knoxville, TN, USA

Business Meeting (4:00 p.m. – 5:00 p.m.)

WEDNESDAY MORNING – AUGUST 9, 2000

S15 Food Biotechnology: Perspectives, Challenges and Opportunities

Co-Convenors: Robert B. Gravani and Sylvia Rowe

8:30 · Perspectives on Biotechnology: Past, Present and Future – MICHAEL PHILLIPS, Biotechnology Industry Organization, Washington, D.C., USA

9:00 · Understanding Consumer Perceptions of Biotechnology – SYLVIA ROWE, International Food Information Council, Washington, D.C., USA

9:30 · Biotechnology in Production Agriculture: A Scientific Perspective – MARTINA MCGLOUGHLIN, University of California-Davis, Davis, CA, USA

10:00 · Break

10:30 · The Environmental Impact of Biotechnology – JANET ANDERSEN, US Environmental Protection Agency, Washington, D.C., USA

11:00 · Food Product Enhancement through Biotechnology – To be announced

11:30 · Detecting Biotechnologically Derived Ingredients in Food – To be announced

S16 Biosensors and Real Time Detection Systems

Co-Convenors: Kathleen Glass and Eric Johnson

8:30 · Fundamentals of Biosensors and Real-Time Detection Systems – ROBERT BRACKETT, FDA, Washington, D.C., USA

9:00 · Use of Colorimetric Sensors for Detection of Foodborne Pathogens – PETER DAVID, DTEK, Los Altos Hills, CA, USA

9:30 · Rapid Detection of *Salmonella* Using an Immunoassay-based Biosensor – DAVID S. GOTTFRIED, Georgia Tech Research Institute, Atlanta, GA, USA

10:00 · Break

10:30 · Detection of Pathogens by Immunomagnetic-electrochemiluminescence (IM-ECL) – GERRY CRAWFORD, USDA-REE-ARS-NAA-ERRC-MB&BR, Wyndmoor, PA, USA

11:00 · Application of Flow Cytometry Techniques as Real Time Detectors – ERIC JOHNSON, University of Wisconsin, Madison, WI, USA

11:30 · Integration and Application of Real Time Detection and Information Systems for Food Safety – DONALD CONNER, Auburn University, Auburn, AL, USA

S17 Transportation of Raw Milk and Finished Dairy Products

Convenor: Gaylord Smith

8:30 · Regulating Haulers/Drivers – MIKE CULPEPPER, Georgia Dept. of Ag., Atlanta, GA, USA

9:00 · Inspection of Farm Bulk Tankers – DAN ERICKSON, Minnesota Dept. of Ag., St. Paul, MN, USA

9:30 · Cleaning and Sanitizing Farm Bulk Tankers – PATRICK BOYLE, Readington Farms, Inc., Whitehouse, NJ, USA

10:00 · Break

10:30 · Sampling Issues – MIKE CULPEPPER, Georgia Dept. of Ag., Atlanta, GA, USA

11:00 · Owner/Operator Issues – RICK BAREFOOT, H. Fred Barefoot Trucking, Inc., Alum Bank, PA, USA

11:30 · Hauling of Finished Dairy Products – RUTH FUQUA, Quality Chekd Dairies Inc., Mt. Juliet, TN, USA

S18 Significance of Mycotoxins in the Global Food Supply

(Sponsored by ILSI-NA)

Co-Convenors: Karen Huether and Morris E. Potter

8:00 · Worldwide Mycotoxin Problems – J. DAVID MILLER, Carleton University, Ottawa, Ontario, Canada

8:45 · Aflatoxins – To be announced

9:30 · Fumonisins – WILLIAM P. NORRED, USDA-RRC, Athens, GA, USA

10:15 · Break

10:30 · Deoxynivalenol – JAMES J. PESTKA, Michigan State University, East Lansing, MI, USA

11:15 · Detection Methods for Mycotoxins in Foods – ANGELO VISCONTI, National Research Council, Bari, Italy

11:45 · Control of Mycotoxins in the Food Supply: A Food Industry Perspective – To be announced

T4 Inactivation and Control Methods II

8:30 T37 · Continuous On-line Processing of Fecal and Food Contaminated Poultry Carcasses – G. KERE KEMP, M. A. Aldrich, and M. Guerra, Alcide Corp., Redmond, WA, USA

8:45 T38 · Efficacy of Electrolyzed Water in Inactivating *Listeria monocytogenes* and *Salmonella enteritidis* on Shell eggs – Chung-Myeon Park, YEN-CON HUNG, Chyi-Shen Lin, and Robert E. Brackett, CFSQE, University of Georgia, Griffin, GA, USA

9:00 T39 · Effect of Pre-chill Skinning on the Level of *Campylobacter* Recovered from Broiler Parts – MARK E. BERRANG, and S. R. Ladely, USDA-ARS-RRC, Athens, GA, USA

9:15 T40 · Ability of Oleic Acid to Reduce the Number of Bacteria on Poultry Skin and in Rinsates of Poultry Skin – ARTHUR HINTON, JR., and Kimberly D. Ingram, RRC, Athens, GA, USA

9:30 T41 · Comparison of Three Commercial Competitive Exclusion Products on Reducing *Salmonella* in Broilers – ANOTONIO JOSE PIANTINO FERREIRA, C. S. A. Ferreira, T. Knobl, A. M. Moreno, M. R. Bacarro, M. Chen, and M. Robach, University of Sao Paulo, Sao Paulo, Brazil

9:45 T42 · Effectiveness of Potassium Lactate and Lactic Acid Against *Campylobacter* and Psychrotrophic Bacteria on Chicken Breasts – DAVID RASMUSSEN, S. Sumner, J. Eifert, C. Hackney, and S. Duncan, Virginia Tech., Blacksburg, VA, USA

10:00 · Break

10:30 T43 · Application of Natural Antimicrobial Systems for Control of *L. monocytogenes* in Foods – XINTIAN MING, Jeff Lambeseder, Fred Bender, and Bill King, Food Bioprotection, Rhodia Foods, Madison, WI, USA

10:45 T44 · Comparative Study of Semisynthetic Derivative of Natamycin and the Parent Antibiotic on the Spoilage of Shredded Cheddar Cheese – ERIC C. SULOFF, J. E. Marcy, C. R. Hackney, and S. S. Sumner, Virginia Polytechnic Institute and State University, Blacksburg, VA, USA

11:00 T45 · Co-60 Irradiation for Inactivation of *Giardia lamblia* Cysts in Water and on Tomatoes – CHRISTINE A. SUNDERMANN, B. Estridge, F. Woods, D. Conner, J. Weese, and C. Wei, Auburn University, Auburn University, AL, USA

11:15 T46 · Inhibitory Effect of Gamma Irradiation on the Growth of *Fusarium moniliforme* and Fumonisin Production – DEOG-HWAN OH, C. C. Yoo, and B. K. Park, Kangwon National University, Korea

11:30 T47 · Resistance of Poliovirus to Inactivation by High Hydrostatic Pressures – N. Wilkinson, NIGEL COOK, A. S. Kurdziel, S. Langton, and E. Needs, Central Science Laboratory, York, UK

11:45 T48 · The Effect of Thermal Processing Schedules and Unit Operations on the Quality of Blue Crab (*Callinectes sapidus*) Meat – Jennifer L. Smith, Robert Lane, Michael Jahncke, Robert Croonenberghs, and GEORGE JOSEPH FLICK, JR.,Virginia Tech., Blacksburg, VA, USA

P4 Microbiological Methods

10:00 a.m. – 1:00 p.m.
(Authors present 10:30 a.m. – 12:30 p.m.)

P111 · Evaluation of Universal Preenrichment Broth for Growth of Heat-injured Pathogens – TONG ZHAO, and Michael P. Doyle, University of Georgia, Griffin, GA, USA

P112 · Characterization of *Listeria monocytogenes* from Cold-Smoked Fish Plant by Pulsed-field Gel Electrophoresis (PFGE) – ANITA METIVIER, Antoine Berthier and Marielle Gay, ASEPT, 53020 LAVAL Cedex 9, France

P113 · *Listeria monocytogenes* Detection in Food Using an ELISA-based Method – Marie-Laure Sorin, Sébastien Faure, Sandrine Poumerol, and PATRICE ARBAULT, Diffchamb SA, 69007, Lyon, France

P114 · Factors Affecting the Isolation and Enumeration of *Escherichia coli* O157:H7 on Alfalfa Seeds – FONE MAO WU, Bala Swaminathan, Joy Wells, Larry Slutsker, Michael P. Doyle, and Larry R. Beuchat, University of Georgia, Griffin, GA, USA

P115 · Efficacy of Various Non-selective Resuscitation Media for Increased Detection of Heat-injured *Escherichia coli* O157:H7 – EDWARD E. FETZER, and Aubrey F. Mendonca, Iowa State University, Ames, IA, USA

P116 · Phosphate Buffer Increases Recovery of *Escherichia coli* O157:H7 from Frozen Apple Juice – SHERYL A. YAMAMOTO, and Linda J. Harris, University of California-Davis, Davis, CA, USA

P117 · Evaluation of FDA/BAM and Rapid Methods for Enumeration and Detection of *Escherichia coli* O157:H7 from Farm Animal Environments – CHRISTOPHER A. KIEFER, D. A. Golden, F. A. Draughon, A. G. Mathew, and S. P. Oliver, University of Tennessee, Knoxville, TN, USA

P118 · Rapid and Sensitive Identification of Viable *Escherichia coli* O157:H7 in Food by Reverse Transcription PCR – SIMA YARON, and Karl R. Matthews, Rutgers University, New Brunswick, NJ, USA

P119 · Comparison of Selective Media for Evaluating Survival of *Escherichia coli* O157:H7 in Fruit Juices – CHARITY A. LAKINS, B. L. Knox, D. A. Golden, and S. S. Sumner, University of Tennessee, Knoxville, TN, USA

P120 · Multiple Target Medium to Screen for *Enterobacteriaceae* and *Escherichia coli* in Meats – R. VICTOR LACHICA, US Army Natick Research, Development & Engineering Center, Natick, MA, USA

P121 · Media Evaluation for Recovery of Injured Cells of *Escherichia coli* O157:H7 and *Salmonella* spp. – ALEJANDRO AMEZQUITA, and Mindy Brashears, University of Nebraska-Lincoln, Lincoln, NE, USA

P122 · Comparison of Selective Enrichment Media to Recover *Salmonella* from Acidified Barbecue and Liquid Non-dairy Products – KAMESH ELLAJOSYULA, John Shields, Nadia Melnyk, and Cecelia Marshall, Rich Products Corp., Buffalo, NY, USA

P123 · Evaluation of a Lateral Flow Device for Detecting *Salmonella enteritidis* in Raw Eggs and Chicken Feces – KUN-HO SEO, P. S. Holt, B. W. Mitchell, and R. K. Gast, USDA-ARS, Athens, GA, USA

P124 · Improved Isolation of *Salmonella* from Chocolate – PETER J. STEPHENS, and Elaine E. M. Fraser, Oxoid Ltd., Basingstoke, Hampshire, England, UK

P125 · Recovery of *Salmonella* from Artificially Contaminated Dairy Feeds – YOBOUET DJE, F. A. Draughon, David A. Golden, P. Stephen Oliver, and J. Willie Taylor, University of Tennessee, Knoxville, TN, USA

P126 · Selective and Differential Properties of Chromogenic Media for Isolation of Salmonellae from Foodstuffs – PETER J. STEPHENS, and Tom Sadler, Oxoid Ltd., Basingstoke, Hampshire, England, UK

P127 · Detection of *Campylobacter jejuni* in Dairy Silage – WILLIE JAMES TAYLOR, F. A. Draughon, David Golden, Stephen Oliver, and Michelle Saul, University of Tennessee Knoxville, TN, USA

P128 · A Comparison of Isolation Protocols for Recovery of *Campylobacter jejuni* from Cattle Feces – WILLIE JAMES TAYLOR, F. A. Draughon, David Golden, Stephen Oliver, and Michelle Saul, University of Tennessee Knoxville, TN, USA

P129 · A Rapid Method to Identify and Enumerate Foodborne Pathogens Using Machine Vision – OMAR TRUJILLO, Carl Griffis, Michael Slavik, and Yanbin Li, University of Arkansas, Fayetteville, AR, USA

P130 · Detection of Guaiacol Produced by *Alicyclobacillus acidoterrestris* in Apple Juice by Sensory and Chemical Analyses – Rachel V. Orr, Robert L. Shewfelt, C. J. Huang, Sebhat Tefera, and LARRY R. BEUCHAT, University of Georgia, Griffin, GA, USA

P131 · Sampling Technique Efficacy for *Arcobacter butzleri* from Live Chickens – ROBERT MATTHEW CASTLE, J. D. Eifert, F. W. Pierson, C. T. Larsen, and C. R. Hackney, Virginia Tech., Blacksburg, VA, USA

P132 · Detection of Coliforms on Food Contact Surfaces – GINNY MOORE, Chris Griffith, and Adrian Peters, Food Safety Research Group, University of Wales Institute Cardiff (UWIC), Cardiff, UK

P133 · Detection of Zearalenone by Fluorescence Polarization Immunoassay and Its Application to Corn – JUNG-HYUN PARK, Mi-Ja Park, Kwang-Soo Ha, and Duck-Hwa Chung, Gyeongsang National University, Chinju, Gyeongnam, Korea

P134 · Screening of Deoxynivalenol Producing Fungi from Greenhouse Horticulture Soils and Products by ALP/NADP Method – DUCK-HWA CHUNG, Mi-Ja Park, Jung-Hyun Park, and Kwang-Soo Ha, Gyeongsang National University, Chinju, Gyeongnam, Korea

P135 · A Comparison of Methods for Monitoring Food Contact Surface Cleanliness – CRAIG DAVIDSON, Chris Griffith, Adrian Peters, and Louise Fielding, University College of Worcester, Henwick Grove, Worcester, UK

P136 · Spreadsheet Tool for Recording and Evaluating Microbiological Environmental Sampling Data – JOSEPH DANIEL EIFERT, H. Wang, and T. Tu, Virginia Tech., Blacksburg, VA, USA

P137 · Reverse Dot-Blot DNA/DNA Hybridization Method for the Detection of Bacteria Involved in Amine Formation in Albacore Tuna (*Thunnus alalunga*) – Begoña Ben-Gigirey, Juan M. Vieites, Shin-Hee Kim, Haejung An, Tómas G. Villa, and JORGE BARROS-VELÁZQUEZ, University of Santiago de Compostela, Lugo, Lugo, Spain

P138 · The Use of MALDI-TOF and Nanospray-Ion Trap Mass Spectrometry to the Characterization of Specific Proteins Separated by Two-dimensional Electrophoresis: Application of Proteomics to the Control of Species Substitution in Fish Products – C. Piñeiro, J. Vázquez, A. Marina, JORGE BARROS-VELÁZQUEZ, R. I. Pérez-Martín, and J. M. Gallardo, Universidad de Santiago de Compostela, Lugo, Spain

P139 · Detection of *Shigella* Using a Digoxigenin-labeled Polynucleotide DNA Probe – JOSEPH L. FERREIRA, Mark Harrison, and Paul Edmonds, FDA, Southeast Regional Laboratory, Atlanta, GA, USA

WEDNESDAY AFTERNOON – AUGUST 9, 2000

S19 The Role of Norwalk-like Viruses (NLVs) in Foodborne Disease

Co-Convenors: Dean O. Cliver and Lee-Ann Jaykus

1:30 · The Role of NLVs in Foodborne Disease – STEPHAN S. MONROE, CDC, Atlanta, GA, USA

2:00 · Environmental Contamination in a Large Hotel with a Prolonged NLV Outbreak – JOHN D. CHEESBROUGH, Public Health Laboratory, PHLS Northwest, Preston, UK

2:30 · Detection of NLVs in Foods – DORIS D. D'SOUZA, North Carolina State University, Raleigh, NC, USA

3:00 · Break

3:30 · Genetic Relatedness of NLVs in Foodborne Disease Outbreaks – STEPHAN S. MONROE, CDC, Atlanta, GA, USA

4:00 · Dose-Response Relationships of Norwalk Virus from Human Challenge Studies – CHRISTINE MOE, University of North Carolina, Chapel Hill, NC, USA

4:30 · Control of NLV Outbreak in a Large Hotel Casino – DANIEL J. MAXSON, Clark Co. Health District, Las Vegas, NV, USA

S20 International Trends in On-Farm Food Safety

Convenor: Albert Chambers

1:30 · The Australian Experience – PAUL RYAN, AgWest Trade and Development, South Perth, Western Australia

1:55 · The Irish Experience – The Clean Green Island – Food Safety Assurance Schemes – THOMAS QUIGLEY, Food Safety Authority of Ireland, Dublin, Ireland

2:20 · The Canadian Experience – Canadian On-Farm Food Safety Program – ALBERT CHAMBERS, Canadian On-Farm Safety Program, Monachus Consulting, Ottawa, Ontario, Canada

2:45 · The US Experience – DAVE PYBURN, National Pork Producers Council, Des Moines, IA, USA

3:10 · Break

3:40 · The Latin American Experience – To be announced

4:05 · Comparison of EU/US/Australian On-Farm QA/Food Safety Schemes – RICHARD BAINES, Royal Agricultural College, Cirencester, UK

4:30 · The Emerging International Standard: On-Farm Food Safety & Codex – BONNIE BUNTAIN, USDA, Washington, D.C., USA

S21 The Earth is Curved (And so are Kinetic Data)

(Sponsored by IAFP Foundation Fund and Nabisco, Inc.)

Co-Convenors: Cindy Stewart and David Legan

1:30 · Introduction

1:40 · Historical Perspective on Microbial Inactivation Data Analysis: Linear Treatments – What, How, Why (not) – FRANK BUSTA, University of Minnesota, St. Paul, MN, USA

2:10 · Non-linear Treatments of Microbial Inactivation Data – What, How, Why – MICHA PELEG, University of Massachusetts, Amherst, MA, USA

2:40 · Modeling Thermal Inactivation of *Clostridium botulinum* Spores – PETER MCCLURE, Unilever Research, Sharnbrooke, Bedford, UK

3:10 · Break

3:30 · Modeling the Effect of Relative Humidities on Heat Resistance of *Salmonella* Typhimurium DT104 – KAREN MATTICK, PHLS Food Microbiology Research Unit, Heavitree, Exeter, Devon, UK

4:00 · Implications of Non-Linear Inactivation Kinetics for Risk Assessment – MARTIN COLE, Food Safety and Quality, Food Science Australia, North Ryde, Australia

4:30 · Panel Discussion

T5 Risk Assessment and Miscellaneous

1:30 T49 · Risk Assessment of *Salmonella enteritidis* in Canadian Shell Eggs – GREG M. PAOLI, E. C. D. Todd, and W. Ross, Decisionalysis Risk Consultants, Inc., Ottawa, Ontario, Canada

1:45 T50 · A Risk Assessment Model for *Salmonella* spp., *Campylobacter jejuni*, and Chicken – THOMAS PATRICK OSCAR, USDA-ARS, Princess Anne, MD, USA

2:00 T51 · Risk Assessment for Harmful Algal Blooms – Can *Vibrio vulnificus* be a Model for These Agents? – EWEN C. TODD, William Ross, and Mark Smith, Health Protection Branch, Health Canada, Ottawa, Ontario, Canada

2:15 T52 · *Cyclospora oocysts* on Raspberries from Guatemala – A Qualitative Risk Assessment – EWEN TODD, Brent Dixon, Helene Couture, Andrea Ellis, Isabelle Laberge, and Rene Cardinal, Food Directorate, Health Canada, Ottawa, Ontario, Canada

2:30 T53 · Safety and Quality Evaluation of Thai Fermented Sausage (Nham) – KWANTAWEE VICHIENROJ PAUKATONG, and S. Kunawasen, National Center for Genetic Engineering and BioTech., Bangkok, Thailand

2:45 T54 · The Use of Household Shopping Patterns to Identify Sources of Foodborne Disease – SUSAN POWELL, Richard Attwell, and Michael Painter, Manchester Metropolitan University, Manchester, UK

3:00 · Break

3:30 T55 · Quantification and Variability Analysis of Bacterial Cross-contamination Rates in the Kitchen – YUHUAN CHEN, Fabiola P. Chea, Kristin M. Jackson, and Donald W. Schaffner, Food Risk Analysis Initiative, Rutgers University, New Brunswick, NJ, USA

3:45 T56 · The Use of Notational Analysis to Assess Cross Contamination during Domestic Food Preparation – CHRIS GRIFFITH, Craig Davidson, Adrian Peters, and Andrew Lewis, University of Wales Institute, Cardiff, UK

4:00 T57 • Contamination of Kitchen Surfaces after Domestic Food Preparation – CHRIS GRIFFITH, Elizabeth Redmond, and Adrian Peters, University of Wales Institute, Cardiff, UK

4:15 T58 • The Significance of Hand Drying after Handwashing – Vidhya Gangar, Eric Meyers, Heidi Johnson, Michael S. Curiale, and BARRY MICHAELS, Georgia Pacific Corp., Palatka, FL, USA

4:30 T59 • Changes of Aflatoxins during the Ripening and Storage of Korean Soy Sauce and Soybean Paste and the Characteristics of the Changes – JONG-GYU KIM, Woo-Sup Roh, Yong-Wook Lee, and Lloyd B. Bullerman, Keimyung University, Taegu, Korea

4:45 T60 • Migration of *Pencillium spinulosum* from Paperboard Packaging to Extended Shelf-life Milk – LAURA SAMMONS, S. S. Sumner, C. R. Hackney, J. Marcy, S. E. Duncan, and W. Eigel, Virginia Tech., Blacksburg, VA, USA

"*Listeria monocytogenes* Risk Assessment"

Wednesday, August 9, 2000

1:30 p.m. – 5:00 p.m.

At the request of the Food & Drug Administration, a Special Session on "*Listeria monocytogenes* Risk Assessment" has been incorporated into the IAFP Annual Meeting as this topic is of great importance to our Members. The National Advisory Committee on Microbiological Criteria for Foods (NACMCF) will be meeting at the Hilton Atlanta, August 10-11 to review this risk assessment.

International Association for Food Protection

ATLANTA

August 6-9

Atlanta, Georgia

EVENT INFORMATION

Evening Events

Cheese and Wine Reception

Sunday, August 6, 2000 (8:00 p.m. – 10:00 p.m.)

A tradition continues for attendees and guests. The reception begins in the exhibit hall immediately following the Ivan Parkin Lecture on Sunday evening.

Exhibit Hall Reception

Monday, August 7, 2000 (5:00 p.m. – 6:30 p.m.)

Relax with colleagues and friends in the exhibit hall at the end of the day. Exhibitors showcase the latest developments in the industry during this informal reception.

Monday Night Social – Fernbank Museum of Natural History

Monday, August 7, 2000 (6:00 p.m. –9:30 p.m.)

A world of exciting adventure awaits you at Fernbank Museum of Natural History. At your leisure you will have the opportunity to dine with colleagues and explore unique state-of-the-art galleries and exhibitions. Fernbank uses innovative design and programming to draw natural history out of display cases and bring it to life. For a limited time only, Fernbank is featuring the world renowned collection of Egyptian art from the National Museum of Antiquities in Leiden, The Netherlands. Mummies, sculptures, jewelry and papyrus pages from the Book of the Dead are among the antiquities featured. This is the only time that these pieces will be on view in the United States before they return to The Netherlands for permanent reinstallation. Don't miss this rare opportunity!

Dinner at Stately Oaks

Tuesday, August 8, 2000 (6:30 p.m. – 10:00 p.m.)

Stately Oaks, a Greek Revival plantation home, was built in 1839 and housed Yankee officers during the Battle of Jonesboro. The home is furnished with period pieces and offers a glimpse of life in the Antebellum period. A guide will take you on an informative tour throughout the house, painting a picture of the rural South during the mid 1800s. Guests will then enjoy a delicious Southern cooked meal. You will not go away hungry!

Awards Banquet

Wednesday, August 9, 2000 (7:00 p.m. – 9:30 p.m.)

A special occasion to formally recognize the accomplishments of deserving food safety professionals. An elegant reception and dinner are followed by the awards ceremony. Business attire requested.

Daytime Tours

(Lunch included in all daytime tours)

Pop Topics

Sunday, August 6, 2000 (9:30 a.m. – 2:30 p.m.)

Today's tour will not only quench your thirst for knowledge but will also quench your thirst. Enjoy a tour of CNN and the world of Coca-Cola Museum. Watch as writers, editors, producers and technicians bring round-the-clock news coverage to over 200 countries worldwide. Take your taste buds on a trip around the globe when you sample Coke's most popular products from other countries at the first museum dedicated to the world famous soft drink, Coca-Cola. Your tour will continue to The Varsity, an Atlanta legacy, where you can order the best chili dogs and hamburgers in town. A stop at Underground Atlanta, the most popular visitor attraction in Georgia, will complete your tour.

Daytime Tours *(continued)*

Peach Buzz

Monday, August 7, 2000 (9:30 a.m. – 2:30 p.m.)

Enjoy a driving tour of Atlanta sites and take a glimpse into the lives of Atlanta's historical hometown heroes. Be a part of history at the Carter Presidential Center where you will find exhibits that focus on important twentieth century events. Continue your historical journey to the Martin Luther King, Jr. Historic District on "Sweet Auburn Avenue" and see the MLK Center, Dr. King's birth home and tomb. You will then experience a revival of genuine Southern hospitality and the finest selection of Southern homestyle food in the city at Mary Mac's Tea Room.

Diaries of the South

Tuesday, August 8, 2000 (9:30 a.m. – 2:30 p.m.)

Be swept away to one of the most exclusive areas of Georgia with a driving tour of Buckhead. Today, Buckhead is considered Atlanta's "Little Hollywood". Step back in time at the Atlanta History Center and see how locals lived over 100 years ago. Continue your journey to the elegant Swan House to witness the glitz and glamour of yesteryear. This beautiful home was built around 1920 for Mr. Inman, one of Atlanta's wealthiest citizens. Walk through the Tullie Smith Plantation, an original farmhouse circa 1800s. Personnel dressed in period costume enhance the multi-sensory experience and offer a charming look at turn-of-the-century fashions. The highlight of the day will be the final stop at the Swan Coach House for lunch. The Swan Coach House presents gourmet cuisine, accented with Southern flavors. Encircled by colorful gardens and natural woodlands, this early 20th century carriage house was once part of the Inman estate.

Affiliate Educational Session

Affiliate Educational Session

Saturday, August 5, 2000 (2:00 p.m. – 4:00 p.m.)

Attention Affiliate delegates, gain insights on Affiliate organizational issues. Be a leader for your Affiliate and participate in this educational experience.

New Member Reception and Orientation

New Member Reception

Saturday, August 5, 2000 (4:30 p.m. – 5:30 p.m.)

Is this your first time attending the Annual Meeting? If so, you are invited to attend this orientation session. Learn how to get involved in Committees and get the most out of attending the Meeting. We look forward to your participation.

Committee Meetings

Committee Meetings

Sunday, August 6, 2000 (7:00 a.m. – 5:00 p.m.)

Share a wealth of knowledge and expertise. Committees and Professional Development Groups (PDGs) plan, develop and institute many of the Association's projects. Technical challenges facing the food safety industry are discussed, examined and debated. Volunteer to serve on any number of committees or PDGs that plan and implement activities to meet the Association's mission. Everyone is welcome.

Student Luncheon

Student Luncheon

Sunday, August 6, 2000 (12:00 p.m. – 1:30 p.m.)

Take charge of your career today! A Student Professional Development Group (PDG) has formed to provide students the opportunity to network with peers and serve as a point for food safety employers to seek qualified applicants. Sign up for the luncheon today to get involved. The purpose of the luncheon is to establish objectives and responsibilities as a PDG and discuss plans for the future. Dr. Anna Lammerding, Chief of Microbial Food Safety Risk Assessment from Health Canada and Mr. Gale Prince, Director of Regulatory Compliance at The Kroger Co. will speak about challenges and opportunities in the field of food safety.

Golf Tournament

The Golf Club at Bradshaw Farm

Sunday, August 6, 2000 (6:00 a.m. – 2:00 p.m.)

Enjoy spectacular views of the northern Georgia mountains as you join your friends and colleagues in a round of golf at The Golf Club at Bradshaw Farm. Everyone is invited to participate in this best-ball tournament. Built on historic farm property, the unique barn-style club house is reminiscent of the great history attached to the course. With elevated tees, tree-lined bermuda fairways and meticulously groomed bentgrass greens, Bradshaw Farm remains one of the most highly regarded layouts in the Atlanta metro area and is perfect for golfers of all skill levels. What an ideal way to kick off the 87th Annual Meeting!

International Association for Food Protection

87th Annual Meeting

6200 Aurora Avenue, Suite 200W
Des Moines, IA 50322-2863, USA
Phone: 800.369.6337 • 515.276.3344
Fax: 515.276.8655
E-mail: info@foodprotection.org
Web site: www.foodprotection.org

August 6-9, 2000, Atlanta, Georgia

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
- Awards Banquet
- Program and Abstract Book

4 Easy Ways to Register

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

Phone: 800.369.6337; 515.276.3344

Fax: 515.276.8655

Mail: 6200 Aurora Avenue, Suite 200W, Des Moines, IA 50322-2863

Web site: www.foodprotection.org

The early registration deadline is June 30, 2000. After June 30, late registration fees are in effect. Registration materials may be picked up on site at the Hilton Atlanta.

Refund/Cancellation Policy

Registration fees, less a $50 administration fee and any applicable bank charges, will be refunded for written cancellations received by July 14, 2000. No refunds will be made after July 14; however, the registration may be transferred to a colleague with written notification. Refunds will be processed after August 14, 2000. Additional tickets purchased are nonrefundable.

Exhibit Hours

Sunday, August 6, 2000 —	8:00 p.m. – 10:00 p.m.
Monday, August 7, 2000 —	9:30 a.m. – 1:30 p.m. 3:00 p.m. – 6:30 p.m.
Tuesday, August 8, 2000 —	9:30 a.m. – 1:30 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 $119 per night, single or double. Make your reservations as soon as possible; this special rate is available only until July 7, 2000.

Hilton Atlanta
255 Courtland Street, NE
Atlanta, Georgia 30303
404.659.2000

Evening Events

Sunday, August 6, 2000

Cheese and Wine Reception (8:00 p.m. – 10:00 p.m.)

Monday, August 7, 2000

Exhibit Hall Reception (5:00 p.m. – 6:30 p.m.)

Monday Night Social **Fernbank Museum of Natural History** (6:00 p.m. – 9:30 p.m.)

Tuesday, August 8, 2000

Dinner at Stately Oaks (6:30 p.m. – 10:00 p.m.)

Wednesday, August 9, 2000

Awards Banquet (7:00 p.m. – 9:30 p.m.)

Daytime Tours

(Lunch included in all daytime tours)

Sunday, August 6, 2000

Pop Topics (9:30 a.m. – 2:30 p.m.)

Monday, August 7, 2000

Peach Buzz (9:30 a.m. – 2:30 p.m.)

Tuesday, August 8, 2000

Diaries of the South (9:30 a.m. – 2:30 p.m.)

Golf Tournament

Sunday, August 6, 2000

Golf Tournament (6:00 a.m. – 2:00 p.m.)

International Association for Food Protection

87th Annual Meeting

6200 Aurora Avenue, Suite 200W
Des Moines, IA 50322-2863, USA
Phone: 800.369.6337 • 515.276.3344
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E-mail: info@foodprotection.org
Web site: www.foodprotection.org

Attendee Registration Form

August 6-9, 2000, Atlanta, Georgia

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

Title Employer

Mailing Address (Please specify: ❒ Home ❒ Work)

City State/Province Country Postal/Zip Code

Telephone Fax E-mail

First time attending meeting ❒ Member since: _____

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

Member Number: _____

REGISTER BY JUNE 30, 2000 TO AVOID LATE REGISTRATION FEES

REGISTRATION FEES:	MEMBERS	NONMEMBERS	TOTAL
Registration (Awards Banquet included)	$ 260 ($310 late)	$395 ($445 late)	_____
Association Student Member*	$ 45 ($ 55 late)	Not Available	_____
Retired Association Member*	$ 45 ($ 55 late)	Not Available	_____
One Day Registration: ❒ Mon. ❒ Tues. ❒ Wed.	$ 145 ($170 late)	$200 ($225 late)	_____
Spouse/Companion* (Name): _____	$ 40 ($ 40 late)	$ 40 ($ 40 late)	_____
Children 15 & Over* (Names): _____	$ 25 ($ 25 late)	$ 25 ($ 25 late)	_____
Children 14 & Under* (Names): _____	FREE	FREE	_____
*Awards Banquet not included			

EVENTS:	PER PERSON	# OF TICKETS	
Golf Tournament (Sunday, 8/6)	$ 90 ($105 late)	_____	_____
Student Luncheon (Sunday, 8/6)	$ 5 ($ 10 late)	_____	_____
Monday Night Social, Fernbank Museum (Monday, 8/7)	$ 39 ($ 44 late)	_____	_____
Children 14 and under	$ 34 ($ 39 late)	_____	_____
Dinner at Stately Oaks (Tuesday, 8/8) (Limited tickets available)	$ 60 ($ 65 late)	_____	_____
Awards Banquet (Wednesday, 8/9)	$ 40 ($ 45 late)	_____	_____

DAYTIME TOURS: (Lunch included in all daytime tours)			
Pop Topics (Sunday, 8/6)	$ 56 ($ 61 late)	_____	_____
Peach Buzz (Monday, 8/7)	$ 53 ($ 58 late)	_____	_____
Diaries of the South (Tuesday, 8/8)	$ 65 ($ 70 late)	_____	_____

TOTAL AMOUNT ENCLOSED $ _____

US FUNDS on US BANK

Payment Options:

❒ Check Enclosed ❒ VISA ❒ MasterCard ❒

Name on Card _____

Signature _____ Expiration Date _____

JOIN TODAY AND SAVE!!!

(Attach a completed Membership application)

(See page 491 of this issue for a membership application)

EXHIBITORS DO NOT USE THIS FORM

Annual Meeting Workshops

Sponsored by International Association for Food Protection

Atlanta Hilton
Atlanta, Georgia
Saturday, August 5, 2000

Workshop I — Microbiological Sampling Plans and Sample Collection for Food Processors

This hands-on workshop is intended for food processor personnel who have responsibility for microbiological sampling plans, sample analysis, data interpretation, and sample collection.

WORKSHOP TOPICS

Module A: Sample Collectian Pratacols and Recardkeeping

Madule B: Sampling Plans far Faodborne Pathagens and HACCP Programs

Module C: Sampling Plans far Food Pracessing Environments

Module D: Investigational (biased) and Attribute (random) Sampling

Module E: Sampling Plans for Starage or Shelf-life Studies

INSTRUCTORS

Joseph D. Eifert, Ph.D., Department of Food Science & Technology, Virginia Tech, Blacksburg, VA

W. Paytan Pruett, Ph.D., Silliker Laboratories Group, Inc., Homewood, IL

Gary M. Smith, Silliker Laboratories Group, Inc., Homewood, IL

WHAT PARTICIPANTS WILL LEARN

Participants will learn proper techniques for sample collection, sample handling, designing appropriate sampling plans for their products and processes. Also, how to evaluate microbiological sample analysis data and adjust their sampling plans. This workshop emphasizes microbiological sampling, rather than analytical testing.

WHO SHOULD ATTEND?

Quality Assurance and Quality Control personnel; Laboratory personnel from food processing industry and private testing laboratories; and Food Technologists and Research and Development personnel.

HOURS FOR WORKSHOP

Saturday, August 5, 2000

Registratian — 8:00 a.m. Continental Breakfast

Workshop — 8:30 a.m. – 4:30 p.m.

Lunch — Provided

Workshop II — Using Information Technology to Manage Food Safety Risks

This workshop promises to be a thought provoking, timely, and multi-disciplinary look at how Information Technology (IT) is being used in the field of food safety.

WORKSHOP TOPICS

Fram EpiInfa to FoodNet: Impraving Surveillance and Outbreak Response

Automating Audits and Inspections with Mobile Computing Salutians

eHACCP: Temperature Data Acquisition and Electronic Data Management

Impraving Lab Information Management for Better Decisian-Making

Clean Behind the Ears: Using Handheld Technolagy far Audits and HACCP Verificatian

INSTRUCTORS

Arthur Liang, Ph.D., Centers for Disease Control and Prevention (CDC), Atlanta, GA

Jahn E. Griggs, Ph.D., GSC Mobile Solutions, East Lansing, MI

Dick Ohaus, Tangent Systems, Inc., Charlotte, NC

Karen Mullery, 3M Microbiology Products, St. Paul, MN

Frank Yiannas, Walt Disney World, Co., Lake Buena Vista, FL

WHAT PARTICIPANTS WILL LEARN

Come learn from industry and regulatory leaders the historical perspectives on information management for food safety solutions; the current uses of IT ranging from foodborne disease surveillance, laboratory data management, food safety audits, HACCP and more; available software and hardware options for your unique needs; see real world examples of food safety IT applications; and perform hands-on exercises using state-of-the-art products.

WHO SHOULD ATTEND?

Food safety professionals, regulatory officials or information technology professionals involved with food processing and retail inspections, HACCP, or risk management decisions utilizing laboratory data.

HOURS FOR WORKSHOP

Saturday, August 5, 2000

Registratian — 8:00 a.m. Continental Breakfast

Workshop — 8:30 a.m. – 4:30 p.m.

Lunch — Provided

For additional information visit our Web site at www.foodprotection.org

Annual Meeting Workshops

◆ Registration Form ◆

Hilton Atlanta ◆ Atlanta, Georgia
Saturday, August 5, 2000

❑ **WORKSHOP I: Microbiological Sampling Plans and Sample Collection for Food Processors**

❑ **WORKSHOP II: Using Information Technology to Manage Food Safety Risks**

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 $_____ Signature _____
(US Funds on US Bank)

Expiration date _____

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

Register by July 7th to avoid late registration fees

◆ Registration ◆

WORKSHOP I: Microbiological Sampling Plans and Sample Collection for Food Processors

	Early Rate	Late Rate
IAFP Member	$280.00	$355.00
NonMember	$380.00	$455.00

WORKSHOP II: Using Information Technology to Manage Food Safety Risks

	Early Rate	Late Rate
IAFP Member	$290.00	$365.00
NonMember	$390.00	$465.00

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 21, 2000. 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 14, 2000. The workshop may be cancelled if sufficient enrollment is not received by July 7, 2000.

Continued from page 492

the food-allergic consumer and understands how important ingredient information is to this population.

These Special Allergy Alert notices are sent via E-mail, and via mail in specially marked envelopes. They are also posted on FAN's Web site (www.foodallergy.org), on which a sampling of recent notices can be found. The company is mentioned in the "Thumbs Up!" section of our bimonthly newsletter, *Food Allergy News,* to remind readers that "we are all in this together."

In summary, food allergy is a public health concern affecting between 6 and 7 million Americans. There is no cure for food allergies; strict avoidance, which requires reading ingredient labels, is the only way to manage food allergies. Ingredient declarations provide key information to food-allergic consumers. The accuracy and reliability of this information is critical in helping consumers manage their food allergies and avoid reactions.

The Food Allergy Network (FAN), a national nonprofit organization established to increase public awareness and provide education to affected individuals, is the food processor's communication link to food-allergic consumers. For information about FAN, visit our Web site or call 800.929.4040.

ADVERTISING INDEX

The Eighth International Symposium on Animal, Agricultural and Food Processing Wastes (ISAAFPW 2000)

OCTOBER 9-OCTOBER 11, 2000
Des Moines, Iowa
Sponsored by the American Society of Agricultural Engineers

This ASAE conference and exhibition will concentrate on managing wastes and nutrients from agricultural production and food processing, including treatment processes and utilization, and environmental impacts, particularly to land water. Phone 800-371-2723 or Email: http://asae.org

CareerServicesSection

ASSISTANT PROFESSOR — FOOD SAFETY AND QUALITY (#922990)

Department of Family, Youth, and Community Sciences (FYCS) and Food Science and Human Nutrition Department (FSHN), University of Florida. Twelve-month, tenure-track, 70% Extension (FYCS), 30% Research (FSHN). Earned Doctorate; at least one degree in Food Science, Microbiology, or closely-related field required.

Applicants should send by July 1, 2000: current curriculum vitae; formal letter of application outlining experiences/qualifications related to this position; official transcripts of all undergraduate and graduate work; four letters of reference from individuals who can assess candidate's qualifications for this position. Refer to Position #922990. The University of Florida is an EEO/EA/AA employer. Women and minorities are encouraged to apply.

To apply or obtain position announcement, contact Dr. Linda Bobroff, Chair, Search Committee, P.O. Box 110310, Gainesville, FL 32611-0310, 352.392.1895, E-mail: lebn@gnv.ifas.ufl.edu.

FDA Seeks Contract Proposals for "Detection and Analysis of Animal Proteins Prohibited from Use in Ruminant Feed."

FDA will support the development of a method for detection of prohibited mammalian material in feed for ruminants, which is a part of its effort to prevent the establishment and amplification of BSE in the US, through animal feed. The deadline for receiving proposals is June 19, 2000, 1 P.M. EDT. For more information go to www.fda.gov/oc/ofacs/contracts/default.htm.

ComingEvents

JULY

·**2-6, Xth International Congress on Animal Hygiene,** Maastricht, The Netherlands. For more information, contact Scientific Secretariat ISAH 2000, Prof. Martin Tielen, Animal Health Service, P.O. Box 4, 5280 AA, Boxtel, The Netherlands; E-mail: ISAH2000@gdvdieren.nl.

·**6-14, XXth Gala International Symposium/Workshop on Rapid Methods and Automation in Microbiology,** Kansas State University, Manhattan, KS. For further information, contact Daniel Y. C. Fung at phone: 785.532.5654; fax: 785.532.5681; E-mail: dfung@oz.oznet.ksu.edu; Web site: www.dec.ksu.edu/dec/con/microbiology.

·**16-19, 37th Annual Florida Pesticide Residue Workshop,** TradeWinds Resort, St. Pete Beach, FL. For additional information, contact Pat Beckett, Florida Dept. of Agriculture, phone: 850.488.9670; fax: 850.922.9110; E-mail: flprw@doacs.state.fl.us.

·**17-21, Laboratory Methods in Food Microbiology,** Silliker Corporate Research Center, South Holland, IL. For more information, contact Silliker Laboratories Group, Inc. at 800.829.7879; Web site: www. Silliker.com.

·**18-19, Food Plant Sanitation Workshop,** San Diego, CA. For additional information contact AIB, 1213 Bakers Way, Manhattan, KS 66505-3999; phone: 785.537.4750; fax: 785.537.1493.

·**19-21, 3rd Annual Florida Foodborne Pathogen Analysis Conference,** TradeWinds Resort, St. Pete, Beach, FL. Keynote speaker: Dr. Michael Doyle, Professor of Food Microbiology, University of Georgia. For further information, contact Dr. Peggy Melton, Florida Dept. of Agriculture, phone: 850.414.0408; fax: 850.487.6573; E-mail: flpac@doacs.state.fl.us.

·**23-27, The Society for Industrial Microbiology Annual Meeting and Exhibition,** Town & Country Hotel, San Diego, CA. For further information, contact SIM, 3929 Old Lee Highway, Suite 92A, Fairfax, VA; phone: 703.691.3357; fax: 703.691.7991; E-mail: info@simhq.org; Web site: www.simhq.org.

AUGUST

·**5, International Association for Food Protection Annual Meeting Workshops,** Atlanta, GA. Workshop I "Microbiological Sampling Plans and Sample Collection for Food Processors." Worskhop II "Using Information Technology to Manage Food Safety Risks." Additional workshop information available in this issue of *DFES* on page 481 or, phone: 800.369.6337; 515.276.3344; fax: 515.276.8655; E-mail: info@foodprotection.org. or visit our Web site at www.foodprotection.org for the most current Annual Meeting information.

·**6-9, International Association for Food Protection Annual Meeting,** Atlanta, GA. Registration information available in this issue of *DFES* on page 479 or contact Julie Cattanach at 800.369.6337; 515.276.3344; fax: 515.276.8655; E-mail: jcattanach@foodprotection.org. Visit our Web site at www.foodprotection.org for the most current Annual Meeting information.

·**15-16, Quality Systems for Food Processors,** New Orleans, LA. This course is designed to assist assurance and control professionals in the development, implementation, and maintenance of effective, regulatory compliant food safety programs. For further information, contact Silliker Laboratories Group, Inc., at 800.829.7879; Web site: www. Silliker.com.

SEPTEMBER

·**10-12, The International Exposition for Food Processors® (IEFP) 2001,** Sands Expo & Convention Center, Las Vegas, NV. For additional information, contact Nancy Janssen or Cheryl Clark at 703.684.1080; 800.331.8816 (US and Canada only); fax: 703.548.6563; Web site: info@fpmsa.org.

·**12-13, Food Plant Sanitation Workshop,** Chicago, IL. For additional information, contact AIB, 1213 Bakers Way, P.O. Box 3999, Manhattan, KS 66505-3999; phone: 785.537.4750; fax: 785.537.1493.

·**12-16, The National Society for Healthcare Foodservice Management 2000 Conference,** at the Registry Resort, Naples, FL. For further information, contact Sheila Crowley at 202.546.7236; fax: 202.547.6348.

·**14-15, Microbiological Concerns in Food Plant Sanitation and Hygiene,** Huntington Beach, CA. This course is designed for individuals responsible for implementing and monitoring sanitation programs. For further information, contact Silliker Laboratories Group, Inc., at 800.829.7879; Web site: www.Silliker.com.

·**23-27, Plasticulture 2000,** Hershey Lodge and Convention Center, Hershey, PA. See active field demonstrations of machinery, crops grown in plasticulture systems and special tours. For more information, contact The American Society for Plasticulture at 814.238.7045.

·**24-27, InterMopro 2000, InterCool 2000, and InterMeat 2000,** Düsseldorf, Germany. For further information, contact Messe Düsseldorf North America, 150 N. Michigan Ave., Suite 2920, Chicago, IL 60601; phone: 312.781.5180; fax: 312.781.5188; Web site: www.mdna.com.

·**27-28, Wisconsin Milk & Food Sanitarians Association Annual Meeting,** Regency Suites, Green Bay, WI. For further information, contact Randy Daggs at 608.266.9376.

·**29-Oct. 2, 2nd Biennial 5-A Day International Symposium,** Washington Monarch Hotel, Washington, D.C. Public health professionals and produce industry leaders interested in implementing or strengthening community-based public/private partnerships to improve health in their own countries should attend this conference. For more information, contact National Cancer Institute at 301.496.8520; E-mail: Margaret_Farrell@nih.gov; or Produce for Better Health Foundation at 302.235.2329, ext. 32; E-mail: mneilan@5aday.com.

OCTOBER

·**9-11, Eighth International Symposium on Animal, Agricultural and Food Processing Wastes (ISAAFPW),** Marriott Conference Center, Des Moines, IA. Co-sponsored by the International Association for Food Protection. For additional information, phone Brenda West at 800.371.2723.

·**11-13, Second NSF International Conference on Food Safety: Preventing Foodborne Illness through Science and Education.** The conference will be held in Savannah, GA at the Hyatt Regency. Co-sponsored by IAFP and other organizations. For additional information, contact Wendy Raeder at 734.827.6888; fax: 734.827.7114/6831; E-mail: raeder@nsf.org.

·**12-13, HACCP Workshop,** Industry, CA. For additional information, contact AIB, 1213 Bakers Way, P.O. Box 3999, Manhattan, KS 66505-3999; phone: 785.537.4750; fax: 785.537.1493.

·**23-25, The 2000 New Mexico Environmental Health Conference,** Albuquerque Convention Center, Albuquerque, NM. For additional information, contact Tom Duker, P.O. Box 27176, Albuquerque, NM 87125-7176; Phone: 505.924.3667; Fax: 505.924.3684; E-mail: tduker@mercury.bernco.gov.

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·**12, IAFP Workshop,** Guadalajara, Mexico. Watch our Web site at www.foodprotection.org for more information.

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THOUGHTS on Today's Food Safety...

Food Allergens: Consumer Concerns

Anne Muñoz-Furlong
Founder and CEO
The Food Allergy Network
Fairfax, Virginia

The foods that make up the backbone of the diet of many Americans also cause up to 90% of all food-allergy-induced reactions in this country. The list of foods that provoke allergy in children includes staples such as milk, eggs, peanuts, tree nuts (walnuts, pecans, Brazil nuts, pistachio nuts, etc.), wheat, and soy. Fortunately, most children will outgrow their food allergies with the exception of peanut and tree nut allergies which are considered lifelong. In adults, four foods account for the majority of their allergic reactions: peanuts, tree nuts, fish, and shellfish.

Researchers estimate that between 2 and 2 1/2% of the population or between 6 to 7 million Americans suffer from food allergies. A recent study on the prevalence of peanut and tree nut allergy in the United States indicates that approximately 1.1% of the population or close to 3 million Americans are affected. It is estimated that food allergy accounts for reactions in thousands of Americans each year; upwards of 30,000 of these require emergency room visits, and at least 125 die from their allergic reactions.

Symptoms vary from person to person or, in some cases, from one reaction to another. They can involve the skin (hives, swelling), respiratory tract (difficulty breathing, asthma, swelling of the lips, mouth, tongue or throat), circulatory system (drop in blood pressure, lightheadedness, unconsciousness), and gastrointestinal tract (abdominal cramps, vomiting, diarrhea). Symptoms typically begin within minutes to two hours after ingestion. Some people begin to have symptoms as soon as they take one bite of the offending food.

There is no cure for food allergy; avoidance is the only way to avert an allergic reaction. As a result, food-allergic individuals must rely on information from others in order to manage their allergies. Label reading and careful screening of foods prepared away from home are crucial for these individuals and their families. It is not unusual for some of these consumers to spend 2 to 3 hours at the grocery store every week reading ingredient declarations for every product that goes into the shopping cart. Strategies for making this tedious task easier and quicker are at the top of the wish list for most food-allergic consumers.

To begin with, information on the label should be clear and easy to read. Doctors often simply tell patients that they must avoid "milk" or "eggs." They don't provide lists of other terms or of foods in which milk or eggs may appear. Additionally, the individual's family and friends are likely to read ingredient declarations as they try to create an allergy "safe" environment in their home. Patients can become confused and overwhelmed when they experience a reaction because they were not aware that "casein" is a milk component, or that hazelnuts are also called filberts, for example.

Precautionary labeling, such as "May contain...," or "Manufactured in a plant that also produces...," are not specific enough for these individuals. Many will avoid all foods with these statements; some will ignore them. Consumers want manufacturers to be as specific as possible when labeling products. For example, rather than using "May contain" statements for food processed on shared equipment, use "Manufactured on shared equipment with ... products." Printing the precautionary statement in boldface type is also quite helpful as it makes that information easier to spot on the ingredient panel and decreases the time required for label reading.

Another item on the food-allergic consumer's wish list is that "Natural flavors" be identified when they contain any of the major allergens. For example, "Natural flavors, contains milk." Currently, the consumer must either avoid buying products with "Natural flavors" or call the manufacturer to ask if the product contains the food to which they are allergic.

As a result, they must create strategies for clearly tagging the allergy-causing foods and the "safe" foods so that spouses, children, babysitters, and others can quickly distinguish "safe" from "unsafe" foods. In families where the allergy-causing food is not eliminated from the home, the cook must take extra precautions to prevent cross contact during meal preparation and cooking.

Most important, consumers want to be certain that if a company makes a processing error, allergic consumers will be warned. Food Allergy Network's (FAN) Special Allergy Alert notices provide companies with a vehicle for quickly transmitting the message of a processing error, product recall, or ingredient change to the food-allergic community. The Special Allergy Alert notices are well received by members. The message they send is that the company cares about

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