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A PUBLICATION OF THE INTERNATIONAL ASSOCIATION FOR FOOD PROTECTION, INC

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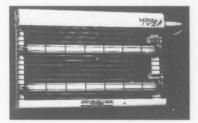
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#### DAIRY, FOOD AND ENVIRONMENTAL

## Sanitation



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#### FOR

#### Dairy, Food and Environmental Sanitation

The International Association for Food Protection is pleased to announce a new focus section for Dairy, Food and Environmental Sanitation (DFES). Beginning with the June issue, we will offer a "CAREER SERVICES SECTION." Special rates for this section will provide a cost-effective means for those seeking employment by offering career services and advertising positions available.

To help get this section started we invite you to advertise in the first two issues at no charge to your organization (up to 1 column by 2" space). Larger space sizes are also available to which an appropriate discount would be applied.

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

Call now for your COMPLIMENTARY INSERTIONS – Initial space reservations must be received by May 5, 2000 to be included in the June issue.

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#### **Introduction to Microbial Risk Analysis Workshop**

May 4 & 5, 2000

Marriott Inn and Conference Center • University of Maryland • College Park, Maryland

#### For more information visit our Web site at www.foodprotection.org

#### WHAT YOU WILL LEARN

Participants will learn about the food industry context for microbial risk assessment, including using food safety objectives as risk assessment targets, HACCP and its relationship to risk assessment.

Participants will also learn the basics of the quantitative risk assessment (QRA) technique including why average and worst case approaches to risk assessment don't work, the common mental errors avoided by QRA, and Monte Carlo techniques for conducting risk assessments. Participants will also become familiar with the components of risk assessment including exposure assessment, population sensitivity and dose response.

Finally, participants will learn that risk assessment is only part of the whole risk analysis picture. Participants will understand the risk management process for making decisions, and talking about risk assessment results and risk management decisions using risk communication.

#### WHO SHOULD ATTEND?

Food industry microbiologists, HACCP coordinators, government food microbiologists, food microbiology researchers and anyone else interested in an introductory look at microbial risk assessment.



#### PROGRAM

Thursday, May 4, 2000

8:00 a.m. - 8:30 a.m. - Registration

8:30 a.m. - Noon

Understanding the context for microbial risk assessment

Using food safety objectives as risk assessment targets HACCP and its relationship to risk assessment Qualitative risk assessment as an alternative to the quantitative approach

1:30 p.m. - 5:00 p.m.

#### Quantitative risk assessment (QRA) basics

Why the average and worst case approaches don't work

Common mental errors avoided by QRA

Monte Carlo techniques

Exposure assessment

Population sensitivity and dose response

Friday, May 5, 2000

8:30 a.m. - Noon

#### Risk assessment is only part of the picture

Making decisions — The risk management process Risk communication — Talking about results and decisions

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Non Member	\$525	\$600	after that date; however, the registration may be transferred to a colleague with written notification. Refunds will be processed after May 8, 2000. The workshop may be cancelled if sufficient enrollment is not received by April 21, 2000.
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## QUOTATIONS

#### FROM JACK



By JACK GUZEWICH President

"The Executive Board and the Executive Director are available to speak at local affiliate meetings"

If you are a Member of an affiliate of IAFP you may feel disconnected from the "International," particularly if you are not able to attend the Annual Meeting. The Executive Board and the Executive Director are available to speak at local affiliate meetings to help bridge that gap. In recent years many local affiliates have taken advantage of this opportunity to have a speaker at their local meetings. Following is a list of the current Executive Board Members and topics they are prepared to speak about.

#### Jack Guzewich, President:

- · FDA Food Safety Initiative Update:
- · Recent Foodborne Disease Outbreaks Involving FDA Regulated Foods - What Have We Learned?:
- · Coordination of Multistate Foodborne Disease Outbreaks.

#### Jenny Scott, President-Elect:

- · Foodborne Illness Concerns: A Global Perspective, An Industry View of the Role of Epidemiology in Public Health Policy;
- · The President's Food Safety Initiative: An Industry Perspective;
- · Regulation of Listeria monocytogenes - A Food Industry Perspective.

#### Jim Dickson, Vice President:

- · Food Irradiation: Microbiological Concerns with
- · Escherichia coli O157:H7.

#### Anna Lammerding, Secretary:

- · Microbial Risk Assessment, Codex Role & Guidelines;
- · Microbial Food Safety.

#### Robert Brackett, Past President:

- · New Pathogen Reduction Strategies;
- · Microbiology of Fruits and Vegetables;
- · Microbiological Safety Concerns with Fresh-cut Produce:
- · Microbiology of Packaged Produce:
- · Safety of the American Food Supply.

#### Randy Daggs, Affiliate Council Chairperson:

- · Large Dairy Farm Sanitation; On-Farm Loading of Tanker Trucks;
- The IMS Conference: History, Structure and Function.

#### David Tharp, Executive Director:

· Status of the Association.

As you can see the diversity of our Board provides coverage of the current topics of interest to

food safety professionals. If you are interested in inviting one of the Board Members or the Executive Director to your Affiliate meeting, please review the following guidelines and then contact Lucia Collison, Affiliate Staff Liason at 800.369.6337 or 515.276.3344 or E-mail: lcollison@ foodprotection.org.

Following are Speaker Program Guidelines:

- 1. Each Affiliate may request one Executive Board speaker for one Affiliate meeting within a 12month calendar year.
- 2. The Association will pay the Board Member's

- expense to travel to your Affiliate meeting location.
- 3. A minimum of 15 minutes should be allowed for the Board Member to deliver information about the International Association for Food Protection in addition to their main subject(s).
- 4. The Affiliate covers local expenses, including meals, lodging, and local transportation for the Board Member.
- 5. Board Members make their own travel reservations and will submit an

- expense report to the International Association for Food Protection within 10 days of completion of their travel to the Affiliate meeting. Any local expense (see #4) will be billed to the Affiliate.
- 6. A two-month advance notice is requested.

Speaking for the Board I know that speaking at local affiliate meetings is a privilege and a great opportunity to meet current and potential new Members of IAFP.

We encourage your Affiliate to take advantage of this excellent benefit as you plan for your next Affiliate meeting.

## **SPONSORSHIPS**



e invite you to participate as a sponsor for the 2000 Annual Meeting. Sponsorship participation provides an excellent opportunity to position your company or organization as a supporter of the Association.

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Several exciting opportunities are available

## COMMENTARY

#### FROM THE EXECUTIVE DIRECTOR



By DAVID W. THARP, CAE **Executive Director** 

"I hope you have had the opportunity to read Reflections from the Past"

You've heard the saving, "the more things change, the more they stay the same." This certainly runs true in the International Association for Food Protection! By now, I hope you have had the opportunity to read many of the columns we have run in Dairy, Food and Environmental Sanitation under the title, "Reflections from the Past." In this series, we are reprinting presidential addresses given at our Annual Meetings over the years. Today, I want to review items covered in earlier reports to show how they affected where we are today and how they relate to current issues.

Back in 1944, C.A. Abele noted that restaurant sanitarians are organizing at the state levels and wish to form affiliations with the International. "If this segment becomes larger, the Journal of Milk Technology and the Association may need to consider name changes." At the time, the Association's name was International Association of Milk Sanitarians. By 1947, the name changed to the International Association of Milk and Food Sanitarians and in 1952, the journal name changed to the Journal of Milk and Food Technology.

It was July of 1952 when the Association first established an office in Indiana. Red Thomasson was hired as the Executive Secretary and only employee. Today, we are located in Des Moines, Iowa with ten full-time and two part-time staff. Red pointed out in his 1952 report that the Journal of Milk and Food Technology was to begin monthly publication in January of 1953.

Harold Adams expounded upon the virtues of professional advancement through Member's actions. In 1956, he observed that the pool of potential Members was vastly larger than the current Member population. He called upon each Member to recruit another Member to help the Association grow. I believe that Jack Guzewich, our current President just repeated this call in January. This is one area where you can be a true leader by encouraging your colleagues to become active in the Association.

In his 1961 Presidential Address. John Scheuring suggested a name change for the Association to include "general" sanitarians. By 1966, environmental was added to our lengthening name. The Association name became the International Association of Milk, Food and Environmental Sanitarians and remained so through December of 1999. Additionally, in 1961 an issue was raised about Members only being able to cast votes if they attended the Annual Meeting. It was decided a better process would be to mail ballots to Members and ask them to return their vote via mail to the Association office. Today, we continue to use this method with our eves on the future. Soon we may be able to accommodate electronic balloting via the Internet.

Earl Wright served as President and Executive Director in 1974. He encouraged colleagues to join the Association and noted an increased activity in Affiliate formation. Earl pointed out a noticeable change in topics of submitted articles for the Journal of Milk and Food Technology. He noted in his report that more food-related articles than milk-related articles were being printed and noted an increase of Members coming from the food industries.

At the 1976 Annual Meeting, President Harold Thompson stated that change is inevitable but that we should never lose sight of our basic

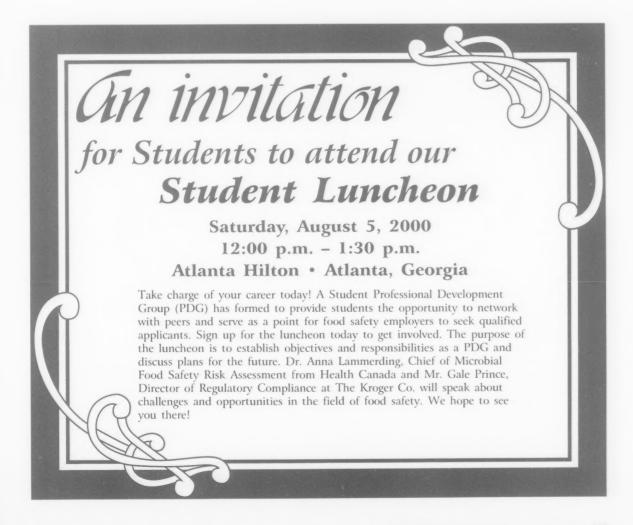
objectives. He didn't elaborate on those objectives but I believe our mission today is much the same as it would have been 20+ years ago - "to provide food safety professionals worldwide with a forum to exchange information on protecting the food supply." Harold pointed out the name of Journal of Milk and Food Technology will change to the Journal of Food Protection with the January 1977 issue.

In 1980, William Kempa announced the launching of a new journal, Dairy and Food Sanitation (which later became Dairy, Food and Environmental Sanitation). This journal evolved to be the "Membership" journal by 1982 as it became evident that printing everything in duplicate was not economi-

Recently we ran an article written by Elmer Marth giving an excellent summary of the chain of events leading to our most recent name change. Elmer pointed out missed opportunities to change the Association name in the early 80's on the heals of changing the journal's name. A name change discussion also took place in the early 90's, but was again defeated. Elmer's article gives his thoughts on why the name change was overwhelmingly supported in 1999. Among his reasons was that the Executive Board soundly supported the proposed name and the worldwide stature and influence of the Journal of Food Protection had increased.

The above summary brings us up-to-date with articles run in DFES

since October of 1999. In this issue, see pages 264-270 for the 1983 and 1986 Presidential Addresses. I hope that you have found these reprinted articles as interesting as I have. There are many issues pointed out in these Presidential Addresses that affected where we are today as an Association. We are diligently working on producing a summary history of the Association from its beginning in 1911 through the conclusion of 1999 with the hopes of having the document available later this year. Earl Wright and Harry Haverland are heading up the efforts, so if you want your piece of history included, contact Earl or Harry. You may also contact me at the Association office.



## **Cleanability of Stainless Steel Surfaces with Various Finishes**

Amelia E. Steiner, Marianne M. Maragos, and R. L. Bradley, Jr. 1

#### SUMMARY

This study was conducted to find a stainless steel surface to which mozzarella cheese would not adhere but that would be cleanable. Standard stainless steel surfaces altered by stainless steel shot peening, glass beading, and sand blasting were evaluated, in addition to investment casting. Stainless steel coupons with various finishes were evaluated for cleanability and product adhering first, followed by evaluation of pasteurizer plates and a mixer-molder auger. Microbiological evaluation indicated that stainless steel shot peening and glass beading produced acceptable surfaces. However, glass beading left glass chips imbedded in all evaluated stainless steel, and this is unacceptable. Fat-free and low-fat mozzarella cheese heated above 57°C for flow and stretch properties adhered to all auger surfaces.

#### INTRODUCTION

The relative cleanability of product contact surfaces in the dairy industry is of great importance in improving product shelf life and quality. Currently, guidelines for stainless steel finish on dairy equipment in the United States require with only one exception, a surface as smooth as, a 32 µ inch roughness average (R<sub>s</sub>) (150 grit, No. 4) finish on product contact surfaces. This finish also must be free of cracks and crevices. The one exception is a 2B finish permitted on vats for cottage cheese manufacture. The required  $32 \mu$  inch R, finish appears to have been arbitrarily established as the surface most easily freed of residual milk product, with little evidence supporting this assumption in the technical literature. Researchers (2, 4) have indicated that stainless steel surface finish is not a factor in removal of milk residue. However, heat-fixed milk residues were not examined in the research.

Recent concerns about stainless steel cleanability have been directed at finding a finish that will better release adhering residues. This is particularly important in cheese vats and mozzarella curd stretching equipment. Better release of adhering residues was a decisive factor and the principal reason for allowing a 2B finish for cottage cheese

Related to milk-soil adhesion is the importance of the speed with which vegetative cells attach to stainless steel. A variety of organisms attach to stainless steel, and that attachment is irreversible (5, 6). Alteration of this adhesion rate may parallel the cleanability of various stainless steel surfaces. For example, on positively charged or neutral surfaces, the greater the surface roughness, the greater the attachment (5,

Few recent research studies have evaluated stainless steel finishes over a wide range of surface preparations. In one study, scanning electron microscopy was used to evaluate 1, 2D, 2B, and 2BA (unpolished), 3, 4, 6, 7, and 8 (polished) metal surfaces (7). This technique was found to be an excellent method for learning more about the finished metal plate surfaces. Bohner and Bradley (1) used scanning electron



TABLE 1. Finishes and profilometer roughness averages of sheet stainless steel used in cleanability assessment

Surface Finish	Perpendicular (μ in. R <sub>A</sub> )	Parallel (μ in. R <sub>A</sub> )
2B, Mill Finish	4	10
36 Grit	174	60
60 Grit	116	43
150 Grit	20	7
2B, Stainless Steel Shot Peened	110	109
36 Grit, Stainless Steel Shot Peened	155	111
60 Grit, Stainless Steel Shot Peened	116	104
150 Grit, Stainless Steel Shot Peened	122	125
2B Shot Peened with New Glass Beads	52	53
60 Grit Shot Peened with New Glass Beads	83	53
150 Grit Shot Peened with New Glass Bead	s 55	50
60 Grit Shot Peened with Used Glass Beads	95	35
150 Grit Shot Peened with Used Glass Bead	s 27	21
2B, Sand Blasted	78	81
60 Grit Sand Blasted	83	97
Investment Casting	210	160

microscopy to examine pit corrosion from sanitizer abuses and also found it a powerful tool to evaluate stainless steel surfaces.

The objectives of this research were: (1) to ascertain the cleanability of various stainless steel finishes, (2) to determine if a particular finish might release soil from dairy foods more easily than another, and (3) to recommend alternate finishes other than the standard 32 µ inch R, for consideration by 3-A as suitable for dairy equipment product contact surfaces, particularly those surfaces in contact with hot mozzarella cheese.

#### MATERIALS AND METHODS

#### Stainless steel coupons

A total of 15 stainless steel coupons were prepared from the same lot of steel (type 304) and evaluated in this cleanability study. The control surface was the 32 µ inch R, finish (150 grit, No. 4); a 2B mill, a 125  $\mu$  inch R<sub>A</sub> (60 grit), and a 250  $\mu$  inch R, (36 grit) finish were also examined. Coupons ( $5 \times 15.3$  cm) were cut from this stainless steel stock sheet and the final finishes applied to the coupons are listed in Table 1. Also, a piece  $(5 \times 15.3 \text{ cm})$  of investment casting was cut. A 25 cm2 rectangle was inscribed in the center of one side of each strip.

One million Bacillus stearothermophilus spores from an ampule (Difco, Inc., Detroit, MI) were added to a half pint of 2% milk; the mixture was shaken, and 0.1 ml was applied and distributed within the inscribed rectangle on the coupon. which was placed on a level surface to ensure that no localized pooling occurred. After applying the inoculated milk product before each washing trial, the film was air dried and then heat fixed at 90°C (195°F) for 30 minutes. The purpose of heat fixing the milk smear was to ensure that the film would remain on the stainless steel plate instead of washing away upon contact with the cleaning solution. In addition, heatfixed films have not been studied previously.

Soil removal was evaluated in a Plexiglas chamber into which each stainless steel coupon was inserted. A 0.5% solution of chlorinated alkaline cleaner in tap water was heated to 57°C in a water bath. The cleaning solution was circulated at 5 linear feet/second for 20 minutes using a peristaltic pump. No sanitizer solution was applied. After cleaning, the plate was removed from the chamber, rinsed with tap water, airdried, and then swabbed with a sterile swab according to Standard Methods for the Examination of Dairy Products (SMEDP), 16th ed (3). The swab was placed in 1 ml of peptone water, which was plated onto Standard Plate Count (SPC) Petrifilm. A control consisting of 1 ml of peptone water was plated onto SPC Petrifilm to ensure that there was no contamination. Incubation was at 32°C for 48 hours, after which the number of colony forming units (CFU) was counted and recorded.

Twelve trials were performed on each coupon. Between trials 1 and 2, the plates were rinsed with hot water (57°C) before the inoculum was applied. Between trial 2 and trial 3, the plates were scrubbed with a 200 ppm dichloroisocyanurate solution (24°C). Between trials 3 and 4 and trials 4 and 5 the plates were soaked in Alconox solution (57°C) for 30 minutes, then scrubbed with a 200 ppm dichloro-

#### Scanning Electron Microscope Pictures of Various Stainless Steel Surfaces:

Figure 1. 2B mill finish



Figure 2. 36 grit finish



Figure 3. 60 grit finish



Figure 4. 150 grit finish



Figure 5. 2B finish stainless steel shot peened

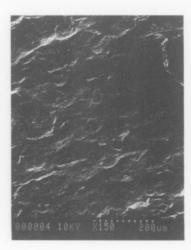


Figure 6. 36 grit finish stainless steel shot peened



Figure 7. 60 grit finish stainless steel shat peened

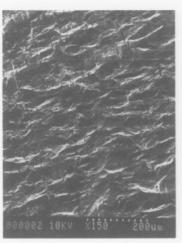


Figure 8. 150 grit finish stainless steel shot peened

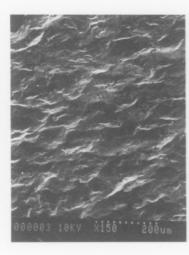


Figure 9. 2B finish new glass beaded



Figure 10. 60 grit finish new glass beaded



**Figure 11.** 150 grit finish new glass beaded



Figure 12. 60 grit finish used glass beaded



#### Scanning Electron Microscope Pictures of Various Stainless Steel Surfaces:

Figure 13. 150 grit finish used glass beaded

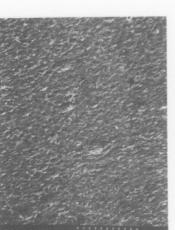


Figure 14. 2B finish sand blasted

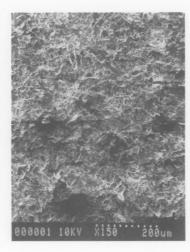


Figure 15. 60 grit finish sand blasted



Figure 16. Investment casting



Figure 17. 2B finish glass beaded using 0.006 inch beads with 50 psi air

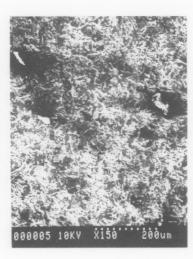


Figure 18. 2B finish glass beaded using 0.006 inch beads with 80 psi air



Figure 19. 2B finish glass beaded using 0.023 inch beads and 50 psi air

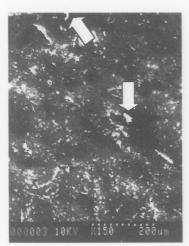


Figure 20. 2B finish glass beaded using 0.023 inch beads and 80 psi air



Figure 21. 2B finish glass beaded using 0.006 inch beads and 50 psi air

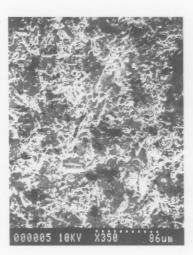


Figure 22. 2B finish glass beaded using 0.006 inch beads and 80 psi air

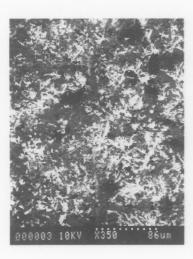


Figure 23. 2B finish glass beaded using 0.023 inch beads and 50 psi air



Figure 24. 2B finish glass beaded using 0.023 inch beads and 80 psi air



TABLE 2. Surface roughness averages on stainless steel plate used to assess acceptance of intensity of shot peening

2B Surface Finish (304SS)	Surface Finish ( $\mu$ in. $R_{\rm A}$ )
Cantral Surface (na shot peening)	28
0.007" stainless media accelerated with 40 psi air pressure	3.5
0.007" stainless media accelerated with 80 psi air pressure	38
0.023" stainless media accelerated with 40 psi air pressure	132
0.023" stainless media accelerated with 80 psi air pressure	131
2B Surface Finish (316SS)	Surface Finish ( $\mu$ in. $\mathbf{R}_{\mathbf{A}}$ )
Cantral Surface (na shat peening)	32
0.007" stainless media accelerated with 40 psi air pressure	46
0.007" stainless media accelerated with 80 psi air pressure	58
0.023" stainless media accelerated with 40 psi air pressure	149
0.023" stainless media accelerated with 80 psi air pressure	151

<sup>\*</sup>All plates were suspended and cleaned in a COP tank and showed microbial counts of less than 1 CFU/50 cm<sup>2</sup>.

TABLE 3. Surface roughness on stainless steel plates used to assess acceptance of intensity of new glass bead peening

2B Surface Finish (304SS)	Surface Finish ( $\mu$ in. $R_{_{\mbox{\scriptsize A}}}$ )	
0.006" glass media accelerated with 50 psi air pressure	59	
0.006" glass media accelerated with 80 psi air pressure	36	
0.023" glass media accelerated with 50 psi air pressure	42	
0.023" glass media accelerated with 80 psi air pressure	68	

<sup>\*</sup>These surfaces were also evaluated with the scanning electran micrascape at bath 150× and 300× magnificatian. Plates were suspended and cleaned in a COP tank and shawed micrabial counts of less than 1 CFU/50 cm<sup>2</sup>.

isocyanurate solution. Trials 4 and 5 used the cleaning solution at a temperature of 66°C rather than 57°C in an attempt to improve removal of the biofilm that had formed. Subsequent trials involved washing the coupons in chlorinated alkaline cleaner at 66°C.

Scanning electron microscope pictures at 150× magnification were taken of all coupons prior to beginning the research (Fig. 1-16). A Federal Pocket Surf® I. Profilometer (Federal Products Company, Providence, RI) was used to measure roughness averages perpendicular and parallel to the base finish (Table 1). Additional 304 and 316 2B finish stainless steel strips  $(36 \times 10 \times .3 \text{ cm})$  were assessed for cleanability. Finishes were applied by varying pressure intensities and by using different sized stainless steel shot and glass beads to ascertain if the full spectrum of applications were all cleanable. The strips were suspended in a COP tank and washed at 59°C for 20 minutes with 0.5% chlorinated alkaline cleaner. Profilometer readings were also obtained (Tables 2 and 3).

#### HTST pasteurizer plates

To further assess cleanability of various stainless steel finishes, thirteen HTST pasteurizer plates, APV

#### TABLE 4. HTST pasteurizer plate surface finishes studied\*

#### Surface Finish

2B Mill Finish

36 Grit

60 Grit

150 Grit

2B Stainless Steel Shot Peened

36 Grit Stainless Steel Shot Peened

60 Grit Stainless Steel Shot Peened

2B Shot Peened with New Glass Beads

60 Grit Shot Peened with New Glass Beads

150 Grit Shot Peened with New Glass Beads

60 Grit Shot Peened with Used Glass Beads

150 Grit Shot Peened with Used Glass Beads

(model SR11), were evaluated (Table 4). The test plates were exchanged for those in service in the regenerator section of the HTST pasteurizer at the UW-Madison Dairy Plant. This pasteurizer was cleaned daily with 0.75% alkaline cleaner circulated at 5 linear feet/second. Plates were swabbed weekly to ascertain cleanliness. Because swabbing is a cleaning process, a different area (50 cm<sup>2</sup>) on each plate was selected each time for evaluation. Procedures followed for swabbing, plating, and counting were given in SMEDP.

#### Mozzarella cheese auger

A new auger for a mixer/molder (Supreme 650, Stainless Steel Fabricating, Inc., Columbus, WI) was prepared with three different surface preparations. One third of the auger was coated with Teflon®, one third was stainless steel shot peened, and one third was standard finish (7-8 µ inch R<sub>s</sub>). This auger and its companion in the mixer molder were observed during daily operation for cheese sticking and ease of cleaning. The test and companion auger were cleaned after each use and swabbed weekly to ascertain cleanliness.

#### **RESULTS AND DISCUSSION**

The results provided, conclusive evidence that some stainless steel finishes were not acceptable from a cleanability point of view. Also, on the glass beaded finish, glass beads had ruptured on impact and had left imbedded glass residue. This surface was unacceptable.

Sandblasted stainless steel and the investment casting had the highest microbial counts and are not acceptable for use as product contact surfaces in the dairy industry (Table 5). Of all surface finishes evaluated, sandblasted and investment casting finishes were the most rough. The scanning electron microscopy shows this roughness as numerous jagged peaks and crevices (Fig. 14-16). The high microbial counts

found on these surfaces indicated that these rough finishes were difficult to clean and were unacceptable.

The cleanability of heat-fixed milk films on stainless steel plates. HTST pasteurizer plates, and mozzarella cheese auger surfaces all showed that stainless steel shot peened finishes cleaned well and were acceptable product contact surfaces (Table 5, 6, 7, 8). These finishes all showed low microbiological counts on cleaned surfaces. Higher counts were observed on the stainless steel coupons, than on the HTST plates and cheese auger because the circulation of cleaner. while at 5 linear feet/second, was less in the Plexiglass chamber than in the connecting tubing. Moreover, the stainless shot peened coupons showed far fewer residual spores than other coupons. An unwashed control coupon with a heat-fixed milk film had 2000 CFU/ml on 50 cm2. The electron microscopy pictures showed that the stainless steel shot peened surfaces had the smoothest surface of any coupon with a surface altered after appli-cation of the initial finish (Fig. 1-16). The stainless steel strips given different intensities (80 and 30 psi) and different sized stainless steel shot (.007 and .023 inches) also cleaned well by COP, with less than 1 CFU/ml.

The CFU/50cm<sup>2</sup> for the new and used glass bead finishes were similar, and both were found acceptable (Table 5). Actually, used glass beads are the only matrix used by this industry. The difference in CFU counts can be explained by examining the scanning electron microscopy results (Fig. 9-13). New glass beads are larger and more nearly spherical than used glass beads, which are fragmented and have sharp edges. Thus, the new glass beads leave a rounded bottom dimple, whereas the used beads may be broken and have jagged edges that leave a sharp impression. Although some glass embedding was observed (arrow points on Figures), a smoother overall surface was achieved with the new glass beads because of their spherical shape. The used glass bead finish also showed more evidence of embedded particles (arrow points on Figures). The rough broken glass

<sup>\*</sup>Sand blasted and investment casting finishes were rejected in the coupon study and therefore not studied with the HTST pasteurizer plates.

TABLE 5. Cleanability of stainless steel coupons with heat fixed *Bacillus stearothermophilus* spores. Data are spores surviving chlorinated alkali cleaning followed by swabbing\*

Surface Finish	Trial 1 (CFU/ml)	Trial 2					5 Trial 7				Trial 11 (CFU/ml)	
28, Mill Finish	3	5	7	2	13	0	2	7	TNTC	4	3	83
36 Grit	1	20	29	4	13	0	0	2	2	50	50	74
60 Grit 1	1	1	1	1	1	0	0	0	26	69	3	1
150 Grit 1	3	17	21	0	0	0	0	0	1	11	2	8
2B, Stainless Steel Shot Peened	1	15	12	65	87	1	6	0	10	12	TNTC	4
36 Grit, Stainless Steel Shot Peened	1	6	4	1	1	0	3	2	1	4	0	3
60 Grit, Stainless Steel Shat Peened	0	3	57	1	48	8	2	3	TNTC	12	5	6
150 Grit Stainless Steel Shat Peened	1	0	4	1	8	0	1	3	46	5	0	10
2B Shat Peened with New Glass Beods	0	1	22	1	73	1	TNTC	39	37	9	2	4
60 Grit Shat Peened with New Glass 8eads	46	0	680	63	11	0	8	0	6	16	1	11
150 Grit Shat Peened with New Gloss 8eads	7	2	0	4	17	1	5	4	5	3	0	2
60 Grit Shot Peened with Used Glass Beods	19	3	31	23	37	95	0	9	0	0	0	16
150 Grit Shat Peened with Used Gloss 8eads	0	18	18	82	4	TNTC	0	0	13	31	0	45
28 Sand 8lasted	133	54	21	360	264	-				-		
60 Grit Sond Blosted	78	31	97	291	55							
Investment Casting	TNTC	149	468	255	92							

<sup>\*</sup>Contact surface manually cleaned to remove biofilm.

TABLE 6. HTST pasteurizer plate Standard Plate Count\* **Surface Finish** Week 1 Week 2 Week 3 Week 4 Week 5 Week 6 Week 7 Week 8 (CFU/ml) (CFU/ml) (CFU/ml) (CFU/ml) (CFU/ml) (CFU/ml) (CFU/ml) (CFU/ml) 28, Mill Finish 36 Grit 60 Grit 150 Grit 28, Stoinless Steel Shat Peened 36 Grit, Stainless Steel Shat Peened 60 Grit Stainless Steel Shot Peened 150 Grit Stoinless Steel Shot Peened 2B Shot Peened with New Gloss Beods 60 Grit Shat Peened with New Gloss 8eads 150 Grit Shot Peened with New Gloss Beods 60 Grit Shot Peened with Used Glass 8eads 150 Grit Shot Peened with Used Gloss Beods 

<sup>\*</sup>A different area was swabbed each week.

Mozzarella cheese auger Standard Plate Count\*

Surface	Standard Plate Count (CFU/ml)										
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 9	Week 10	Week 11	Week 12	
Teflon	<1	<1	2	<1	<1	<1	<1	6	<1	1	
Stoinless Steel Shot Peened	1	4	130	<1	1	2	<1	2	<1	<1	
Control Standard 150 Grit #4	6	2	<1	<1	<1	<1	5	<1	<1	<1	
Control Auger Opposite Upper	1	<1	80	<1	<1	3	<1	6	<1	1	

<sup>\*</sup>All surfaces cleaned well. Only reduced, low, and no fot mozzarella stuck when temperature was raised to obove 135°F to ease flow.

TABLE 8. Mozzarella cheese auger Coliform Plate Count Surface Coliform Plate Count (CFU/ml) Week 1 Week 2 Week 3 Week 4 Week 5 Week 6 Week 9 Week 10 Week 11 Week 12 Teflon <1 <1 <1 <1 <1 <1 Stoinless Steel Shot Peened <1 <1 <1 <1 <1 <1 <1 <1 <1 Control Stondord 150 Grit #44 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 Control Auger Opposite Upper

beads and embedded glass particles may have created a rougher surface that did not allow for effective cleaning. In an attempt to prove that glass particles were present, magnification of some of the glass beaded surfaces was increased from 150x to 350× (Table 9). Evidence of glass particle inclusions shown as white spots is clear (Fig. 17-20). Used and new glass beaded finishes cleaned similarly in the HTST pasteurizer plate study, and both were acceptable (Table 6) from a cleanability view but unacceptable in view of the imbedded glass.

Electron microscopy is a useful tool to show the texture of stainless steel. Apparent surface roughness created by the initial polishing treatment with emery cloth can be markedly reduced by blasting the surface with stainless steel shot or glass beads (Fig. 1-13 and 17-24). Research on the cleanability of mozzarella cheese auger surfaces showed that both the Teflon® and stainless steel shot peened finishes cleaned as well as the control surface and that all surface treatments were acceptable (Table 7 and 8). However, when cheese temperature was increased above 57°C, fat-free, and low-fat mozzarella cheeses adhered to all surfaces. Teflon® showed the effects of abrasion and a loss of a minimum of 2 cm of Teflon® from the outer parts of the auger after two months of use.

#### CONCLUSIONS

This research shows that stainless steel shot peened finishes clean efficiently. Of those finish modifications evaluated, stainless steel shot peening appeared to be the only acceptable surface modification for stainless steel product contact surfaces in the dairy industry. In fact, stainless steel shot peening is the only controlled process used to alter surface finish reported here, in that the shape, size, and velocity of the media are carefully controlled. Rough surfaces did not clean effectively, and sand blasted and investment casting finishes are therefore not acceptable for food product contact surfaces. Glass beaded finishes cleaned effectively, but the issue of embedded glass particles within the surface finish is of concern to users. Teflon coated and shot peened surfaces on mozzarella cheese augers cleaned adequately as well. However, when low-fat, and no-fat mozzarella cheeses were heated above 57°C to develop the necessary flow characteristics, adhesion resulted to all test and control surfaces studied. Sticking of mozzarella appeared temperature dependent.

<sup>\*</sup>Teflon coming off ouger edges Week 11.

<sup>\*</sup>Auger left in upper position because of sticking.

TABLE 9. Scanning electron microscopy figures and observations

Figure	Surface Finish - 150× magnification	Observations			
1	2B Mill Finish - Cantral				
2	36 Grit - Cantral				
3	60 Grit - Cantral				
4	150 Grit - Cantral				
5	2B Stainless Steel Shat Peened				
6	36 Grit, Stainless Steel Shat Peened				
7	60 Grit, Stainless Steel Shat Peened				
8	150 Grit Stainless Steel Shat Peened				
9	2B Shat Peened with New Glass Beads	Appears ta cantain particle inclusions			
10	60 Grit Shat Peened with New Glass Beads	Appears ta cantain particle inclusions			
11	150 Grit Shat Peened with New Glass Beads	Appears ta cantain particle inclusions			
12	60 Grit Shat Peened with Used Glass Beads	Appears ta cantain particle inclusians			
13	150 Grit Shat Peened with Used Glass Beads	Appears ta cantain particle inclusians			
14	2B Sand Blasted	Raugh and jagged appearance			
15	60 Grit Sand Blasted	Raugh and jagged appearance			
16	Investment Casting	Raugh and jagged appearance			
	2B Surface Finishes - 150×				
17	0.006" glass media accelerated with 50 psi air pressure	Appears to contain particle inclusions			
18	0.006" glass media accelerated with 80 psi air pressure				
19	0.023" glass media accelerated with 50 psi air pressure	Appears ta cantain particle inclusians			
20	0.023" glass media accelerated with 80 psi air pressure	Appears ta cantain particle inclusians			
	2B Surface Finishes - 350×				
21	0.006" glass media accelerated with 50 psi air pressure				
22	0.006" glass media accelerated with 80 psi air pressure	Appearance of additional inclusions			
23	0.023" glass media accelerated with 50 psi air pressure				
24	0.023" glass media accelerated with 80 psi air pressure	Appears ta cantain particle inclusions			

#### **ACKNOWLEDGMENTS**

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## Honey, Human Pathogens, and HACCP

Dean O. Cliver

#### SUMMARY

The recommendation that honey not be fed to children less than one year old may be a reasonable precaution in preventing infant botulism, although the incidence of infant botulism seems to have been little affected by the prohibition. There is no indication that honey plays a role in intestinal toxemia botulism of persons over one year old or that honey-containing products have led to the syndrome in those of any age. Other foodborne bacterial pathogens, such as E. coli O157:H7, L. monocytogenes, and Salmonella spp., evidently have not been associated with or detected in honey. Testing honey for these bacteria or for bacterial indicators that might be associated with them, although certainly possible, will accomplish little to enhance the safety of foods that contain honey. If the food to which honey is added has no step in its processing sequence that is certain to kill vegetative bacterial pathogens, the processing of the honey that is to be used should be regarded from a HACCP standpoint. If, for example, the heat process used to kill yeasts in honey can guarantee the death of vegetative bacterial pathogens, designating this as a critical control point should afford greater safety of honey as an ingredient than can usually be attained for final consumer food products.

#### INTRODUCTION

Snowdon and Cliver (13) extensively reviewed knowledge of the incidence of microorganisms in honey, with special attention to pathogens that might cause disease in consumers. Honey is well known to preserve itself, by virtue of its low water activity (a,,) and its content of certain natural antimicrobial compounds. These preservative properties prevent multiplication of bacteria, yeasts, and molds in undiluted honey. They do not kill bacterial spores, such as those of Clostridium botulinum, but they may damage vegetative cells of other pathogens, most of which cannot form spores. This brief review addresses the question of other pathogens in honey, a question that arises when honey is used as an ingredient in foods or beverages, thereby diluting the honey and thus mitigating its preservative capability.

Clostridium botulinum has been the pathogen of greatest concern in honey because it is occasionally associated with infant botulism (1). This syndrome occurs when an infant's intestines are colonized by C. botulinum (and, very rarely, other Clostridium species) that, after being ingested in the spore form, germinates, multiplies, and produces toxin that travels via the bloodstream to the central nervous system, causing a flaccid paralysis

(muscular weakness and difficulties of sucking and breathing). Arnon (1) states that 95% of infant botulism cases occur in infants less than six months old and that fewer than 5% of confirmed cases (in California) had been fed honey before becoming ill. Although this does not say that honey was the source of C. botulinum spores in 5% of the cases of infant botulism, spores of C. botulinum have occasionally been detected in honey (the incidence varies widely with geographic source and other unknown factors). Therefore, it is widely recommended that honey not be fed to children less than one year old, and feeding honey to infants under one vear of age is called an "avoidable risk." The recommendation has been extended to all honey-containing products, although there appears to be no scientific or epidemiologic basis for this.

Since the description of infant botulism in 1976 (10, 11), it has been recognized that people over the age of one year occasionally experience an illness similar to infant botulism, which in this case is called "intestinal toxemia botulism" (1). As of 1995, fewer than a dozen cases had been described, one in a three year-old (12) and the rest in adults aged 20 to ~70 years (1). All but two of these people had a major predisposing condition, often intestinal surgery (5, 6, 7). The two for whom no predisposing condition was known had both eaten foods, other than honey, that contained C. botulinum spores (8). Among the remaining eight, one had eaten honey and another a honey-coated cereal shortly before the onsets of their illnesses; two samples of the honey the first had eaten tested negative for C. botulinum spores. Another victim had eaten cream of coconut that contained C. botulinum spores, but not toxin (2). One patient was apparently intoxicated with type F botulinal toxin, but the organism isolated from his feces was identified as C. baratii (9). None of the victims of this non-infant intestinal toxemia botulism had any of the classi-

cal causes of immune impairment (AIDS, old age, pregnancy, etc.), except one who had received radiation therapy, chemotherapy, and a bone marrow transplant as treatments for neuroblastoma (12). This suggests that very few "at-risk" persons (3) other than infants under the age of one year (especially under six months) are subject to intestinal toxemia botulism; rather, intestinal surgery (often in an attempt to treat obesity) is the major predisposing factor.

There are, of course, many other pathogens transmitted via foods. Viruses and parasites appear unlikely to occur in honey, although this has not been intensively investigated (13). The bacteria of greatest concern are probably Escherichia coli O157:H7, Listeria monocytogenes, and Salmonella spp. None of these organisms have been detected in or associated with illness that followed honey ingestion, despite the fact that dormant vegetative cells could cause infection after the honey was ingested or could multiply in foods in which honey was an ingredient.

On the other hand, the increasing use of the hazard analysis-critical control points (HACCP) system in the food industry brings a new outlook to food processing (14). If food manufacturers' processes do not include a step that would kill a pathogen that concerns them, they may impose a purchase specification on honey intended for use as an ingredient in their products. The purchase specification might require that honey be tested for specific pathogens, tested for indicators of contamination, or processed under a HACCP plan by the supplier. Purchase specifications would probably not be directed to C. botulinum, because absence of C. botulinum spores is seldom expected of raw food materials. Although microbiological test methods specific for honey are not generally available, there is no reason to suppose that honey poses special problems

in testing for E. coli O157:H7, L. monocytogenes, and Salmonella spp. Tests for "fecal indicator" bacteria are also highly possible. However, it is so unlikely that any such bacteriological tests would yield useful information that their use would be a cosmetic gesture. Inevitably, the costs of such measures must be passed on to the consumer, who in this case would gain little benefit from the added cost.

A HACCP plan for honey processors appears to be an alternative. Even routine heating to kill yeasts (e.g., 11 min at 60°C, 7.5 min at  $63^{\circ}$ C, or 2 min at  $66^{\circ}$ C)/(4) might well serve to kill vegetative bacterial pathogens, although evidently this has not been studied. Other innovative food processing technologies may also be applicable, although it seems unlikely that a treatment could kill C. botulinum spores in honey without adversely affecting quality. If the treatment applied to the honey were shown to be a critical control point in which critical limits of time, temperature, etc., could be established, the honey offered for sale might well have a more valid HACCP pedigree than the end product in which it became an ingredient.

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# Reflections from the Past

## **Presidential Address**

Robert Marshall

70th Annual Meeting of the International Association of Milk, Food and Environmental Sanitarians, Inc. August 7-11, 1983 St. Louis, Missouri

elcome to St. Louis and the 70th Annual Meeting of IAMFES. As a Missourian I share the pleasure of members of the Missouri Milk, Food and Environmental Health Association in hosting your visit here.

I also bring you greetings from the IAMFES Board of Directors and staff, each of whom I deeply respect and admire. You have chosen your officers well, and they have employed dedicated and capable persons to work for the Association. The system adopted in our Bylaws years ago whereby in successive years officers are chosen from among sanitarians, industry and academia has provided leaders of a mixture that is highly beneficial. The system provides heterogeneity, and heterogeneity begets vigor. We have vigor in our Executive Board along with a variety of ideas.

Variety can make life spicy, but activities of your Board are characteristically tempered by good judgment and insight.

It is my purpose in this address to apprise you of my thinking about the status of the Association and its outlook for the future. Of course, I am addressing you from a biased viewpoint. My loyalty to IAMFES, and I am sure yours, causes me to view the subject with less objectivity than might an outsider.

Publications - We belong to an international organization, one that is best known for its Journal of Food Protection. Under the leadership of Editor Elmer Marth, Associate Editor Mike Dovle and Journal Management Chairman Pete Read, all premier scientists, and with contributions from 18 countries and 35 states in 1982, the Journal has achieved high status and brought acclaim to IAMFES. Because of its stature, the Journal attracted sufficient papers to merit publication of two special issues in 1982, and Elmer and Mike successfully solicited contributions from sufficient firms to publish these issues. The Journal's Editorial Board consists of 65 scientists from 29 states, 3 provinces and the District of Columbia. Nearly 2,900 Members and subscribers received IFP in June, 1983.

Publication of the Journal of Food Protection is a major way the Association accomplishes several of its objectives. It certainly helps us (1) Improve the professional status of sanitarians, (2) Develop methods of inspection and testing; (3) Improve sanitary methods, equipment and supplies; (4) Assist Members in technical work and development; and (5) Disseminate information. It may even help us meet our other

objective, i.e., Cooperate with other professional groups.

To broaden and enhance our communications with Members and others, the Association began in 1981 to publish *Dairy and Food Sanitation*, a journal designed to disseminate information of nonexperimental nature. By June, 1983, about 2,100 copies of this Journal were being distributed to Members and subscribers. This Journal has had growing pains and is, in my opinion, still seeking its niche in our society. Its Journal Management Committee, under the able leadership of Harold Bengsch, and its Editor, Kathy Hathaway, have worked long and hard to make DFS speak especially to sanitarians, fieldmen and industrial quality assurance personnel. Most of us agree that the need for such a publication is great. But, writing for it is something other than great to most of us. Credit to academic types for articles of a non-research nature is limited. Extension personnel of our land grant institutions are already over-extended. Industry employees and sanitarians frequently feel they have little to write that is new and different. So, obtaining useful material for publication is a continuing concern.

Of some concern to me is the cost of duplication of material placed in both Journals. As we talk about this, I want to be strong with my praise of those who have made it possible for IAMFES to publish with a comparatively low per page cost. Based on information obtained in an informal way, I calculated our cost per 100 letters and letter-sized spaces as about \$1 or about 1¢/space. This compares quite favorably to costs of publication in other journals in which the figure is between \$1 and \$2 per 100 letters of spaces.

Nevertheless, the Association could save money by not printing duplicate pages in the two Journals.

To date the Executive Board has taken the stance that there is certain information that is important to all Members – this information is therefore duplicated in the Journals. Thus, the 2,500 Members and subscribers who get only one or the other Journal receive the information once, whereas the 1,200 who purchase both Journals get two opportunities to read the same pages. Our pricing structure recognizes this situation. A person who primarily wants JFP can have DFS for only \$10 additional, a savings of \$50 over the per issue price, and one who primarily reads DFS can have JFP for \$22, a cost of only about .22¢/page, including postage and handling. Thus, it appears that our present pricing structure may be retained and that we are advised not to adopt the practice of some associations of having their non-technical publication received by all Members, a separate charge being levied for the scientific Journal.

Committees - Since I became President-Elect and started pondering appointments to committees, I have been both vexed and pleasantly amazed by the structure and function of IAMFES committees.

Unlike the American Dairy Science Association, of which many of us are members, IAMFES has no procedure of rotation and appointment of committees. We work on a much less formal basis, allowing Members to choose the committee(s) with which they work and often leaving a chairperson in a position for many vears.

This procedure has many advantages. It gives Members opportunity to be involved with practices, issues and policies of greatest interest to them. It provides for continuity in that the tenure of persons on a committee is not limited.

However, it also has significant disadvantages among which is the loss of drive on the part of leaders who too long are charged with the great responsibilities of keeping a committee on course and active. When one or a few people have to carry the load for a long time, the load gets awfully heavy, and sometimes one gets tired of carrying a load of milk and would like to haul cattle for awhile.

Last fall we asked first Vice President Archie Holliday to study our Committee structure and duties. We presented him with the results of a survey of committee chairs that I did at the Louisville meeting. As Archie moves into the President-Elect's position and begins to work with committees, we expect him to be well informed on the subject.

Those of you who read my "President's Perspective on Committees" learned that IAMFES has about 225 persons on committees and that their contributions to IAMFES, and to sanitarians in general, have been great. There is no way we could meet our organizational objectives without this valuable input of so many of you. My most sincere and cordial thanks goes to each of you who came a day before the technical sessions started so you could help us meet several of our objectives. It is my hope that each of our committees will prepare, for publication, information on their activities and particularly that studies done by IAMFES Committees will be completed in a timely manner and that the results will be quickly disseminated.

Affiliate Council — Our Constitution and Bylaws provide for a council made up of representatives from each Affiliate. For four or more years I have attended each meeting of the Council and have listened as interested representatives presented persuasively their thoughts about policy and practice. Our forebears truly intended that the council advise the Executive Board of my needs, concerns, interests and programs of the affiliates and their members. What I have seen happen in the Council both enheartens and disheartens me. I'm enheartened by the participation of several who, having discerned the wishes of their affiliate, bring those wishes before the council. I'm disheartened that too often an affiliate has no representative or that the representative is not informed regarding the subjects that may be discussed.

To help alleviate this problem it is important that there be two-way communications between Council members and the Council chairman. Affiliates not represented at the Annual Meeting should receive a letter informing them of what transpired. Then, before the Annual Meeting the Chairman should inform representatives of subjects expected to be discussed. I hope that our efforts to communicate this year have aided representatives in their tasks.

Representatives to Other Organizations — By having representatives to the National Mastitis Council, the 3-A Sanitary Symbols Council, the International Dairy Federation, the Conference of State Sanitary Engineers, the Sanitarian's Joint Council, the National Conference on Food Protection and the Interstate Shellfish Sanitation Conference, IAMFES is able both to give and to get information.

Many of you represent us well in other capacities. We all profit from your Memberships and activities in that you are kept well informed and are more productive in IAMFES.

I address this subject because I feel it illustrates the wealth of our organization and that it gives us cause to expect our Members to provide each other with sound advice. Our collective wealth of education and experience is great. Our challenge is to use it wisely and to provide incentive to pass it on and around.

Awards - Your President has many pleasant opportunities. One of those is to serve on the Crumbine Award Jury – the body composed of the Presidents of IAMFES, the National Environmental Health Association, the Chairman of the Environmental Health Section of APHA, a consumer advocate, and three other professional sanitarians or public health workers. The award is given by the Single Service Institute for excellence in food sanitation at the local level.

I have been most favorably impressed with the high quality of food sanitation programs described in the applications for the award. I want to publically thank the Single Service Institute for sponsoring the award and to encourage each of you to strive for the excellence that merits your department's application. It surely can be done, even by a small unit.

We continue to have the support of (1) Diversey Wyandotte, The H. B. Fuller Company, and Klenzade Division of Economics Laboratories for our Sanitarian's Award, (2) The Milking Machine Manufacturer's Council of the Farm and Industrial Equipment Institute for our Educator Award, (3) NASCO International for our Barnum (Industry) Award, and (4) Red Lobster Inns of America for our Sherman Award.

For this support we are most grateful. Excellence in these phases of work should be recognized. As individuals lead the way to high levels of attainment,

others are caused to follow. If we are to improve the professional status of all our Members, some people must lead the way. I'm sure that each of you has already found an arena in which you have become a leader. I wish that we could recognize all of you. Your dedication to the betterment of the lot of your fellow man is an honorable quality - your daily striving to protect the health and welfare of your people is commendable and rewarding. When you've become well informed, have studied the pertinent facts and have acted rationally and positively, you will have done your job well.

International Office - You and I have been most fortunate to have enjoyed Membership in IAMFES as it was being managed by Dr. Earl O. Wright. This will be Earl's last meeting as Executive Secretary. Many of you have been privileged to work closely with Earl, have learned how dedicated he has been to the International, have seen him direct its growth and development and have continued to discover that Earl is long on love, big of heart, and in every way sincere.

We wish Earl and Sally the best of life as they retire to Arkansas, and no doubt, more will be said about this retirement in the future.

It is the future on which I want to now focus – on the leader your Board has chosed to manage International's affairs tomorrow. That person is Kathy Hathaway.

Kathy began working for IAMFES and to study in Professor Wright's School in December, 1981. She had three years experience with Hot Line, Inc. where she was manager of the composition department and the subscription departments and where she worked as a public relations specialist. Previously, Kathy had worked for two radio stations in Iowa performing sales, writing, programming and pubic affairs duties. Kathy has a bachelor's degree in communications.

In her work with IAMFES in Ames, Kathy Hathaway has added a new dimension. She has created direct mail pieces, trained an advertising representative to solicite, advertising for the Association, created an Association brochure, became qualified to do all sorts of things with the Apple III computer edited the Milk and Food Sanitation Journal, managed the office and learned what IAMFES is all about.

Kathy has regularly informed your President and President-Elect of what has been happening in the Ames office. As Earl has given her progressively more of his responsibilities, she has incorporated them well into her routine. As her knowledge of the organization and its needs has increased, Kathy's mind began to suggest new projects, new ways to serve Members, and new ways to obtain Members, subscribers and advertisers.

Furthermore, at one time when the Executive Board was considering what way to go in managing the office as Earl retired, Kathy and her two assistants

prepared a statement that showed the Board their concept of the operation, their strong interest in serving us well, and their abilities to get the job done. This impressive statement increased the Board's confidence in our operations team.

Now a word about the other two members of the team, Jeanine Strodtman primarily works in member and affiliate services and circulation while Suzanne Trcka has major responsibilities in recording, billing and acting as receptionist. These are loval and dedicated employees who get along well with each other. Jeanine and Suzanne know who is in charge, but I like to view them as the team that they claim to be. They complement each other well. They are happy people when you ring them up. It's my impression that they intend to do such a good job that there will be no question that (1) IAMFES remains a vibrant and vital organization, and (2) they obtain for themselves the job security that everyone seeks and for us the confidence that those who perform the many daily tasks that keep IAMFES going are people we can depend on.

I would be remiss to fail to compliment our printer, Don Heuss. In the two visits I have had with him and in the tour of his plant, all reactions are strongly positive. I consider Mr. Heuss to be a progressive businessman who runs an efficient shop. All indications are that we can expect him to assist us toward further advances in computerization of our publications processes.

The Future — Some have asked, why doesn't the International do more for the affiliates? Consideration of the question prompted me to list the Member services we currently provide. As the top of the list and far ahead of all others in importance my: (1) publication of our Journals which include newsletters, and (2) provision of an Annual Meeting.

Nearly all our other activities are in some way linked with these two.

Committees meet at the Annual Meeting. Much of their reporting is done at the meeting or in a Journal. Proceedings of the Annual Meeting are largely reported in the Journal.

Member services can also include direct billing of affiliate members through the International Office. Having been Secretary-Treasurer of a state organization, I've learned how much work it is to keep up with members and their dues. Since we have the Apple III in Ames, we are able to provide an important member service to those affiliates that wish to turn over collection of dues. In fact, Kathy's notice to numerous direct Members that their affiliate needed them resulted in several new affiliate memberships.

Sometimes affiliates need to have a representative of IAMFES at their meeting. Travel expenses have gotten so high that your Executive Board has had to curtail travel somewhat. In the past year Kathy and/or Earl visited five affiliates plus an organizational meeting in Arizona. However, the officers of the Association also attended meetings of nine affiliates. The purposes of these visits include promotion of the Journals and of the benefits of Membership in IAMFES, explaining procedures and practices of the International, and providing technical, scientific or operations advice to the affiliate. Frequently, there are also chances to contact prospective Sustaining Members.

For 1983-84 we plan to continue to ask our Board members to make themselves available to the affiliates within their area. We like to split the cost of travel equally.

For those affiliates that especially need Kathy's assistance we want to make her available. However, we must limit expenses for such travel, and this means she can make about five visits per year.

In the upcoming business meeting you will hear in detail how the financial picture of IAMFES has improved markedly in 1982-83, viz., how we went from a loss of about \$30,000 in 1980-81, to a balanced budget in 1981-82, to a net income of about \$43,000 in 1982-83

This was the best of news. Of course, we have Earl and Sally to thank for a good part of our savings - they took only \$6,000 salary this past year. You may recall that Earl asked that the salary he gave up be used to replenish the Foundation Funds from which IAMFES borrowed the previous year.

Now that the Foundation Funds have been restored (with interest) I have asked Harry Haverland and Earl Wright to consider and to recommend to the Board how these funds may best be used. Our Sustaining Members are told that the monies they contribute will be used to promote research and education to aid workers in the field of milk, food and the environment. We want to affirm that this is our intent.

We have many reasons to rejoice over our organizations accomplishments in 1982-83. We started the year with a fine meeting in Louisville and end it with YOU at the Gateway to the West. What more could we ask?

Nineteen hundred and eighty-three and eightyfour will present new challenges. New affiliates are contemplated for Nebraska, Wyoming and Arizona. Some mature affiliates need rejuvenation. Our staff must continue to contact and convince people that membership is meaningful.

Our editors and their helpers must maintain and even advance the quality of our Journals. The Program Committee and Alberta's Local Arrangements Committee must prepare well and persuade convincingly that it is really worth the extra cost to travel to Alberta next August 4-9. Kathy, Jeanine and Suzanne must keep the Ames office running smoothly

and efficiently. They'll have more work to do than ever before, but they'll be better equipped to do it.

It will be done! When President Brazis stands before you in Edmonton on August 8, I predict his smile will be big, his enthusiasm will be strong and his audience will be large.

You, my friends, are going to be the ambassadors of IAMFES. You, this year, are going to sell our organization as the premier representative and servant of sanitarians and related individuals in this world. I'm

confident that the fellowship of this occasion, the education you receive and the benefits you and yours otherwise derive will motivate you to enlist your co-workers and friends as dues-paying, benefit-receiving Members of IAMFES.

You will do it, won't you?

Reprinted from *Dairy, Food and Environmental Sanitation*, November 1983, Vol. 3, No. 11.

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## **Presidential Address**

Sidney E. Barnard

73rd Annual Meeting of the International Association of Milk, Food and Environmental Sanitarians, Inc. August 3-7, 1986 Minneapolis, Minnesota

ntroduction - Here we are at the 73rd Annual Meeting of the International Association of Milk, Food and Environmental Sanitarians. Preregistration of over 600 persons is an indication of the direction in which your Association is going. You have another outstanding program before you. This has always been the key to how many people participate in a meeting. Your Association has taken a number of steps, which have been completed this year. You will see the changes in the next few days. Welcome to what will be a worthwhile educational program and a chance to enjoy a good time.

**Program** — Your Executive Board chose to invite a number of the Local Arrangements Committee to the planning meeting last fall. Roy Ginn selected some industry leaders from Minnesota. The program reflects their input. In my judgment it is the best program during my 22 years with your Association. Roy Ginn, with his secretary Mary, pulled the many topics and speakers together. The Listeria and Salmonella symposia may be the highlights, but there are sessions for all regardless of your interests. These include milk, food, field, laboratory and environment.

Exhibits — Your Executive Board agreed to have a set number of educational exhibits on a trial basis this year. They were quickly filled, with other companies desperately wanting space. Your response and our judgment will determine whether these will be continued next year. We hope the exhibits are a worthwhile addition to the program this year and in the future.

Local Arrangements — When we met here last fall we were impressed with the facilities at the Radisson South. The Local Arrangements Committee under the leadership of Michael Pullen has done a great job. Vernal Packard, David Smith and Bill Coleman have led key committees. Both attendees and companions should have a good time with the variety of social activities which they have arranged for us. They have a big challenge since we expected over 400 people to attend and the number exceeded 600.

Membership - More good news is that Membership has increased in all areas. Affiliate, direct Members and subscribers were up over 200 from the previous year. This is the first year in many that we have actually increased and maintained on renewals. The advertising department alone brought in 50 of these Members. Additional promoting in terms of distribution of the Journals, direct mail, and travel have brought this about. Ruth Fuqua, Membership Chairperson and your Executive Board are getting plans into action to continue this increase. Total Membership was 3,598. Twelve new Sustaining Members this year can also be credited to the efforts of the Advertising Department.

**Advertising** — Due to the efforts of Kate Wachtel and the advertising staff of two part time and one full time person, over \$70,000 in advertising was sold this year. The goal for our next fiscal year is \$100,000. Advertising is very important in keeping your Association in the black and maintaining your dues at the present rate.

Ivan Parkin Lectureship — At the recommendation of the Foundation Fund trustees, the Executive Board initiated an annual lectureship named in honor of Ivan Parkin, a long time active Member of the Association. Ivan continues to serve as parliamentarian and to give the invocation at the banquet. This annual lectureship brought us our keynote speaker, Dr. J. C. Olson.

Developing Scientist Award — This will be the first year when graduate student papers will be designated, judged and monetary awards will be given. Seven abstracts were accepted and under the leadership of Lloyd Bullerman, a judging committee was appointed and outstanding presentations will be selected. It is hoped that this will become a larger part of the program in coming years. This idea came from the trustees of the Foundation Fund and was endorsed by the Executive Board.

Foundation Fund - Money has accumulated in the Foundation Fund from Sustaining Membership fees. Both the trustees and the Executive Board endorsed the idea of developing ways to use the money in the most worthwhile manner. We are considering a proposal to develop a visual aids library for loaning slide/cassette tapes and videotapes to Association Members.

Affiliates — We have tried to foster more exchange of information between the affiliates and the Association staff in Ames, Iowa. We need to know more about affiliate activities. To help achieve this, an effort has been made to contact the president or secretary of each affiliate this past year. You should note that all affiliates listed in this year's program have a delegate name. Sandy Engelman from the Ames office will be contacting affiliate officers throughout the year for meeting dates, Annual Meeting highlights, officer changes and so on. The 800 number has greatly improved the communication between affiliates and the Ames office.

Publications — Under the leadership of the editors, both publications continue to be successful. Mailing dates have been moved up so that you will be receiving your publications on a timely basis. There is a sixmonth backlog of articles ready for printing in the Journal of Food Protection. Dairy and Food Sanitation for the first time has a comfortable backlog, but as always welcomes and needs your articles. Presentations at affiliate meetings make good articles. Your on-the-job experiences are of interest to the readership. You all have practical information and experiences to share with others. Rough out an article and Suzanne Trcka will work with you on it.

**Committees**—The backbone of IAMFES has always been its Members and their activities in committees. Some of the committees have not been very active in the past few years. If there is still a purpose for your committee, let's revitalize them so they are worthwhile. Committee chairpersons are no longer required to give a report to the Executive Board. However, a report five minutes or less in length is requested during the business meeting.

Finances — This year has been a year of investment in the future. Substantial financial investments were made in a new and larger computer, an 800 telephone service and additional personnel. This has given the Membership better service as well as increasing advertising by 75%. These investments, however, were not anticipated when the budget was prepared, but we felt the need for these areas was more important then having a better bottom line. Your Association squeaked by in the black even with these added expenditures.

Ames Staff — Kathy Hathaway and our Association staff have done an outstanding job. They have improved service to the Members and expanded advertising. Behind the scenes they play a big part in making our Annual Meeting a success. They deserve our full support and thanks.

**Executive Board Action** — We unanimously voted to ask affiliates for a brief annual report of activities for the previous calendar year. This will be used as a basis for selecting the affiliate for the Shogren Award. In addition to certificates of merit given to members of affiliates at their meetings, we will be giving an award to the affiliate gaining the most new members for IAMFES. The 1987 meeting will be hosted by California and the 1988 meeting will be in Florida. We received two formal bids for 1989 from Kansas and Missouri.

**Thanks** — I appreciated serving as your president this past year. June and I have enjoyed meeting many new friends and it has surely broadened my experience. Thanks for letting me serve you, along with a strong Executive Board.

Conclusion - Your Association increases its reputation because of the two publications and the many activities of its Members. Our future is bright. With the election of Ron Case to the Executive Board and Roy Ginn assuming the presidency, your Association will be in good hands.

Reprinted from Dairy, Food and Environmental Sanitation, November 1986, Vol. 6, No. 11.

# SPECIAL EVENTS

In conjunction with the International Association for Food Protection 87th Annual Meeting

# GOLF TOURNAMENT

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

## The Golf Club at Bradshaw Farm

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

Cost: \$90.00 (\$105.00 after June 30, 2000)

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!

## Monday Night Social — Fernbank Museum of Natural History

Monday, August 7, 2000

6:00 p.m. - 9:30 p.m.

Cost: Adults - \$39.00 (\$44.00 after June 30, 2000)

Children - 14 and under \$34.00 (\$39.00 after June 30, 2000)

(Buffet included)

A world of exciting adventure awaits you. At your leisure, dine with colleagues and explore the unique state-of-the-art galleries and exhibitions.

For a limited time only, Life & Death Under the Pharaohs is being featured. This is one of the largest traveling exhibitions of Egyptian art, featuring 300 antiquities and scale models. Don't miss out on this once in a lifetime opportunity!

Other exhibits open for your enjoyment will be:

- A Walk Through Time in Georgia
- Cultures of the World
- First Georgians

See our Web site at www.foodprotection.org for additional Annual Meeting information.



# 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 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:

**Bey Corron** International Association for Food Protection 6200 Aurora Ave., Suite 200W Des Moines, IA 50322-2863, USA Phone: 800.369.6337; 515.276.3344 Fax: 515.276.8655 E-mail: bcorron@foodprotection.org

# SYMPOSIUM PROPOSAL

# 2001 Annual Meeting August 5-8, 2001

## Minneapolis, Minnesota

Title:		
Organizer's Name:		
Phone:	Fax:	E-mail:
For each presentation provide	de: Topic – Suggested Present	er (Affiliation)
(Example: 1. HACCP Implem	nentation - John Smith, Unive	rsity of Georgia)
1.		
2		
3.		
4		
5		
6.		
Suggested Convenors:		
Description of Audionas		
Signature of Organizer:		
Receipt by mail by July 17, 2000 to:	International Association Symposium Proposal	on for Food Protection
by July 17, 2000 to.	6200 Aurora Ave., Suit	
	Des Moines, IA 50322	2863, USA
Submit in person on August 6, 2000 to:	Program Committee International Association	on for Food Protection 87th Annual Meeting
	Atlanta, GA	0.000 0
or Contact:	Bev Corron International Associati	on for Food Protection
	6200 Aurora Ave., Suit	
	Des Moines, IA 50322-	2863, USA
	Phone: 800.369.6337; Fax: 515.276.8655	515.276.3344
	E-mail: bcorron@foodp	rotection.org

# New Members

## BULGARIA

Ilia N. Iliev SIBIO 93 Ltd. Ploydiy

#### CANADA

Rena Crumplen Parmalat Canada Ltd London, Ontario

Gary E. Gensler Alberta Agriculture, Food & Rural Development, Edmonton, Alberta

Marie-Claude Lamontagne I. M. Schneider Inc. St. Anselme, Quèbec

Carl J. Pietraszko J. M. Schneider St. Anselme, Quèbec

Dominque St. Louis SYPAMO Inc. St. Laurent, Ouèbec

## ENGLAND

**Richard Kemp** University of Liverpool Neston, South Wirral

## GERMANY

**Martin Exner** Hygiene-Institut Sigmund-Freud-Strasse, Bonn

## KOREA

Kim H. Soo KMIS, Seoul

#### **UNITED STATES**

#### Alabama

Ronald Dawsey Alabama Dept. of Public Health Montgomery

#### California

James Bell Ralphs Grocery Co. Compton

Marco A. Guzmàn Delimex Chula Vista

Jim Jackson Ralphs Grocery Co. Compton

Frances F. Pabrua Fresh Express Salinas =

An Q. Tran Vitasoy, USA Inc. San Francisco

#### Colorado

John Samelis Colorado State University Fort Collins

#### Florida

Michael Brennan Walt Disney World Orlando

## Georgia

Gloria L. Tetteh University of Georgia Griffin

#### Idaho

Bruce J. Bradley Rocky Mountain Resource Labs, Inc. Ierome

#### Illinois

Marlena Bordson Illinois Dept of Public Health Springfield (

## Indiana

Lewis C. True A.S.I. Food Safety Consultants, Inc. Indianpolis

#### lowa/

**Ronald Majeres Excel Specialty Products** Orange City

## Kentucky

Patricia A. Ortiz S.S.E. Manufacturing Florence

## Maryland

Michael L. Dunn Sodexho Marriott Services New Market

Debra Y. Johnson US Army Fort Meade

## Michigan

Carol A. Austerberry Monroe County Monroe

Thomas J. Krueger Summit Laboratory **Grand Rapids** 

#### Minnesota

#### Ralf Loeffelholz

Ecolab Inc. St. Paul

#### Jack E. Ulrich

First District Assn. Litchfield

#### Nevada

#### Jaime S. Frank

Nevada State Health Laboratory Reno

#### **New Jersey**

Luis V. Castro Biotrace Inc Plainsboro

#### **New York**

#### James M. Keller

PATCO Management, Inc. Liverpool

#### **North Carolina**

#### Michael J. Casteel

University of North Carolina Chapel Hill-

## Ohio

#### Theresa S. Witeof

Golden Valley Microwave Foods Marion

## Pennsylvania

#### Bruce Dean

RIDIONAL

Pulva Corporation Saxonburg

#### Texas

#### **Yoseline Torres**

Metromedia Restaurant Group Plano

#### Wisconsin

#### Diane M. DeMonaco Dowd

University of Wisconsin Madison

#### Leon Gustafson

DSM Food Specialties USA, Inc. Manitowoc

#### Kurt Heitmann

Alto Dairy Corop Neshkoro/

#### James J. Potter

Foremost Farms USA, Sauk City

## **New Sustaining Member**

AUSTRALE

#### James Dickson

Iowa State University Food Microbiology Group Ames, Iowa

# **UpDates**

## Alfa Laval Flow Inc. **Names Technical Services** Supervisor

om Jensen of Pleasant Prairie, WI, has accepted a position with Alfa Laval Flow Inc. as technical services supervisor.

Originally from Denmark and a former employee of Alfa Laval sister company, Tom has established an extensive amount of product knowledge of the entire sanitary flow line. He holds several years of technical and customer service management experiences and will oversee the day-to-day activities of the technical service department.

## **Peter Koley Joins Fristam Pumps**

Fristram Pumps, Inc. is pleased to announce that Peter Kolev has joined the company as an applications engineer. In his new position, Peter will be responsible for providing in-house and in-field technical support and customer service.

Peter has a master's degree in mechanical engineering from the Technical University of Sofia, Bulgaria (formerly the Higher Institute of Mechanical and Electrical Engineering). In addition he has over five years of pump industry experience and is multi-lingual.

## J. L. Prince and B. Nelson **Elected to ADPI Board**

¶r. John L. (Jack) Prince, executive vice president and chief operating officer, Dairy Foods Industrial Group, Land O'Lakes, Inc., Arden Hills, MN and Mr. Brad Nelson, vice president of operations, Brewster Dairy, Inc., Brewster, OH, were elected to the Board of Directors of the American Dairy Products Institute at the February 4 Board meeting. Both Prince and Nelson were selected to fill existing Board vacancies and will serve initial terms that expire in 2001.

Visit our Web site www.foodprotection.org

## **World Health** Organization (WHO) **Approves Resolution** on Food Safety

uring its January 2000 session, the Executive Board (EB) of WHO adopted a resolution on food safety, which is expected to be endorsed by the World Health Assembly (WHA) in May 2000.

With this decision, WHO recognizes for the fist time in its 52-year history in this formal and official form the importance of food safety for public health.

The US representative at the EB had requested the inclusion of food safety at the EB agenda. A draft resolution had been prepared by the two US public health agencies responsible for food safety (i.e. FDA & FSIS). During the EB session, many of the members strongly supported this initiative and subsequently adopted the resolution after several amendments. With the anticipated endorsement of this resolution by the WHA, food safety enters nationally and internationally into a new area as an essential public health function.

## **New Report Focuses** on the Science of Safe Food

onsumers may hold the key to food safety, a new report from the American Academy of Microbiology says. Safe food-handling practices go a long way toward minimizing the threat from foodborne microbes that cause disease. While changes in food production, processing, and international trade can present new risks for consumers-steps taken in the kitchen can kill pathogens and make sure that cross contamination does not occur. The report, "Food Safety: Current Status and Future Needs,' makes specific recommendations for improving food safety at each step from the farm to the table.



The Centers for Disease Control and Prevention estimates that there are as many as 76 million cases of foodborne illness in the United States each year. Five thousand of those cases are fatal. Improved systems of sampling and surveillance can offer better understanding of the nature and scope of the problem. The report discusses research priorities for more and better scientific data, and says risk assessment is a promising tool for addressing food safety issues. Responsibility and roles for the food safety community including government, industry, professional societies, and consumers are also covered in detail.

Another focus is understanding interactions among microbes. humans, animals, and the environment. Ecological forces and the agricultural use of antibiotics may alter the way microbes live, multiply and survive. Foodborne pathogens are evolving, and new pathogens are emerging to fill special environmental niches. These processes may pose new threats to human health.

The document presents the conclusions of a panel of 30 scientists that spent several days deliberating the issues. The meeting brought together aca-

demic researchers, government regulators, food industry representatives, and health care professionals to take a broad and inclusive view of problems and offer solutions.

## **Apparent Viral** Gastroenteritis after **Eating Scottish Oysters**

t least 12 people developed diarrhea, vomiting, pyrexia, and myalgia around 48 hours after eating oysters at one or other of four restaurants in England between 26 and 29 January 2000. All four restaurants obtained their ovsters from a single source that supplies outlets throughout the United Kingdom (UK) and beyond. None of the cases has been confirmed microbiologically, but the clinical features, incubation period, duration of illness (about 12 hours in those who said), and association with eating oysters are suggestive of small round structured virus (SRSV) infection. Any remaining oysters harvested from the same period were withdrawn and samples of these are being tested. The supplier's premises and treatment processes are being examined by environmental health officers. Public health officials throughout the UK were asked to report relevant cases and incidents, but none have been attributed to oysters from this supplier. Valentine's Day (14 February) is a date on which the aphrodisiac property of oysters is commonly tested. SRSV accounted for 43% (680/1568) of the general outbreaks of infectious intestinal disease identified in England and Wales in 1995 and 1996. Twentyone of these outbreaks were reported to be foodborne. A total of 12 outbreaks were attributed to eating oysters. Apparent outbreaks of SRSV infection may not be confirmed because by the time cases come to light and are investigated the virus is unlikely to be detectable by electron

microscopy. The development of polymerase chain reaction tests offers the potential for confirming the diagnosis over a longer period, and may in time improve ascertainment of SRSV infection.

## Fatal Neonatal Salmonella rubislaw Infection in Household with Pet Reptile in England

three-week old baby recently developed Salmonella meningitis and died. Isolates from Margate General Hospital in Kent and St. Thomas' Hospital in London have been identified as Salmonella rubislaw by the PHLS Laboratory of Enteric Pathogens (LEP). The baby's mother is also infected with S. rubislaw. The family keeps a water dragon lizard and a chinchilla. Salmonellas isolated from the water dragon's drinking water and a piece of wood from its cage have been identified as S. rubislaw by Ashford Public Health Laboratory in Kent. Only seven reports of human infections with S. rubislaw were made in England and Wales in 1998 and six in 1999. In December 1999, LEP reported on a six-month old baby in the north east of the country whose S. rubislaw infection was linked to an orange skink. Increasing popularity of exotic pets is bringing to light the risks of keeping reptiles, particularly in households that include people at increased risk of invasive infection such as young children, elderly people, and those with impaired immunity.

## **Carbonating Cow** Manure Stunts E. coli Growth

harmless ingredient found in soft drinks and some toothpastes suppresses the growth of Escherichia coli in cow manure, U.S. Department of Agriculture and Cornell University scientists have reported.

"Some cattle harbor E. coli O157:H7 and other disease-causing bacteria, and these pathogens can persist in manure for long periods of time," said Agricultural Research Service Microbiologist James B. Russell. "But in lab studies, adding sodium carbonate kills many of these harmful microbes." ARS is the chief research agency of USDA.

Russell works at the ARS US Plant, Soil and Nutrition Laboratory in Ithaca, NY, and is affiliated with the Nutrient Conservation and Metabolism Laboratory at Beltsville, MD. Russell collaborated with postdoctoral fellows Francisco Diez-Gonzalez and Graeme Jarvis, and with undergraduate student David Adamovich in Cornell's Department of Microbiology on the research.

Russell's team had been looking for a practical and inexpensive method for treating dairy cattle manure to decrease E. coli O157:H7 and other potential pathogens.

"Bacteria can be killed by chlorination, but chlorinating manure is not practical," Russell said. "Laboratory tests indicated that E. coli was resistant to alkaline pH and ammonia, but it was very sensitive to carbonate if the pH was alkaline."

"Carbonate can be derived from urine. When urease-an enzyme in feces - breaks down urinary urea, some carbon dioxide is trapped as carbonate. Urinary carbonate alone can kill E. coli, but cows don't make enough urine to kill all the E. coli," Russell said. The ARS-Cornell team made its discovery by mixing manure and urine. When the ratio was 1-to-1, virtually all of the E. coli were killed. However, dairy cows typically excrete 2.2 times

as much feces as urine, and E. coli persisted at that ratio.

"If cow manure samples are spiked with sodium carbonate in the laboratory, E. coli do not persist. Some sodium hydroxide is also added to make sure that the pH is at least 8.5, but the estimated cost of this treatment would be only \$10 per dairy cow per year," Russell said. He indicated that after only 5 days, the E. coli count was less than 10 cells per gram. Because the manure samples originally had from 100,000 to 100,000,000 counts per gram, carbonate appears to be an extremely effective antibacterial agent.

Cattle manure is often stored outdoors in large tanks or ponds prior to spreading on fields, but a three-fold dilution with water did not diminish the effectiveness of carbonate treatment.

While this process looks very promising in the laboratory, pilot and farm-scale testing will be needed before the technology can be recommended to the livestock industry, he added.

Laboratory experiments also indicated that carbonate killed other bacterial pathogens such as Salmonella Typhimurium, Streptococcus pyogenes, Klebsiella pneumoniae, and Staphylococcus aureus

## Science "Management" Key to Trade **Disputes**

cience will need to be managed more responsibly in the trade arena than it has been in the past if agriculture is going to reap the benefits of globalization, says a University of Saskatchewan economist.

Dr. William Kerr told the National Beef Science Seminar, held recently in Lethbridge, that the management of science-based information is a major factor in

facilitating smooth trade in the growing international marketplace. Agri-food issues often make the headlines, and driving this intense media coverage is a general public uneasiness with agriculture science. Although many of these well-reported trade disputes are based on science, Kerr says science itself is not the problem. "It's the mismanagement of science, not science itself, that leads to trade problems," he says. A few fundamental problems are at the root of the public's misperception of science, says Kerr. First, science is a statistical process. "Safe" food and "environmental acceptability" are based on statistical processes. The very nature of science means it's mathematically impossible for anything to be deemed safe beyond question. Even when research indicates that a food product or technique is virtually 100 percent safe for human use, a scientist is compelled to say risk cannot be absolutely ruled out.

"Consumers and environmentalists are looking for a granitesolid guarantee," Kerr says. "But a scientist, in good conscience, can't give it. And once that perception of risk is created, it really gets amplified by the media."

Adding to the problem is the fact that science is not science at all in terms of international trade regulations. Kerr says pure science is based on absolutes, but developing international laws and regulations about science is anything but black and white. "It takes years of meetings, formal discussions, informal sessions and working groups to make even a small degree of progress," he says.

While there are some inherent difficulties with science in trade. Kerr believes the management of science by governments and the private sector has been far more detrimental to international commerce. He says the British government's handling of bovine spongiform encephalopathy (BSE), or mad cow disease, is a perfect example of how mismanagement of science-based problems can lead to science losing its credibility.

Another influencing factor is that scientific research often leads to change, and Kerr says change of any kind will always make some people uneasy. Every major new technology has always been met with some resistance-television, space travel, the Internet. Concerns about these new technologies are most often directed toward science, and the research community is usually the "they" in public concerns about "what will they come up with next?" The current debate about biotechnology's place in food production is a perfect example, Kerr says.

"The application of biotechnological techniques in agriculture represents one of the most important and wide-ranging technological changes seen to date," Kerr says. "It has wide-ranging applications and represents a fundamental change in how humankind interacts with nature. As with any new technology, it brings uncertainties along with its benefits."

New technologies are costly to develop. Kerr says this underlines another problem with science it can be underfunded. Shrinking public budgets mean science must look to the private sector for support, and the public is often sceptical of science run by profitdriven organizations. "The public questions their motives, particularly those people who dislike large corporations," Kerr says.

As science and international trade enters the new millennium, Kerr says it's time to re-evaluate the way science and scientific information is managed.

He says as new technologies continue to be discovered, they will provide both opportunities and challenges for international trade. Management of the science behind those opportunities will

be key if the beef industry is to capture the benefits of globaliza-

## State Health Director Warns Public about **Eating Raw Sprouts**

iting recurring outbreaks of illnesses associated with the consumption of contaminated raw alfalfa and clover sprouts and an advisory from the federal Food and Drug Administration (FDA) on the potential risks associated with consuming these sprouts, State Health Director Diana Bont urged consumers to do the following: Children, the elderly and individuals with weakened immune systems should not eat raw alfalfa and clover sprouts. Healthy individuals could become ill from eating raw alfalfa or clover sprouts. Those who wish to avoid the risk of illness should not eat these products.

Raw alfalfa and clover sprouts have emerged as recognized sources of foodborne illness in the United States. Since 1996, at least 12 sprout-associated outbreaks in California and numerous sproutassociated outbreaks in other states have been reported. Although the outbreaks have included healthy individuals of both sexes and all ages, public health officials are particularly concerned about children, the elderly and those with weakened immune systems. Since these individuals are at greatest risk of developing serious complications if they become ill, they should not eat raw sprouts. Bont reiterated previous advisories from the California Department of Health Services in emphasizing that alfalfa and clover sprouts should not be served in nursing homes, hospitals and daycare centers. Salmonella or Escherichia coli (E. coli) O157:H7 infections are the most common

illnesses associated with sprout consumption. For most healthy adults, these bacteria cause four to seven days of diarrhea, fever and abdominal cramps. Although these infections are generally self-limiting in healthy adults, in some individuals, especially young children, the elderly and those with weakened immune systems, the illness may be much more severe. The bacteria may spread to the bloodstream and to other vital organs, and even be life threatening. In some children, E. coli O157:H7 infection causes hemolytic uremic syndrome, a serious illness that can result in kidney failure, anemia and death.

Raw sprouts present unique food safety problems because: The warm humid conditions needed to grow spouts are also ideal for the rapid growth of harmful bacteria.

Sprouts are generally eaten raw with no additional treatment, such as cooking, which would eliminate harmful bacteria. Washing may reduce the bacterial load. However, it does not eliminate the harmful bacteria that may be present.

People may unknowingly eat sprouts in sandwiches and salads purchased at restaurants and delicatessens. Bont advised consumers who wish to reduce their risk of foodborne illness to specifically request that raw alfalfa or clover sprouts not be added to their food purchased at restaurants, delicatessens and other eating establishments. Sprouts grown in the home also present a risk if eaten raw. Bont also reminded consumers that harmful bacteria contamination may not change the appearance, texture or taste of any food product.

FDA has issued a similar consumer advisory regarding the potential risks associated with eating alfalfa and clover sprouts. FDA has also issued a guidance document for the sprout industry on recommended sprout production practices designed to reduce the risk of bacterial contamination. Additional measures to reduce the risk of illness associated with sprouts are being investigated by industry and government, including irradiation of sprout seeds.

## **Effect of Vaccination** of Calves with Inactivated E. coli O157:H7 **Bacterin on Shedding** of E. coli O 157:H7 in Manure

uman infections with E. coli O157:H7, an important foodborne pathogen, are frequently linked to consumption of beef, as well as other food sources and water contaminated with this organism. Ordinarily, the health risk due to E. coli O157:H7 is contained by hygienic processing, persistently low storage temperatures, and by inadequate cooking of meat. Occasionally, these precautions are not observed or fail, leading to problems ranging from sporadic cases of illnesses to large-scale outbreaks (Jordan, et al., 1999). The gastrointestinal tract of clinically normal cattle is an important reservoir of infection of E. coli O157:H7 (Jordan, et al.,

Contamination of beef carcasses occurs principally by direct contamination with fecal material or rumen contents during the slaughter process, by direct contact with accumulated fecal material on hides, by contact with contaminated equipment or by airborne spread of dust or aerosols.

The source of the organism is one or more animals in the pen shedding E. coli O157:H7 during or shortly before slaughter. High rates of E. coli O157:H7 infection among newly weaned calves are thought to contribute to its dissemination within herds, and subsequent transmission of the

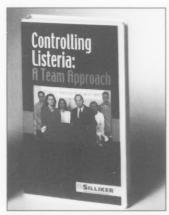
organism to humans through food and water contaminated with cattle manure. An approach to controlling contamination of beef products is to reduce or eliminate E. coli O157:H7 from the gut of animals in the preslaughter period.

In a study led by Dr. R. Johnson and Dr. S. McEwen, newly weaned, 6 to 10 weeks-old dairy calves were innoculated three times intramuscularly with a vaccine containing inactivated E. coli O157:H7, supplemented with inactivated verotoxin 2 and the adherence factor, intimin O157, to boost the immune response. The bacterin administered was approved by the Veterinary Biologics and Biotechnology Division of the Canadian Food Inspection Agency.

The calves were then orally challenged with an antibioticresistant strain of E. coli O157:H7. Antibiotic resistance acts as a marker for identification of the organism so that it can be tracked and identified in the laboratory. The calves were maintained in an isolation facility at the Ontario Veterinary College to ensure complete containment of this pathogen.

Despite strong and sustained antibody responses to the vaccination, vaccinated calves did not shed significantly fewer organisms in their manure than did the control calves. The researchers concluded that immunization and the accompanying antibody responses assessed in this study do not influence shedding of E. coli O157:H7 in naturally reared calves. However, they believe more investigation is needed to effectively reduce the organism in the gut and that vaccination still shows strong potential for reducing the spread of E. coli O157:H7. Drs. Johnson and McEwen commented that we should not give up on developing an effective vaccine. It is not going to be simple, but we believe a vaccine is possible, and the benefits to public health are substantial.

# Industry **Products**



Silliker Loborotories Group, Inc.

## Silliker Video Shows Controlling *Listeria* is a **Team Approach**

Cilliker announces "Controlling Listeria: A Team Approach", the new employee training video from Silliker Laboratories that combines compelling drama and practical scientific information to help food processors control the growth of Listeria.

"The video vividly shows that the failure to control Listeria through GMPs and rigid sanitation can have dire consequences for food companies," said Rena Pierami, general manager of education services, Silliker Laboratories Group, Inc. "Employees will be reminded of the crucial role they play in controlling the growth of Listeria in their plants."

In the dramatic segment of the video, a fictional processing plant closes it doors following the implication of one of its products in a devastating outbreak of Listeria monocytogenes. Then,

using actual in-plant footage from a variety of processing environments, the video provides a technical review of the Listeria species and highlights key practices to control its growth in plants. Among the topics covered in the video include:

- · Raw material receiving and handling
- Employee hygiene practices
- Cross contamination
- **Environmental monitoring**

Finally, the video punctuates the importance of team work among management, line-workers, quality control personnel, sanitation crews, and maintenance workers in the control of Listeria.

Silliker Laboratories Group, Inc., Homewood, IL

Reader Service No. 252

## **New Line of Electro**magnetic Vibratory **Feeders from Eriez Provides Precise Control**

Eriez introduces a new line of Electromagnetic Vibratory Feeders with enhanced control for high speed feeding. The new Series 36 feeders are rugged AC-operated units for linear, accurate feeding of large quantities of bulk materials. Both models meet international standards and include all metric fasteners.

With a capacity of up to 5 tons per hour (4.46 metric tons/hr), the HS-36 High Speed Feeder is ideally suited for high speed packaging, filling and conveying

applications of light products, those less than 25 pounds per cubic foot (0.4 gm/cc). Its highly damped elastomeric torsion spring makes it stop more precisely than any other feeder in the industry. The HS-36 is effective when used in many industries, including food processing and pharmaceutical processing.

The rugged construction of the model 36C Vibratory Feeder makes it ideal for medium-duty processing applications including food, chemicals, pharmaceuticals, abrasives and plastics. It can process seven tons per hour (6.3 metric tons/hr). Its patented electropermanent magnetic drive gives powerful 3,600 VPM with low power consumption. The 36C operates with MGS solid state control from Eriez that can vary line voltage from zero to 100

Eriez Magnetics, Erie, PA

Reader Service No. 253

## **New 3M Ouick Swab Product Streamlines Plant Environmental Testing**

Plant environmental testing no longer calls for preparing neutralizing diluents, filling racks of test tubes, and pipetting and plating the samples. 3M Quick Swab, the new ready-to-use environmental swab system from 3M, makes the task easier, more efficient, accurate and less expen-

The 3M Quick Swab system consists of a five-inch long

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rayon-tipped swab that, used wet or dry, delivers approximately 1.0 mL of sample directly onto a 3M Petrifilm Plate or 3M Redigel Test. The swab contains letheen neutralizing buffer to facilitate the recovery of bacteria. Letheen broth is more accurate than standard diluents because it neutralizes iodine, chlorine, halogen, quaternary ammonium, acid sanitizers and other residual sanitizers remaining on surfaces after cleaning.

3M's customer interviews showed that quality assurance personnel wanted a more efficient environmental testing system that was accurate, easy to use, moderately priced and available in an all-in-one format. "Based on that input, I believe we created the most efficient, cost-effective and economical method for environmental swab testing available today," said Kevin Habas, market development supervisor, 3M Microbiology.

"When you consider that the adenosine triphosphate (ATP) swabs cost around \$2.50 per test, the material expense alone adds up quickly," he continued. "At approximately \$1 per test, the 3M Quick Swab method costs significantly less. And that's not even considering the substantial labor savings this product offers. Traditional methods of preparing environmental samples require a significant amount of labor time."

The 3M Quick Swab saves labor by eliminating the need to haul racks of test tubes into a plant, prepare neutralizing diluents or use a pipette to add the sample to a plate or test. The streamlined testing procedure is not only more efficient; it also provides more consistent results from technician to technician.

3M Microbiology Products, St. Paul, MN

Reader Service No. 254



Fluid Metering, Inc.

## **Industrial Dispense Pump** IDS-2000 from Fluid Metering, Inc.

Fluid Metering, Inc., introduces the new IDS 2000 Industrial Dispense Pump for industrial process applications requiring maintenance free, precision fluid control.

The IDS 2000 Dispense Pump is designed for dispensing and metering fluids used in chemical, electronics, battery, metal finishing, semiconductor, food processing, and other industrial process environments. The integrated pump and electronics are housed in a rugged stainless steel enclosure and is suitable for wall mounting in process areas. The electronics feature precision stepper motor control, multiple dispense and continuous modes, indicator lights, and will interface with a PLC.

The IDS 2000 Industrial Dispense Pump features FMI's patented CeramPump® valveless design having only one moving part, a single rotating and reciprocating piston made of dimensionally stable, chemically resistant ceramics. This unique pump design accomplishes all fluid control functions while eliminating valves which can clog, fatigue, and fail, causing accuracy drifting and pump failure over time.

FMI's Industrial Dispense Pump IDS-2000 will deliver from microliters per dispense up to one liter per minute while maintaining a dispense precision of 0.5% for millions of dispenses without re-calibration or downtime.

Fluid Metering, Inc., Syosset,

Reader Service No. 255

## The New Protector® FilterMate™ Mobile Station for Protector® VS **Ventilation Station Eliminates Outside** Ducting

abconco Corporation, introduces the new Protector® FilterMate Mobile Station. This station filters contaminated air generated by procedures performed in the Protector® VS Ventilation Station so that purified air is returned to the laboratory, no outside ducting required.

The FilterMate accommodates carbon-based filter cells designed to adsorb or treat chemical fumes and vapors from solvents, acids, ammonia and amines, and formaldehvde. Also available is a Color-Smart HEPA Filter Cell which is 99.99% efficient at removing aerosols and particulate matter 0.3 micron in diameter or larger. For VS Station applications that create both gaseous and particulate contaminants, the FilterMate can accommodate one carbon-based and one HEPA filter cell.

Once connected to the exhaust outlet of the VS Station via an 8' flexible duct, the FilterMate creates an airflow velocity at the opening of the VS Station of 60 to 100 fpm, depending on the filter

cell(s) installed and VS Station model selected. The operator may use the FilterMate's foot controlled on/off switch to momentarily pause the airflow during delicate weighing procedures. Because the FilterMate is mobile, it allows the VS Station to be located anywhere in the laboratory.

Labconco Corporation, Kansas City, MO

Reader Service No. 256

## **Burling Instruments' Rugged Solid State Temperature Controllers Resists Vibration &** Moisture

esigned for demanding industrial applications, the Burling 2300 Series solid state temperature controllers/limiters are offered with either NEMA 4 or explosion-proof enclosures. The controllers' 24AWG Type J thermocouple sensor is protected by a rigid 304 stainless steel sheath in the local-mount version and in a flexible armored cable for remote mounting. Remote temperature display is also an option.

The series consists of five basic models: on/off heating. single relay output in NEMA 4 and Ex housings; Limit, single relay output in NEMA 4 and Ex housings; and on/off, on/off dual relay in an Ex housing. Three standard temperature ranges covering 0 to, 600°F or 700° (-32 to 315 or 370°C) depending on the model selected. The on/off operating differential is ±2.5°F (1.4°C). The set-point is fieldadjustable and the unit can be mounted in any orientation.

The Series 2300 explosion proof housing is rated for Class I Group D and Class II Groups E, F and G locations. It is It is also rated for Class I Group C locations when sealed from conduit system.

The sensor and control are combined in a single package with 100% burn-in for 72 hours. Standard outputs for these instruments is an 8 amp SPDT electro-mechanical relay plus a 10mV/°C output for measurement or display of process temperature.

Burling Instruments Inc., Chatham, NI

Reader Service No. 257



Alfa Laval Flow Inc.

## Alfa Laval Sanitary **Remote Controlled Valve** Now Available in **One-inch Size**

The reputable SRC, Sanitary ■ Remote Controlled valve available from Alfa Laval Flow Inc. has extended its range to include a one-inch size, ensuring the SRC can be adapted to most installa-

Available in automatic, manual and aseptic models, the SRC valve requires only a few simple moving parts for operation, making it extremely reliable. Its hygienic design allows stopping or diverting product flow in single or multidirectional systems.

Other features include:

- · Product wetted parts AISI 316/EPDM
- · Flexible installation
- · Long process time due to few moving parts
- · Field reversible from normally open to normally closed actuation
- · Can be fitting to Alfa Laval's control and indication unit
- · Easy and quick maintenance

Alfa Laval Flow Inc., Pleasant Prairie, WI

Reader Service No. 258

## **Validation Protocol for the Sprint™ High Throughput Auto-Inoculator**

Riolog, Inc. has released a validation protocol for its powerful auto inoculator. The validation protocol allows the operator to easily and fully validate their Sprint Auto-Inoculator. This new product is especially beneficial in the pharmaceutical, medical device, and other regulated industries where validation is required.

The Sprint Validation Protocol gives step-by-step instructions for successfully installing the Sprint (Installation Qualification-IQ), operating the Sprint (Operation Qualification-OQ), and provides standard operating procedures (SOPs) for the unit. The easy-to-use protocol will lead users through the simple process of verifying system components and the functionality and accuracy of the unit. The appropriate forms are included with the protocol to speed instrument implementation in the lab.

The Sprint Auto-Inoculator is an extremely flexible system to

fulfill liquid handling needs in a variety of settings, so the Sprint Validation Protocol can be customized to meet the needs of any laboratory.

Biolog, Inc., Hayward, CA

Reader Service No. 259

## **Sellers Cleaning Systems Announces New Tankmaster T-5 Tank** Cleaner

Cellers® Cleaning Systems Jannounces its new Tankmaster T-5 low flow rotary tank cleaner. Hydraulically driven with a sealed gearbox design, this tank cleaner is designed to clean small tanks with a 3 in (76 mm) schedule 40 or schedule 80 opening. With the capacity to effectively clean vessels up to 20 feet (6 m) in diameter, the Tankmaster T-5 is ideal for cleaning small tanks, vats, totes, IBCs and bulk transport clean-outs.

Providing a thorough, highimpact 360° cleaning pattern, this tank cleaner handles flow rates

from 12-40 gpm (45-151 l/m) and offers operating pressures from 100-1000 psi (6.9-68.9 bar). Initially available in a dual-nozzle configuration, the Tankmaster T-5 is available with 0.165 in (4 mm), 0.187 in (4.7 mm) or 0.200 in (5.1 mm) nozzles. Triple-nozzle and four-nozzle configurations will be available in the near future for maximum low-cost cleaning flexibility.

Easier to maintain than competitive units, the Tankmaster T-5 features a choice of cycle times ranging from 5-30 minutes. Four optional orifice plates are available for cycle time adjustments.

Sellers Cleaning Systems, Piqua, OH

Reader Service No. 260

## **NEW In-Line Load Cell Works in Compression. Tension from Sensotec**

The New Model RG load cell from Sensotec is a compression/tension In-Line load cell

capable of withstanding significant torque and off-axis loads. This versatile unit exhibits only .003" full scale deflection and is ideal for in-line applications where side loading cannot be completely controlled.

The RG Series is available for ranges from 2,000 to 50,000 lbs. and can be configured with integral male and/or female threads. Excitation up to 15 VDC or AC is acceptable and standard output is 2 mV/V. Combined linearity and hysteresis is ±0.25% over an operating temperature from -65° to 250°F. Optional outputs include 0-5 VDC and 4-20 mA, and a variety of tongue shackles, yoke shackles and rod end bearings are available.

Designed for rugged use, the stainless steel Model RG is fully welded, hermetically scaled, and has a 50% overload capacity rating. This design is featured in a variety of applications including monitoring of cable tension and actuator forces, and parts retrieval from deep well or offshore platforms.

Sensotec, Inc., Columbus, OH

Reader Service No. 261





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

# Audiovisual Library

#### DAIRY

- D1170 3-A Symbol Council-(8 minute videotape). A video which was developed to make people in the dairy and food industries aware of the 3-A program and its objectives.
- D1180 10 Points to Dairy Quality-(10 minute videotape). Provides in-depth explanation of a critical control point in the residue prevention protocol. Illustrated with on-farm, packing plant, and milk-receiving plant scenes as well as interviews of producers, practicing veterinarians, regulatory officials and others. (Dairy Quality Assurance-1992) (Rev. 1998)
- D1010 The Bulk Milk Hauler: Protocol & Procedures-(8 minute videotape). Teaches bulk milk haulers how they contribute to quality milk production. Special emphasis is given to the hauler's role in proper milk sampling, sample care procedures, and understanding test results. (Iowa State University Extension-1990). (Rev. 1998)
- D1020 Causes of Milkfat Test Variations & Depressions-(30 minute-140 slides-tape-script). This set illustrates the many factors involved in causing milkfat test variations or depressions in your herd, including feeding, management, stage of lactation, age of samples, handling of samples, and testing procedures. The script was reviewed by field staff, nutritionists, laboratory personnel and county extension staff. It is directed to farmers, youth and allied industry. (Penn State-1982)
- D1030 Cold Hard Facts-This video is recommended for training personnel associated with processing, transporting, warehousing, wholesaling and retailing frozen foods. It contains pertinent information related to good management practices necessary to ensure high quality frozen foods. (National Frozen Food Association-1993) (Rev. 1998)
- D1040 Ether Extraction Method for Determination of Raw Milk-(26 minute videotape). Describes the ether extraction procedure to measure milkfat in dairy products. Included is an explanation of the chemical reagents used in each step of the process. (CA-1988) (Rev.
- The Farm Bulk Milk Hauler-(30 minute-135 D1050 slides-tape-script). This set covers the complete procedure for sampling and collecting milk from farms. Each step is shown as it starts

- with the hauler entering the farm lane and ends when he leaves the milk house. Emphasis is on universal sampling and automated testing. Funds to develop this set were provided by The Federal Order #36 Milk Market Administrator. (Penn State-1982) (Rev. 1998)
- D1060 Frozen Dairy Products-(27 minute videotape). Developed by the California Department of Food and Agriculture. Although it mentions the importance of frozen desserts, safety and checking ingredients; emphasis is on what to look for in a plant inspection. Everything from receiving, through processing and cleaning and sanitizing is outlined, concluded with a quality control program. Directed to plant workers and supervisors, it shows you what should be done. (CA-1987) (Rev. 1997)
- D1070 The Gerber Butterfat Test-(7 minute videotape). Describes the Gerber milkfat test procedure for dairy products and compares it to the Babcock test procedure. (CA-1990) (Rev.
- D1080 High-Temperature, Short-Time Pasteurizer-(59 minute videotape). Provided by the Dairy Division of Borden, Inc. It was developed to train pasteurizer operators and is well done. There are seven sections with the first covering the twelve components of a pasteurizer and the purpose and operation of each. The tape provides the opportunity for discussion after each section or continuous running of the videotape. Flow diagrams, processing and cleaning are covered. (Borden, Inc.-1986) (Rev. 1997)
- D1100 Mastitis Prevention and Control-(2.45 minute videotapes). This video is ideal for oneon-one or small group presentations. Section titles include: Mastitis Pathogens, Host Defense, Monitoring Mastitis, Mastitis Therapy, Recommended Milking Procedures, Postmilking Teat Dip Protocols, Milk Quality, Milking Systems. (Nasco-1993)
- D1110 Milk Plant Sanitation: Chemical Solution-(13 minute videotape). This explains the proper procedure required of laboratory or plant personnel when performing chemical titration in a dairy plant. Five major titrations are reviewed... alkaline wash, presence of chlorine and iodophor, and caustic wash and an acid wash in a HTST system. Emphasis is also placed on record keeping and employee safety. (1989)
- Milk Processing Plant Inspection Proce-D1120 dures-(15 minute videotape). Developed by

the California Department of Food and Agriculture. It covers pre- and post- inspection meeting with management, but emphasis is on inspection of all manual and cleaned in place equipment in the receiving, processing and filling rooms. CIP systems are checked along with recording charts and employee locker and restrooms. Recommended for showing to plant workers and supervisors. (CA-1986)

D1130 Pasteurizer - Design and Regulation-(16 minute videotape). This tape provides a summary of the public health reasons for pasteurization and a nonlegal definition of pasteurization. The components of an HTST pasteurizer, elements of design, flow-through diagram and legal controls are discussed. (Kraft General Foods-1990) (Rev. 1998)

D1140 Pasteurizer - Operation-(11 minute videotape). This tape provides a summary of the operation of an HTST pasteurizer from start-up with hot water sanitization to product pasteurization and shut-down. There is an emphasis on the legal documentation required. (Kraft General Foods-1990) (Rev. 1998)

D1150 Processing Fluid Milk-(30 minute-140 slides-script-tape). It was developed to train processing plant personnel on preventing food poisoning and spoilage bacteria in fluid dairy products. Emphasis is on processing procedures to meet federal regulations and standards. Processing procedures, pasteurization times and temperatures, purposes of equipment, composition standards, and cleaning and sanitizing are covered. Primary emphasis is on facilities such as drains and floors, and filling equipment to prevent post-pasteurization contamination with spoilage or food poisoning bacteria. It was reviewed by many industry plant operators and regulatory agents and is directed to plant workers and management. (Penn State-1987) (Rev. 1998)

#### **ENVIRONMENTAL**

E3010 The ABCs of Clean-A Handwashing & Cleanliness Program for Early Childhood Programs-For early childhood program employees. This tape illustrates how proper handwashing and clean hands can contribute to the infection control program in daycare centers and other early childhood programs. (The Soap & Detergent Association-1991)

E3020 Acceptable Risks?-(16 minute videotape). Accidents, deliberate misinformation, and the rapid proliferation of nuclear power plants have created increased fears of improper nuclear waste disposal, accidents during the transportation of waste, and the release of radioactive effluents from plants. The program shows the occurrence of statistically anoma-

lous leukemia clusters; governmental testing of marine organisms and how they absorb radiation: charts the kinds and amounts of natural and man-made radiation to which man is subject; and suggests there is no easy solution to balancing our fears to nuclear power and our need for it. (Films for the Humanities & Sciences, Inc.-1993) (Rev. 1998)

Air Pollution: Indoor-(26 minute video-E3030 tape). Indoor air pollution is in many ways a self-induced problem...which makes it no easier to solve. Painting and other home improvements have introduced pollutants, thermal insulation and other energy-saving and waterproofing devices have trapped the pollutants inside. The result is that air pollution inside a modern home can be worse than inside a chemical plant. (Films for the Humanities & Sciences, Inc.) (Rev. 1998)

E3040 Asbestos Awareness—(20 minute videotape). This videotape discusses the major types of asbestos and their current and past uses. Emphasis is given to the health risks associated with asbestos exposure and approved asbestos removal abatement techniques. (Industrial Training, Inc.-1988) (Rev. 1998)

Effective Handwashing-Preventing Cross-E3055 Contamination in the Food Service Industry-(3 1/2 minute videotape). It is critical that all food service workers wash their hands often and correctly. This video discusses the double wash method and the single wash method and when to use each method. (Zep Manufacturing Company-1993)

E3060 **EPA - Test Methods for Freshwater Effluent** Toxicity Tests (Using Ceriodaphnia)-(22 minute videotape). Demonstrates the Ceriodaphnia 7-Day Survival and Reproduction Toxicity Test and how it is used to monitor and evaluate effluents for their toxicity to biota and their impact on receiving waters and the establishment of NPDES permit limitations for toxicity. The tape covers the general procedures for the test including how it is set up, started, monitored, renewed and terminated. (1989) (Rev. 1998)

**EPA - Test Methods for Freshwater Effluent** E3070 Toxicity Tests (Using Fathead Minnow Larva)—(15 minute videotape). A training tape that teaches environmental professionals about the Fathead Minnow Larval Survival and Growth Toxicity Test. The method described is found in an EPA document entitled, "Short Term Methods for Estimating the Chronic Toxicity of Effluents & Receiving Waters to Freshwater Organisms." The tape demonstrates how fathead minnow toxicity tests can be used to monitor and evaluate effluents for their toxicity to biota and their impact on receiving waters and the establishment of NPDES permit limitations for toxicity. (1989) (Rev. 1998)

- E3075 EPA-This is Super Fund (12 minute videotape). Produced by the United States Environmental Protection Agency (EPA). This videotape focuses on reporting and handling hazardous waste sites in our environment. The agency emphasizes community involvement in identifying chemical waste sites and reporting contaminated areas to the authorities. The primary goal of the "Super Fund Site Process" is to protect human health and to prevent and eliminate hazardous chemicals in communities. The film outlines how to identify and report abandoned waste sites and how communities can participate in the process of cleaning up hazardous sites. The program also explains how federal, state and local governments, industry and residents can work together to develop and implement local emergency preparedness/response plans in case chemical waste is discovered in a community. (2000)
- E3080 Fit to Drink-(20 minute videotape). This program traces the water cycle, beginning with the collection of rain-water in rivers and lakes, in great detail through a water treatment plant, to some of the places where water is used, and finally back into the atmosphere. Treatment of the water begins with the use of chlorine to destroy organisms; the water is then filtered through various sedimentation tanks to remove solid matter. Other treatments employ ozone, which oxidizes contaminants and makes them easier to remove; hydrated lime, which reduces the acidity of the water; sulfur dioxide, which removes any excess chlorine; and floculation, a process in which aluminum sulfate causes small particles to clump together and precipitate out. Throughout various stages of purification, the water is continuously tested for smell, taste, titration, and by fish. The treatment plant also monitors less common contaminants with the use of up-to-date techniques like flame spectrometers and gas liquefaction. (Films for the Humanities & Sciences, Inc.-1987)
- E3110 Garbage: The Movie-(25 minute videotape). A fascinating look at the solid waste problem and its impact on the environment. Viewers are introduced to landfills, incinerators, recycling plants and composting operations as solid waste management solutions. Problems associated with modern landfills are identified and low-impact alternatives such as recycling, reuse, and source reduction are examined. (Churchill Films) (Rev. 1998)
- E3120 Global Warming: Hot Times Ahead-(23 minute videotape). An informative videotape program that explores the global warming phenomenon and some of the devastating changes it may cause. This program identifies greenhouse gases and how they are produced by human activities. Considered are: energy use in transportation, industry and home; effects of deforestation, planting of trees and recycling as

- means of slowing the build-up of greenhouse gases. (Churchill Films-1995)
- E3130 Kentucky Public Swimming Pool & Bathing Facilities-(38 minute videotape). Developed by the Lincoln Trail District Health Department in Kentucky and includes all of their state regulations which may be different from other states, provinces and countries. This tape can be used to train those responsible for operating pools and waterfront bath facilities. All aspects are included of which we are aware, including checking water conditions and filtration methods. (1987). (Rev. 1998)
- E3135 Plastics Recycling Today: A Growing Resource-(11:35 minute videotape). Recycling is a growing segment of our nation's solid waste management program. This video shows how plastics are handled from curbside pickup through the recycling process to end-use by consumers. This video provides a basic understanding of recycling programs and how communities, companies and others can benefit from recycling. (The Society of the Plastics Industry, Inc.-1988)
- E3140 Putting Aside Pesticides-(26 minute videotape). This program probes the long-term effects of pesticides and explores alternative pestcontrol efforts; biological pesticides, geneticallyengineered microbes that kill objectionable insects, the use of natural insect predators, and the cross-breeding and genetic engineering of new plant strains that produce their own antipest toxins. (Films for the Humanities & Sciences, Inc.) (Rev. 1999)
- E3150 Radon-(26 minute videotape). This program looks at the possible health implications of radon pollution, methods homeowners can use to detect radon gas in their homes, and what can be done to minimize hazards once they are
- E3160 RCRA-Hazardous Waste-(19 minute videotape). This videotape explains the dangers associated with hazardous chemical handling and discusses the major hazardous waste handling requirements presented in the Resource Conservation and Recovery Act. (Industrial Training, Inc.)
  - The New Superfund. What It is & How It Works-A six-hour national video conference sponsored by the EPA. Target audiences include the general public, private industry, emergency responders and public interest groups. The series features six videotapes that review and highlight the following issues:
  - E3170 Tape 1-Changes in the Remedial Process: Clean-up Standards and State Involvement Requirements-(62 minute videotape). A general overview of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and the challenge of its imple-

mentation. The remedy process-longterm and permanent cleanup-is illustrated step-by-step, with emphasis on the new mandatory clean-up schedules, preliminary site assessment petition procedures and the hazard ranking system/National Priority List revisions. The major role of state and local government involvement and responsibility is stressed.

Tape 2-Changes in the Removal E3180 Process: Removal and Additional Program Requirements-(48 minute videotape). The removal process is a short-term action and usually an immediate response to accidents, fires and illegal dumped hazardous substances. This program explains the changes that expand removal authority and require procedures consistent with the goals of remedial action.

Tape 3-Enforcement & Federal Fa-E3190 cilities-(52 minute videotape). Who is responsible for SARA clean-up costs? Principles of responsible party liability; the difference between strict, joint and several liability; and the issue of the innocent land owner are discussed. Superfund enforcement tools-mixed funding, De Minimis settlements and the new nonbinding preliminary allocations of responsibility (NBARs) are explained.

E3210 Tape 4-Emergency Preparedness & Community Right-to-Know-(48 minute videotape). A major part of SARA is a free-standing act known as Title III: The Emergency Planning and Community Right-to-Know Act of 1986, requiring federal, state, and local governments and industry to work together in developing local emergency preparedness/response plans. This program discusses local emergency planning committee requirements, emergency notification procedures, and specifications on community right-to-know reporting requirements such as using OSHA Material Safety Data Sheets, the emergency & hazardous chemical inventory and the toxic chemical release inventory.

F3220 Tape 5-Underground Storage Tank Trust Fund & Response Program-(21 minute videotape). Another addition to SARA is the Leaking Underground Storage Tank (LUST) Trust Fund. One half of the US population depends on ground water for drinking-and EPA estimates that as many as 200,000 underground storage tanks are corroding and leaking into our ground water. This program discusses how the LUST Trust Fund will be used by EPA and the states in responding quickly to contain and clean-up LUST releases. Also covered is state enforcement and action requirements, and owner/operator responsibility.

E3230 Tape 6-Research & Development/ Closing Remarks-(33 minute videotape). An important new mandate of the new Superfund is the technical provisions for research and development to create more permanent methods in handling and disposing of hazardous wastes and managing hazardous substances. This segment discusses the SITE (Superfund Innovative Technology Evaluation) program, the University Hazardous Substance Research Centers, hazardous substance health research and the DOD research, development and demonstration management of DOD wastes.

E3240 Sink A Germ-(10 minute videotape). A presentation on the rationale and techniques for effective handwashing in health care institutions. Uses strong imagery to educate hospital personnel that handwashing is the single most important means of preventing the spread of infection. (The Brevis Corp.-1986). (Rev. 1998)

E3245 Wash Your Hands-(5 minute videotape). Handwashing is the single most important means of preventing the spread of infection. This video presents why handwashing is important and the correct way to wash your hands. (LWB Company-1995)

E3250 Waste Not: Reducing Hazardous Waste-(35 minute videotape). This tape looks at the progress and promise of efforts to reduce the generation of hazardous waste at the source. In a series of company profiles, it shows activities and programs within industry to minimize hazardous waste in the production process. Waste Not also looks at the obstacles to waste reduction, both within and outside of industry, and considers how society might further encourage the adoption of pollution prevention, rather than pollution control, as the primary approach to the problems posed by hazardous waste. (Umbrella films)

#### FOOD

F2260 100 Degrees of Doom... The Time & Temperature Caper-(14 minute videotape). Video portraying a private eye tracking down the cause of a Salmonella poisoning. Temperature control is emphasized as a key factor in preventing foodborne illness. (Educational Communications, Inc.-1987) (Rev. 1998)

- F2440 Cleaning & Sanitizing in Vegetables Processing Plants: Do It Well, Do It Safely!-(16 minute videotape) This training video shows how to safely and effectively clean and sanitize in a vegetable processing plant. It teaches how it is the same for processing plant as it is for washing dishes at home. (University of Wisconsin Extension-1996) (Available in Spanish)
- F2010 Close Encounters of the Bird Kind-(18 minute videotape). A humorous but in-depth look at Salmonella bacteria, their sources, and their role in foodborne disease. A modern poultry processing plant is visited, and the primary processing steps and equipment are examined. Potential sources of Salmonella contamination are identified at the different stages of production along with the control techniques that are employed to insure safe poultry products. (Topek Products, Inc.) (Rev. 1998)
- Cooking and Cooling of Meat and Poultry F2037 Products-(2 videotapes - 176 minutes). (See Part 1 Tape F2035 and Part 2 Tape F2036). This is session 3 of a 3-part Meat and Poultry Teleconference cosponsored by AFDO and the USDA Food Safety Inspection Service. Upon completion of viewing these videotapes, the viewer will be able to (1) recognize inadequate processes associated with the cooking and cooling of meat and poultry at the retail level; (2) Discuss the hazards associated with foods and the cooking and cooling processes with management at the retail level; (3) Determine the adequacy of control methods to prevent microbiological hazards in cooking and cooling at the retail level, and (4) Understand the principle for determining temperature with various temperature measuring devices. (AFDO/USDA-1999)
- F2030 "Egg Games" Foodservice Egg Handling and Safety-(18 minute videotape). Develop an effective egg handling and safety program that is right for your operation. Ideal for manager training and foodservice educational programs, this video provides step-by-step information in an entertaining, visually-exciting format. (American Egg Board-1999)
- F2020 Egg Handling & Safety-(11 minute videotape). Provides basic guidelines for handling fresh eggs which could be useful in training regulatory and industry personnel. (American Egg Board-1997)
- Emerging Pathogens and Grinding and F2036 Cooking Comminuted Beef-(2 videotapes -165 minutes.) (See Part 1 Tape F2035 and Part 3 Tape F2037.) This is session 2 of a 3-part Meat and Poultry Teleconference co-sponsored by AFDO and the USDA Food Safety Inspection Service. These videotapes present an action plan for federal, state, local authorities, industry, and trade associations in a foodborne outbreak. (AFDO/USDA-1998)
- F2035 Fabrication and Curing of Meat and Poultry Products-(2 videotapes - 145 minutes). (See

- Part 2 Tape F2036 and Part 3 Tape F2037). This is session 1 of a 3-part Meat and Poultry Teleconference cosponsored by AFDO and the USDA Food Safety Inspection Service. Upon viewing, the sanitarian will be able to (1) Identify typical equipment used for meat and poultry fabrication at retail and understand their uses; (2) Define specific terms used in fabrication of meat and poultry products in retail establishments, and (3) Identify specific food safety hazards associated with fabrication and their controls. (AFDO/ USDA-1997)
- F2040 Food Irradiation-(30 minute videotape). Introduces viewers to food irradiation as a new preservation technique. Illustrates how food irradiation can be used to prevent spoilage by microorganisms, destruction by insects, overripening, and to reduce the need for chemical food additives. The food irradiation process is explained and benefits of the process are highlighted. (Turnelle Productions, Inc.) (Rev. 1998)
- F2045 Food Microbiological Control—(6-video-tapes - appoximate time 12 hours). Designed to provide information and demonstrate the application of basic microbiology, the Good Manufacturing Practices (GMPs), retail Food Code, and sanitation practices when conducting food inspections at the processing and retail levels. Viewers will enhance their ability to identify potential food hazards and evaluate the adequacy of proper control methods for these hazards. (FDA-1998)
- F2050 Food Safe-Food Smart-HACCP & Its Application to the Food Industry-(2-16 minute videotapes). (1)-Introduces the seven principles of HACCP and their application to the food industry. Viewers will learn about the HACCP system and how it is used in the food industry to provide a safe food supply. (2)-Provides guidance on how to design and implement a HACCP system. It is intended for individuals with the responsibility of setting up a HACCP system. (Alberta Agriculture, Food and Rural Development) (Rev. 1998)
- F2060 Food Safe-Series I-(4-10 minute videotapes). (1) "Receiving & Storing Food Safely," details for food-service workers the procedures for performing sight inspections for the general conditions of food, including a discussion of food labeling and government approval stamps. (2) "Food-service Facilities and Equipment," outlines the requirements for the proper cleaning and sanitizing of equipment used in food preparation areas. Describes the type of materials, design, and proper maintenance of this equipment. (3) "Microbiology for Food-service Workers," provides a basic understanding of the microorganisms which cause food spoilage and foodborne illness. This program describes bacteria, viruses, protozoa, and parasites and the conditions which support their growth.

- (4) "Food-service Housekeeping and Pest Control," emphasizes cleanliness as the basis for all pest control. Viewers learn the habits and life cycles of flies, cockroaches, rats, and mice. (Perennial Education-1991) (Rev. 1998)
- F2070 Food Safe-Series II-(4-10 minute videotapes). Presents case histories of foodborne disease involving (1) Staphylococcus aureus, (sauces) (2) Salmonella, (eggs) (3) Campylobacter, and (4) Clostridium botulinum. Each tape demonstrates errors in preparation, holding or serving food; describes the consequences of those actions; reviews the procedures to reveal the cause of the illness; and illustrates the correct practices in a step-by-step demonstration. These are excellent tapes to use in conjunction with hazard analysis critical control point training programs. (Perennial Education-1991) (Rev.
- F2080 Food Safe-Series III-(4-10 minute videotapes). More case histories of foodborne disease. This set includes (1) Hepatitis "A", (2) Staphylococcus aureus (meats), (3) Bacillus cereus, and (4) Salmonella (meat). Viewers will learn typical errors in the preparation, holding and serving of food. Also included are examples of correct procedures which will reduce the risk of food contamination. (Perennial Education-1991) (Rev. 1998)
- F2133 Food Safety First-(50 minute videotape). This food safety training video presents causes of foodborne illness in foodservice and ways to prevent foodborne illness. Individual segments include personal hygiene and handwashing, cleaning and sanitizing, preventing cross contamination and avoiding time and temperature abuse. Foodhandling principles are presented through scenarios in a restaurant kitchen. (Glo-Germ 1998)
- F2090 Food Safety: An Educational Video for Institutional Food-Service Workers-(10 minute videotape). Provides a general discussion on food safety principles with special emphasis on pathogen reductions in an institutional setting from child care centers to nursing homes. (U.S. Department of Health & Human Services-1997)
- F2120 Food Safety: For Goodness Sake, Keep Food Safe-(15 minute videotape). Teaches foodhandlers the fundamentals of safe food handling. The tape features the key elements of cleanliness and sanitation, including: good personal hygiene, maintaining proper food product temperature, preventing time abuse, and potential sources of food contamination. (Iowa State University Extension-1990) (Rev. 1998)
- F2110 Food Safety is No Mystery-(34 minute videotape). This is an excellent training visual for food-service workers. It shows the proper ways to prepare, handle, serve and store food in actual restaurant, school and hospital situa-

- tions. A policeman sick from food poisoning, a health department sanitarian, and a food-service worker with all the bad habits are featured. The latest recommendations on personal hygiene, temperatures, cross-contamination, and storage of foods are included. (USDA-1987). Also available in Spanish. - (Rev. 1998)
- F2130 Food Safety: You Make the Difference-(28 minute videotape). Through five food workers from differing backgrounds, this engaging and inspirational documentary style video illustrates the four basic food safety concepts: handwashing, preventing cross-contamination, moving foods quickly through the danger zone, and hot/cold holding (Seattle-King County Health Department-1995)
- GMP Basics Employee Hygiene Prac-F2140 tices-(20 minute videotape). Through real-life examples and dramatization, this video demonstrates good manufacturing practices that relate to employee hygiene, particularly hand washing. This video includes a unique test section to help assess participants' understanding of common GMP violations. (Silliker Laboratories-1997)
- GMP Basics: Guidelines for Maintenance F2143 Personnel-(21 minute videotape). Developed specifically for maintenance personnel working in a food processing environment, this video depicts a plant-wide training initiative following a product recall announcment. Maintenance personnel will learn how GMPs relate to their daily activities and how important their roles are in the production of safe food products. (Silliker Laboratories-1999)
- F2148 GMP-GSP Employee-(38 minute videotape). This video was developed to teach food plant employees the importance of "Good Manufacturing Practices" and "Good Sanitation Practices." Law dictates that food must be clean and safe to eat. This video emphasizes the significance of each employee's role in protecting food against contamination. Tips on personal cleanliness and hygiene are also presented. (L.J. Bianco & Associates)
- F2150 GMP: Personal Hygiene & Practices in Food Manufacturing-(14 minute videotape). This video focuses on the personal hygiene of food-manufacturing workers, and explores how poor hygiene habits can be responsible for the contamination of food in the manufacturing process. This is an instructional tool for new food-manufacturing line employees and supervisors. It was produced with "real" people in actual plant situations, with only one line of text included in the videotape. (Penn State-1993)-(Available in Spanish and Vietnamese)
- F2147 GMP Basics: Process Control Practices-(16 minute videotape). In actual food processing environments, an on-camera host takes employees through a typical food plant as they learn

the importance of monitoring and controlling key points in the manufacturing process. Beginning with receiving and storing, through production, and ending with packaging and distribution, control measures are introduced, demonstrated, and reviewed. Employees will see how their everyday activities in the plant have an impact on product safety. (Silliker Laboratories-1999)

- F2160 GMP: Sources & Control of Contamination during Processing-(20 minute videotape). This program, designed as an instructional tool for new employees and for refresher training for current or reassigned workers, focuses on the sources and control of contamination in the food-manufacturing process. It was produced in actual food plant situations. A concise description of microbial contamination and growth and cross-contamination, a demonstration of food storage, and a review of aerosol contaminants are also included. (Penn State-
- F2135 Get with a Safe Food Attitude-(40 minute videotape). Consisting of nine short segments which can be viewed individually or as a group, this video presents safe food handling for moms-to-be. Any illness a pregnant women contracts can affect her unborn child whose immune system is too immature to fight back. The video follows four pregnant women as they learn about food safety and preventing foodborne illness. (US Department of Agriculture-1999)
- F2165 HACCP and Its Application to the Food Industry-(2-17 minute videotapes). Looking to develop a comprehensive food-safety and quality control program for your organization? Part one introduces the concept of the HACCP system and the seven principles behind it. Part two takes the viewer through each of the 12 stages in setting up such a system. (Alberta Agriculture-1993) (Rev. 1999)
- F2180 HACCP: Safe Food Handling Techniques-(22 minute videotape). The video highlights the primary causes of food poisoning and emphasizes the importance of self-inspection. An explanation of potentially hazardous foods, cross-contamination, and temperature control is provided. The main focus is a detailed description of how to implement a Hazard Analysis Critical Control Point (HACCP) program in a foodservice operation. A leader's guide is provided as an adjunct to the tape. (The Canadian Restaurant & Food-services Association-1990) (Rev. 1998)
- F2170 The Heart of HACCP-(22 minute videotape). A training video designed to give plant personnel a clear understanding of the seven HACCP principles and practical guidance on how to apply these principles to their own work environment. This video emphasizes the principles

of primary concern to plant personnel such as critical limits, monitoring systems, and corrective actions that are vital to the success of a HACCP plan. (Silliker Laboratories Group-

- F2175 Inspecting For Food Safety-Kentucky's Food Code-(100 minute videotape). Kentucky's Food Code is patterned after the Federal Food Code. The concepts, definitions, procedures, and regulatory standards included in the code are based on the most current information about how to prevent foodborne diseases. This video is designed to prepare food safety inspectors to effectively use the new food code in the performance of their duties. (Department of Public Health Commonwealth of Kentucky-1997) (Rev. 1999)
- F2190 Is What You Order What You Get? Seafood Integrity—(18 minute videotape). Teaches seafood department employees about seafood safety and how they can help insure the integrity of seafood sold by retail food markets. Key points of interest are cross-contamination control, methods and criteria for receiving seafood and determining product quality, and knowing how to identify fish and seafood when unapproved substitutions have been made. (The Food Marketing Institute) (Rev. 1998)
- F2210 Northern Delight-From Canada to the World-(13 minute videotape). A promotional video that explores the wide variety of foods and beverages produced by the Canadian food industry. General in nature, this tape presents an overview of Canada's food industry and its contribution to the world's food supply. (Ternelle Production, Ltd.) (Rev. 1998)
- F2240 On the Front Line-(18 minute videotape). A training video pertaining to sanitation fundamentals for vending service personnel. Standard cleaning and serving procedures for cold food, hot beverage and cup drink vending machines are presented. The video emphasizes specific cleaning and serving practices which are important to food and beverage vending operations. (National Automatic Merchandising Association-1993) (Rev. 1998)
- F2250 On the Line-(30 minute videotape). This was developed by the Food Processors Institute for training food processing plant employees. It creates an awareness of quality control and regulations. Emphasis is on personal hygiene, equipment cleanliness and good housekeeping in a food plant. It is recommended for showing to both new and experienced workers. (Available in Spanish) The Food Processors Institute. 1993. (Rev. 1998)
- Pest Control in Seafood Processing F2270 Plants-(26 minute videotape). Videotape which covers procedures to control flies, roaches, mice, rats and other common pests associated with food processing operations.

The tape will familiarize plant personnel with the basic characteristics of these pests and the potential hazards associated with their presence in food operations. (Rev. 1998)

- F2280 Principles of Warehouse Sanitation-(33 minute videotape). This videotape gives a clear, concise and complete illustration of the principles set down in the Food, Drug and Cosmetic Act and in the Good Manufacturing Practices, as well as supporting legislation by individual states. (American Institute of Baking-
- F2290 Product Safety & Shelf Life-(40 minute videotape). Developed by Borden Inc., this videotape was done in three sections with opportunity for review. Emphasis is on providing consumers with good products. One section covers off-flavors, another product problems caused by plant conditions, and a third the need to keep products cold and fresh. Procedures to assure this are outlined, as shown in a plant. Well done and directed to plant workers and supervisors. (Borden-1987) – (Rev. 1997)
- F2220 Proper Handling of Peracidic Acid-(15 minute videotape). Introduces paracidic acid as a chemical sanitizer and features the various precautions needed to use the product safely in the food industry.
- Purely Coincidental-(20 minute videotape). F2230 A parody that shows how foodborne illness can adversely affect the lives of families that are involved. The movie compares improper handling of dog food in a manufacturing plant that causes the death of a family pet with improper handling of human food in a manufacturing plant that causes a child to become ill. Both cases illustrate how handling errors in food production can produce devastating outcomes. (The Quaker Oats Company-1993.) (Rev. 1998)
- F2310 Safe Food: You Can Make a Difference-(25 minute videotape). A training video for foodservice workers which covers the fundamentals of food safety. An explanation of proper food temperature, food storage, cross-contamination control, cleaning and sanitizing, and handwashing as methods of foodborne illness control is provided. The video provides an orientation to food safety for professional foodhandlers. (Tacoma-Pierce County Health Department-1990). (Rev. 1998)
- F2320 Safe Handwashing-(15 minute videotape). Twenty-five percent of all foodborne illnesses are traced to improper handwashing. The problem is not just that handwashing is not done, the problem is that it's not done properly. This training video demonstrates the "double wash" technique developed by Dr. O. Peter Snyder of the Hospitality Institute for Technology and Management. Dr. Snyder demonstrates the procedure while reinforcing the microbiological reasons for keeping hands clean. (Hospitality

Institute for Technology and Management-1991) (Rev. 1998)

- Sanitation for Seafood Processing Person-F2330 nel-(20 minute videotape). A training video suited for professional foodhandlers working in any type of food manufacturing plant. The film highlights Good Manufacturing Practices and their role in assuring food safety. The professional foodhandler is introduced to a variety of sanitation topics including: (1) foodhandlers as a source of food contamination, (2) personal hygiene as a means of preventing food contamination, (3) approved food storage techniques including safe storage temperatures, (4) sources of cross-contamination, (5) contamination of food by insects and rodents, (6) garbage handling and pest control, and (7) design and location of equipment and physical facilities to facilitate cleaning. (Rev. 1998)
- F2340 Sanitizing for Safety-(17 minute videotape). Provides an introduction to basic food safety for professional foodhandlers. A training pamphlet and quiz accompany the tape. Although produced by a chemical supplier, the tape contains minimal commercialism and may be a valuable tool for training new employees in the food industry. (Clorox-1990) (Rev. 1998)
- F2350 SERVSAFE® Serving Safe Food-(4-20 minute videotapes). This video series illustrates and reinforces important food safety practices in an informative and entertaining manner. The material is presented in an easy to understand format, making it simpler for employees to learn and remember this essential information. Each video includes a leader's guide that provides all the information managers need to direct a productive training session. (Educational Foundation of the National Restaurant Association-1993) (Rev. 1998)
- F2360 SERVSAFE® Serving Safe Food Second Edition-(6-10 minute videotapes). The program still covers all the major areas of food safety training, but there is an added emphasis on training employees to follow HACCP procedures. The second edition program includes an Employee Guide, Leader's Guide and six instructional videos. (Educational Foundation of the National Restaurant Association-1993)
- F2430 Smart Sanitation: Principles & Practices for Effectively Cleaning Your Food Plant-(20 minute videotape) A practical training tool for new sanitation employees or as a refresher for veterans. Employees will understand the food safety impact of their day-to-day cleaning and sanitation activities and recognize the importance of their role in your company's food safety program. (Silliker Laboratories Group-1996)
- F2370 Supermarket Sanitation Program-"Cleaning & Sanitizing"-(13 minute videotape). Contains a full range of cleaning and sanitizing information with minimal emphasis on product.

Designed as a basic training program for supermarket managers and employees. (1989) (Rev. 1998)

- F2380 Supermarket Sanitation Program-"Food Safety"—(11 minute videotape). Contains a full range of basic sanitation information with minimal emphasis on product. Filmed in a supermarket, the video is designed as a basic program for manager training and a program to be used by managers to train employees. (1989) (Rev. 1998)
- F2390 Take Aim at Sanitation—(8 minute videotape). This video features tips on food safety and proper disposal of single service items. Also presented is an emphasis on food contact surfaces as well as the manufacture, storage and proper handling of these items. (Foodservice and Packaging Institute, Inc.-1995). (Available in Spanish)
- F2410 Wide World of Food-Service Brushes—(18 minute videotape). Discusses the importance of cleaning and sanitizing as a means to prevent and control foodborne illness. Special emphasis is given to proper cleaning and sanitizing procedures and the importance of having properly designed and constructed equipment (brushes) for food preparation and equipment cleaning operations. (1989) (Rev. 1998)
- F2420 Your Health in Our Hands-Our Health in Yours—(8 minute videotape). For professional foodhandlers, the tape covers the do's and don'ts of foodhandling as they relate to personal hygiene, temperature control, safe storage and proper sanitation. (Jupiter Video Production–1993). (Rev. 1998)

#### OTHER

- M4010 Diet, Nutrition & Cancer—(20 minute videotape). Investigates the relationship between a person's diet and the risk of developing cancer. The film describes the cancer development process and identifies various types of food believed to promote and/or inhibit cancer. The film also provides recommended dietary guidelines to prevent or greatly reduce the risk of certain types of cancer.
- M4020 Eating Defensively: Food Safety Advice for Persons with Aids—(15 minute videotape). While HIV infection and AIDS are not acquired by eating foods or drinking liquids, persons infected with the AIDS virus need to be concerned about what they eat. Foods can transmit bacteria and viruses capable of causing life-

threatening illness to persons infected with AIDS. This video provides information for persons with AIDS on what foods to avoid and how to better handle and prepare foods. (FDA/CDC-1989)

- M4030 Ice: The Forgotten Food—(14 minute videotape). This training video describes how ice is made and where the critical control points are in its manufacture, both in ice plants and in onpremises locations (convenience stores, etc.); it documents the potential for illness from contaminated ice and calls on government to enforce good manufacturing practices, especially in on-premises operations where sanitation deficiencies are common. (Packaged Ice Association— 1993)
- M4040 Legal Aspects of the Tampering Case—(25 minute videotape). This was presented by Mr. James T. O'Reilly, University of Cincinnati School of Law at the fall 1986 Central States Association of Food and Drug Officials Conference. He emphasizes three factors from his police and legal experience–know your case, nail your case on the perpetrator, and spread the word. He outlines specifics under each factor. This should be of the greatest interest to regulatory sanitarians, in federal, state and local agencies. (1987)
- M4050 Personal Hygiene & Sanitation for Food Processing Employees—(15 minute videotape). Illustrates and describes the importance of good personal hygiene and sanitary practices for people working in a food processing plant. (Iowa State-1993)
- M4060 Psychiatric Aspects of Product Tampering—(25 minute videotape). This was presented by Emanuel Tanay, M.D. from Detroit, at the fall 1986 conference of CSAFDA. He reviewed a few cases and then indicated that abnormal behavior is like a contagious disease. Media stories lead to up to 1,000 similar alleged cases, nearly all of which are false. Tamperproof packaging and recalls are essential. Tampering and poisoning are characterized by variable motivation, fraud and greed. Law enforcement agencies have the final responsibilities. Tamper proof containers are not the ultimate answer. (1987)
- M4070 Tampering: The Issue Examined—(37 minute videotape). Developed by Culbro Machine Systems, this videotape is well done. It is directed to food processors and not regulatory sanitarians or consumers. A number of industry and regulatory agency management explain why food and drug containers should be made tamper evident. (Culbro–1987)



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	D1050	The Farm Bulk Milk Hauler		E3220	The New Superfund: What It is		F2175	Inspecting For Food Safety -
		Frozen Dairy Products		E3220	& How It Works – (5) Underground	-	F2190	Kentucky's Food Code Is What You Order What You Get?
		The Gerber Butterfat Test			Storage Tank Trust Fund & Response		F2190	Seafood Integrity
		High-Temperature, Short-Time			Program		F2210	Northern Delight - From Canada
	271000	Pasteurizer		E3230	The New Superfund: What It is		12210	to the World
	D1100	Mastitis Prevention and Control		2020	& How It Works – (6) Research		F2240	On the Front Line
0	D1110				& Development/Closing Remarks		F2250	On the Line
	DITTO	Solution		E3240	Sink a Germ		F2270	Pest Control in Seafood Processing
	D1120	Milk Processing Plant Inspection		E3245	Wash Your Hands			Plants
	171120	Procedures		E3250	Waste Not: Reducing Hazardous Waste		F2280	Principles of Warehouse Sanitation
	D1130	Pasteurizer - Design and Regulation			0	0	F2290	Product Safety & Shelf Life
		Pasteurizer - Operation			FOOD		F2220	Proper Handling of Peracidic Acid
		Processing Fluid Milk		F2260	100 Degrees of DoomThe Time	0		Purely Coincidental - English
					& Temperature Caper	0	F2310	Safe Food: You Can Make a Difference
				F2440			F2320 F2330	Safe Handwashing
_		ENVIRONMENTAL			Processing Plants: Do It Well,		F2550	Sanitation for Scafood Processing Personnel
	E3010	The ABCs of Clean - A Handwashing			Do It Safely!		F2340	Sanitizing for Safety
		& Cleanliness Program for Early		F2010	Close Encounters of the Bird Kind	0	F2350	SERVSAFE® Serving Safe Food
		Childhood Programs		F2037	Cooking and Cooling Meat and Poultry		12330	(4 Videos)
	E3020	Acceptable Risks?	0	F2030	Products "For Comes" Foodsesvice For		F2360	SERVSAFE* Serving Safe Food Second
	E3030	Air Pollution: Indoor		F2030	"Egg Games" Foodservice Egg Handling and Safety		12300	Edition (6 Videos)
	E3040	Asbestos Awareness		F2020	Egg Handling & Safety		F2430	Smart Sanitation: Principles & Practices
	E3055	Effective Handwashing-Preventing		F2036	Emerging Pathogens and Grinding			for Effectively Cleaning Your Food
		Cross-Contamination in the Food			and Cooking Comminuted Beef			Plant
	E2060	Service Industry		F2035	Fabrication and Curing of Meat		F2370	Supermarket Sanitation Program -
	E3060	EPA - Test Methods for Freshwater Effluent Toxicity Tests (Using			and Poultry Products		12,7.0	"Cleaning & Sanitizing"
		Ceriodaphnia)		F2040	Food Irradiation	0	F2380	Supermarket Sanitation Program -
	E3070	EPA - Test Methods for Freshwater		F2045	Food Microhiological Control		F2380	
	E30/0	Effluent Toxicity Tests (Using Fathead		F2050	Food Safe - Food Smart - HACCP	_		"Food Safety"
		Minnow Larva)			& Its Application to the Food Industry		F2390	Take Aim at Sanitation
	E3075	EPA - This is Super Fund	_	E20/0	(Part 1&2)			Wide World of Food-Service Brushes
	E3080	Fit to Drink	0	F2060	Food Safe - Series I (4 Videos)		F2420	Your Health in Our Hands -
	E3110	Garbage: The Movie		F2070	Food Safe - Series II (4 Videos)			Our Health in Yours
	E3120	Global Warming: Hot Times Ahead		F2080	Food Safe - Series III (4 Videos)			
	E3130	Kentucky Public Swimming Pool		F2133 F2090	Food Safety First			OTHER
		& Bathing Facilities		F2090	Food Safety: An Educational Video for Institutional Food-Service Workers		M4010	Diet, Nutrition & Cancer
0	E3135			F2120	Food Safety: For Goodness Sake,			Eating Defensively: Food Safety Advice
		Resource		14140	Keep Food Safe			for Persons with AIDS
	E3140	Putting Aside Pesticides		F2110	Food Safety is No Mystery		M4030	Ice: The Forgotten Food
	E3150	Radon		F2110	Food Safety: You Make the Difference			Legal Aspects of the Tampering Case
	E3160	RCR A - Hazardous Waste		F2135	Get with a Safe Food Attitude			Personal Hygiene & Sanitation
	E3170	The New Superfund: What It is		F2140	GMP Basics: Employee Hygiene			for Food Processing Employees
		& How It Works-(1) Changes in the			Practices		M4060	Psychiatric Aspects of Product
		Remedial Process: Clean-up Standards		F2143	GMP Basics: Guidelines			Tampering
		& State Involvement Requirements			for Maintenance Personnel		M4070	Tampering: The Issue Examined



# **Preliminary Program**



- Presentation of the International Association for Food Protection Fellows Awards
- Ivan Parkin Lecture Reclaiming Dinner: **Enhancing Food Safety and Consumer** Confidence, Douglas Powell, University of Guelph, Guelph, Ontario, Canada Cheese and Wine Reception will follow in the Exhibit Hall

## **MONDAY MORNING — AUGUST 7, 2000** 8:30 a.m. - 12:00 p.m.

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

(Sponsored by ILSI-NA)

- Relevance of Animal Models to Study Virulence of L. monocytogenes
- Primates as a Model for L. monocytogenes Infective Dose: A Progress Report
- Relationship between Virulence in L. monocytogenes Genotypes
- Risk Assessment of *L. monocytogenes*: Prevalence in the Food Supply
- Risk Assessment of L. monocytogenes: Impact of Cooking and Food Handling Procedures in the Home
- Update on FDA's Risk Assessment of L. monocytogenes

#### Safer Production of Sprouts from Seeds

- Overview: Outbreaks Associated with Consumption of Sprouts and the Response from Government, Industry and Academia
- Pathogen Monitoring during Sprouting of Alfalfa Seeds



- Effectiveness of Chemical Sanitizers Applied to Seeds and Sprouts
- Sanitizing Laboratory Inoculated and Naturally Contaminated Alfalfa Seed with Chemicals
- Elimination of E. coli O157:H7 and Control of Salmonella on Alfalfa Seed by Gamma Irradiation
- What Have We Learned and Where Do We Go from Here? Implications for the Sprout Industry and Others

#### **S3** Cook-chill/Sous Vide Technology

- European Cook-chill Technology
- US Processor Cook-chill Technology
- Commercial Cook-chill in Europe
- US Institutional Cook-chill
- Cook-chill Equipment Technology
- The Microbiological Safety of Cook-chill Foods

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

- Infective Dose for Vibrio parahaemolyticus, V. vulnificus and Viruses, in Raw Oysters and Its Correlation to Counts with Oysters during Harvesting
- Molecular Approaches for the Detection of Bacteria with Special Reference to Vibrios in Seafood
- Molecular Techniques for Viruses and Their Limitations: New Frontiers in Non-molecular Methods
- Risk Assessment on the Public Health Impact on Vibrio parahaemolyticus in Oysters
- Industries' Perspective on Use of Molecular Biological Techniques as a Preventive Tool

#### **Foodborne Pathogens**

- Heat Resistance and Survival of Alkali-stressed Listeria monocytogenes
- Listeria monocytogenes in UHT Milk: A Case T2
- The Ability of Sublethally Heat-injured L. mono-T3 cytogenes Cells to Compete with a Commercial Mesophilic Lactic Acid Starter Culture during Milk Fermentation
- Growth of Listeria monocytogenes and Esch-T4 erichia coli O157:H7 is Enhanced in Readyto-eat Lettuce Washed in Warm Water
- A Survey of US Orchards to Identify Potential Sources of Escherichia coli O157:H7
- T6 Attachment of Escherichia coli to the Epidermis and Internal Structures of Apples as Demonstrated by Confocal Scanning Laser Microscopy
- Quinolone Resistance among Clinical and Food Isolates of Campylobacter spp.
- The Survival and Culturability of Campylobacter jejuni Micro-colonies under Modified Atmospheres at 4°C and 8°C Using a Model Food System
- Survival of Campylobacter jejuni in Biofilms Isolated from Chicken Houses
- T10 Comparative Tolerance of Salmonella Typhimurium DT104 to Heat and Desiccation
- T11 Routes of Infiltration, Survival, and Growth of Salmonella enterica Serovar Hartford and Escherichia coli O157:H7 in Oranges
- T12 A Descriptive Analysis of Giardiasis Cases Reported in Ontario, 1990-1997

#### P1 **Inactivation and Control Methods I** (10:00 a.m. - 1:00 p.m.)

- Cleaning Practices and the Cleanliness of Food Surfaces
- P2 Evaluation of Household Cutting Board Clean-up Techniques
- P3 Ozone: An Alternative Disinfectant for the Food Industry
- P4 Removal of Microorganisms from Industrial Surfaces Using Peracetic Acid
- Efficacy of Two Sanitizers against Food Spoilage Bacillus Isolates
- P6 Effects of Cleaners of Biofouled Stainless-steel Surfaces in Yogurt Manufacturing Equipment
- **P**7 Influence of Processing Flow Velocity on Attachment Rates of Pseudomonas fluorescens Isolated from the Egg Industry

- Comparative Biocidal Capacities of Oxidative P8 and Non-oxidative Sanitizers vs. L. monocytogenes, E. coli O157:H7, and Salmonella Typhimurium Using a Modified Surface-dried Film Assay Method
- P9 Ultrasound Cleaning in Cheese Mold Hygiene
- P10 Evaluation of Cytylpyridinium Chloride Immersion as a Method to Reduce Pathogenic
- P11 Attachment and Survival of Salmonella stanley on Cantaloupe Surface: Efficacy of Washing Treatments and Possibility of Transfer to Fresh-
- P12 Combination of Chemical Treatments with Gamma Irradiation for Elimination of Foodborne Pathogens from Fresh Produce
- Inactivation of Bacterial Foodborne Pathogens P13 on Fresh Produce Using Water-based Chemical **Treatments**
- P14 Growth of E. coli O157:H7 and Naturally Present Microorganisms in Heated Fresh-cut Lettuce
- P15 Bactericidal Effect of Chlorine Dioxide against Salmonella spp., E. coli O157:H7, and Listeria monocytogenes Inoculated on Apples and Lettuce
- Modeling UV Inactivation of Escherichia coli in Apple Cider for Quantitative Risk Assessment
- Efficacy of Surface Heat Treatment on Apples in the Production of Apple Cider
- P18 Fate of Yersinia enterocolitica on Sanitized **Apples**
- P19 Assessment of the Microbial Efficacy of a Prototype GRAS Produce Wash on Apples
- P20 Inactivation of E. coli O157:H7 and Salmonella in Apple Cider and Orange Juice by Ozone
- P21 Efficacy of Allyl Isothiocyanate in Killing Enterohemorrhagic Escherichia coli O157:H7 on Alfalfa Seeds
- P22 Evaluation of Chemicals for Their Effectiveness in Killing Salmonella on Alfalfa Seeds
- P23 Factors Affecting the Thermal Inactivation of Bacteria in Poultry Products during Air Convection Cooking
- Fate of Salmonella spp. during Heating at Different Rates in Sous-vide Cooked Beef
- P25 Survival of Inoculated Escherichia coli O157:H7 on Beef Jerky Dried at 62.5°C Following Four **Preparation Treatments**
- P26 Physical Variables and Yeast Inactivation during Thermo-ultrasonication

- Effects of Pulsed Electric Field Processing Using a Static Chamber on the Survival of Listeria monocytogenes
- P28 Inactivation of Listeria monocytogenes in Brine Chiller Water for Thermally Processed Meat Products Using a Recirculating Electrochemical Treatment System
- Influence of Gamma Irradiation on Salmonella spp. Incorporated into Oysters
- Loss of Crystal Violet Binding Activity in Yersinia enterocolitica Following Gamma Irradiation
- Efficacy of Disinfectants in Killing Spores of Alicyclobacillus acidoterrestris and Performance of Media for Enumerating
- Efficiency of Sanitation Procedures against P32 Listeria monocytogenes: Application to Coldsmoked Fish Industry in France
- Influence of Sodium Pyrophosphate on Thermal P33 Inactivation of *Listeria monocytogenes* in Pork Slurry and Ground Pork
- Aerobic Microflora and Yersinia enterocolitica Reductions on Eggs Treated with Different Sanitizers
- P35 Evaluation of Spray Application of Acidified Sodium Chlorite on Frankfurters and Its Effect on Reduction of Listeria monocytogenes
- P36 Bactericidal and Bacteriostatic Effect of Bovine Lactoferrin and Its Pepsin Hydrolysate for Foodborne Pathogens
- Limitations in the Use of Ozone to Disinfect Maple Sap

#### ALL DAY POSTER SYMPOSIUM -**AUGUST 7, 2000**

#### **Approaches to Control Pathogens** in the Next Millennium

- Electron Beam Irradiation
- Gamma Source Irradiation
- Factors Affecting Ability of Microorganisms to Survive Microwave Cooking
- Consumer Expectations and Response to Food Safety Technology
- Pasteurization of Intact Shell Eggs
- Competitive Exclusion
- Decontamination of Beef Carcass Surface Tissue by Steam Vacuuming Alone and Combined with Hot Water and Lactic Acid Sprays
- High Intensity Pulsed Electric Fields
- High Hydrostatic Pressure

#### **MONDAY AFTERNOON — AUGUST 7, 2000** 1:30 p.m. - 5:00 p.m.

- **S6** Listeria monocytogenes: Current Issues and Concerns — Session II: Detection, **Enumeration, and Intervention** Strategies for L. monocytogenes (Sponsored by ILSI-NA)
  - A Comparison of Rapid Genetic Methods for the Detection of L. monocytogenes
  - Ecology of L. monocytogenes: Studies on Growth and Microbial Competition
  - Production Intervention Strategies to Control L. monocytogenes: Prospects for the Use of Irradiation (or Pasteurization) for Packaged Ready-to-eat Meats
  - Production Intervention Strategies to Control L. monocytogenes: Improved Hygienic Design Strategies

#### **S7** International Farm Level Produce Food Safety: Good Agricultural Practices

- Grower/Packer Worker Education Project
- Grower Education Program
- GAPs in Mexico Government and Grower Programs

#### **S8 Relevance of Testing to Reduce Risk**

- Legal and Regulatory Implications of Testing -A Company Perspective
- Statistical Sampling An Overview
- Scientific Advances to Improve Testing Strategies
- Statistical Sampling for Specific Foodborne Pathogens
- The Impact of Sampling Strategies on Risk Analysis and Risk Mitigation

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

- CDC Data on Infection and Diseases Caused by Cooking and Ready-to-eat Seafoods
- FDA's Update on Compliance with Seafood HACCP Regulations and Their Policy for Handling and Storing Cooked and Ready-to-eat Seafoods
- HACCP-based Post-cook Handling and Storage Options for Cooked Ready-to-eat Seafood
- Growth Patterns of Pathogenic Microbes in Cooked and Ready-to-eat Seafoods Using **Optional Processing Strategies**
- Gulf Blue Crab HACCP Economics: Proposed and Actual Effects

#### T2 Microbiological Methods

- T13 Development of a Standard Method to Detect Parasitic Protozoa on Fresh Vegetables
- T14 Development of Custom Identification Patterns for *Salmonella* Based on the Use of the Restriction Enzyme PvuII with an Automated Ribotyping System
- T15 The Development and Testing of an Instrument for the Homogeneous Detection of PCR Products
- T16 Evaluation of Immuno-concentration Procedure to Detect Salmonellae in Poultry Samples
- T17 Rapid Enumeration of *Lactobacillus* spp. in Salad Dressings Using the BioSys
- T18 Paper Kits for the Rapid Enumeration of Total and Coliforms/*E. coli*
- T19 Inoculum Size of *Clostridium botulinum* 56A Spores Influences Time-to-detection and Percent Growth-positive Samples
- 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
- T21 The Development of a Quantitative Assay for the Detection of Genetically Modified Soy Protein
- 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
- T23 Evaluation of the BioSys Optical Method for Rapidly Enumerating Populations of Aerobic Bacteria, Coliforms, and *Escherichia coli* (E. coli) from Ground Beef
- T24 A Survey of *Campylobacter* Diversity in Poultry Samples Using a Network of Automated Ribotyping Systems with the Restriction Enzyme Pstl

## P2 Inactivation and Control Methods II (3:00 p.m. – 6:00 p.m.)

- P38 Effect of Freezing on the Isolation and Survival of Plasmid-bearing Virulent *Yersinia* enterocolitica in Pork
- P39 Effect of Growth Temperature or Starvation on the Radiation Resistance of *E. coli* O157:H7 in a Model System and Ground Beef
- P40 Susceptibilities of *Staphylococcus aureus*, *Listeria* and *Salmonella* Isolates Associated with Poultry Processing to Six Antimicrobial Agents

- P41 Invasive Ability and Tolerance of Acid-adapted and Non-adapted *Salmonella* Typhimurium DT104 to Stress Conditions
- P42 Heat Adaptation Induced Cross-protection against Osmotic Stress in *Salmonella* Typhimurium DT104
- P43 Multiple Stress Studies in Arcobacter Species
- P44 Influence of Fruit Variety, Harvest Technique, Culling, and Storage on the Microbial Composition and Patulin Contamination of Unpasteurized Apple Cider
- P45 Organic Acids and Hydrogen Peroxide Inhibit Microbial Viability in Fresh Juices
- P46 Survival of Enterohemorrhagic *Escherichia coli* O157:H7 Strains in Wounded Apple Tissue during Temperature Abuse
- P47 Loss of Fumonisin during the Corn Flake Process with and without Sugars
- P48 Peroxidative Stress Adaptation and Thermal Cross-resistance in *Escherichia coli* O157:H7 933 Subjected to Sublethal Doses of Peroxyacetic Acid Sanitizer
- P49 Effect of Inhibitors of Branched-chain Keto Acid Dehydrogenase on the Growth, Fatty Acid Composition, and Enzyme Activity of *Listeria* monocytogenes
- P50 Zygosaccharomyces bailii Time-to-growth as Affected by Temperature, Water Activity, pH and Antimicrobials
- P51 Effect of Salt on Survival of *Shigella flexneri* as Affected by Temperature and pH
- P52 Use of Polystyrene Foam Net Containing Silver-coated Ceramic to Extend Shelf Life of Longissimus Steaks from Korean Cattle
- P53 Impact of Heating Stress on the Behavior of Two *Listeria monocytogenes* Strains in a Broth Which Mimics the Camembert Cheese Composition
- P54 Unrelatedness of Nisin Resistance and Antibiotic Resistance in *Listeria monocytogenes*
- P55 Changes in Populations and Acid Tolerance of *Listeria monocytogenes* in Fresh Beef Decontamination Fluids
- P56 Evaluation of *Listeria monocytogenes* in Vaccum-packed Gravad Salmon
- P57 Fate of *Escherichia coli* O157:H7 in Channel Catfish Pond Water
- P58 Internalization of *Escherichia coli* Outside Laboratory Conditions
- P59 Localization and Tissue Damage Induced by Enterohemorrhagic *Escherichia coli* O157:H7 in Apple Tissue

- Modeling the Survival of Enterohemorrhagic P60 E. coli in Uncooked Fermented Salami
- P61 Growth of Escherichia coli O157:H7 in Biofilms with Microorganisms Isolated from Meat **Processing Environments**
- Growth and Survival of Escherichia coli O157: P62 H7 and Nonpathogenic E. coli in Cheddar Cheese Curds
- Survival of Enterohemorrhagic Escherichia coli P63 O157:H7 in Retail Mustard
- P64 **Environmental Conditions Affecting Survival** of Escherichia coli O157:H7 and Salmonella Typhimurium DT104 in Land-spread Manure
- P65 Effect of Antacid on Survival of Vibrio vulnificus and V. vulnificus Phage in a Simulated Gastrointestinal Model
- P66 Survival of Vibrio vulnificus in Raw and Fried Mussels (Mytilus galloprovincialis) being Consumed as Traditionally in Turkey
- P67 Microbial Population, Chemical Status and Shelf Stability of Smoked and Non-smoked Country-
- P68 Fate of Bacterial Pathogens Inoculated on Fresh Pork during Simulated Temperature Abuse at Distribution
- Cooling Rate Effect on Outgrowth of Clostridium perfringens in Cooked Turkey **Products**
- Comparing Attachment Strength, Heat Tolerance and Alkali Resistance of Pathogenic and Non-pathogenic Bacteria on Orange Surfaces
- Potential for Transference of Inoculated and Indigenous Bacteria from the Non-wounded Rind of Melons to the Interior Edible Flesh
- P72 Survival of Poliovirus on Fresh Produce

## **TUESDAY MORNING — AUGUST 8, 2000** 8:30 a.m. - 12:00 p.m.

#### \$10 Campylobacter Performance Standards: **Implementation and Control**

- Update on FSIS Campylobacter Programs
- Control of Campylobacter in Poultry from Farm to Table
- Control of Campylobacter in Pork from Farm through Slaughter
- Current Campylobacter Research Needs on Behalf of Public Health
- Perspectives and Possibilties for Campylobacter Performance Standards

#### S11 Genetic Methods to Track Microorganisms in Food Production and **Processing**

- Advantages and Disadvantages of Different Genetic Techniques
- Interpreting Genetic Results What do the Results Mean?
- Tracking E. coli O157:H7 in Wisconsin Dairy Farms
- Tracking Campylobacter in Poultry Production and Processing
- Using Genetic Tests to Understand Microbial **Ecology of Food Production Systems**
- Monitoring Changes in Microbes Used in Food Production and Fermentation Systems Using Genetic Methods

#### S12 Issues Facing Today's Large Dairy **Producers**

- Management Issues of Expanding an Operation
- Nutrient Management and Waste Issues
- Design of Milking Center and Other Buildings
- Decisions in Choosing a Milking System
- **Employee and Labor Issues**

#### S13 Approaches to Food Safety in Latin **America and Caribbean Countries**

- Surveillance of Foodborne Diseases in Countries of Latin America and the Caribbean with **Emphasis in Emerging Pathogens**
- Food Safety Approaches in Latin America and the Caribbean
- Latin America Network of Food Analysis Laboratories
- Food Safety Initiative in Caribbean Countries
- Food Safety Aspects of Meat Exportation from Latin America and the Caribbean
- Food Safety Aspects of Fruits and Vegetables Exportation from Latin America and the Caribbean

#### **Inactivation and Control Methods I** T3

- T25 Inactivation of Bacterial Foodborne Pathogens on Fresh Produce by Low-dose Gamma Irradiation
- T26 Effect of Irradiation Temperature on Inactivation of E. coli O157:H7 and Staphylococcus aureus
- Non-thermal Processing Alternatives for the Effective Elimination of E. coli O157:H7 in Apple Cider

#### (Tuesday morning, continued)

- T28 Inactivation of *Escherichia coli* O157:H7 and *Listeria monocytogenes* on Apples and in Fresh Apple Cider Using Sonication and Copper Ion Water
- T29 Influence of Environmental Stresses on Biocide Susceptibility of *Escherichia coli* O157:H7
- T30 Inhibition of *Listeria monocytogenes*,

  Salmonella Typhimurium DT104 and

  Escherichia coli O157:H7 on Bologna and
  Summer Sausage Using Whey Protein Isolatebased Edible Films Containing Antimicrobials
- T31 Disinfection of Bacterial Pathogens and Selected Viruses on Fresh Romaine Lettuce
- T32 The Antimicrobial Efficacy of Herbs in Marinated Chicken
- T33 Effect of Fat Content, Evaporative Cooling and Food Type on Pathogen Survival during Microwave Heating
- T34 Microbiological Evaluation and Manufacturing Practices of Sprouts in Canada
- T35 Effect of Blanching Cucumbers on the Microflora of Non-acidified Refrigerated Pickles
- T36 Effects of Water Washing and Rinsing Temperature on Handwashing Efficacy

# P3 General Food Microbiology and Education

(10:00 a.m. - 1:00 p.m.)

- P73 Cytotoxicity and Buffering Capacity of an Alkaline Tolerant Dairy-associated *Bacillus*Isolate
- 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
- P75 Transposon Insertions in Branched-chain Alphaketo Acid Dehydrogenase Region of Two Coldsensitive *Listeria monocytogenes* Mutants
- P76 A Risk-based Evaluation of Traditional and Social Marketing Methods of Food Hygiene Education
- P77 Foodborne Disease Reporting in America: Closing the Gaps in Our Federal Food-safety Net
- P78 Food Handlers' Beliefs about Food Safety Procedures and Risks
- P79 The Repeatability and Reproducability of Food Safety Behavior in the Domestic Environment
- P80 Prevalence of Unsafe Practices during Preparation of Homemade Food in Argentina
- P81 Evaluation of a Targeted Intervention Food Safety Program for Women Who are Pregnant and/or Have Young Children
- P82 Cost, Benefits and Attitudes Towards HACCP Implementation in English Butchers' Shops
- P83 Development of a Competitive Exclusion Product to Reduce *Escherichia coli* O157:H7 in Cattle

- P84 Isolation and Selection of Lactic Acid Bacteria from Meat Products to Inhibit Foodborne Pathogens
- P85 Biocontrol of Mold Growth Using *Bacillus pumilus* and *Lactobacillus* Species Isolated from Foods
- P86 Employing *Citrobacter rodentium* as a Surrogate for *E. coli* O157:H7 in a Mouse Model to Investigate the Effects of the Probiotic *L. acidophilus* on Pathogen Binding in the Large Intestine
- P87 Purification and Characterization of an Antilisterial Bacteriocin Produced by Leuconostoc sp. W65
- P88 Resistance of *Listeria monocytogenes* to Bacteriocins of Lactic Acid Bacteria
- P89 Botulinal Toxin Production in Reduced-fat and Fat-free Pasteurized Process Cheese Products
- P90 Antimicrobial Activity of Several Spices and Organic Acid Solutions Tested against Arcobacter butzleri
- P91 Trans-2-Hexenal, as an Antimicrobial Agent
- P92 Carvacrol, Citral, Eugenol, Thymol, Vanillin,
  Potassium Sorbate and Sodium Benzoate
  Inhibitory Concentrations for *Aspergillus flavus*at Selected Water Activities and pHs
- P93 Antimicrobial Effect of Honey on Hydrated Batter Mix
- P94 Natural Antimicrobials as Potential Replacements for Calcium Propionate in Bread
- P95 Effect of Natural Antimicrobials on Bakers' Yeast
- P96 Prevalence of *Pseudomonas* spp. in Process Water, Recycled Water and Dairy Products
- P97 Population Changes of Pathogenic Bacteria Inoculated in Fresh Pork Following Chilled Storage and Simulated Consumer Temperature Abuse
- P98 Prevalence of *Listeria monocytogenes*, *Salmonella* Typhimurium and *Yersinia enterocolitica* on In-coming Hogs and Fresh Pork during and after Slaughter
- P99 Levels of Microbial Contamination in United States Pork Retail Products
- P100 Microbial Contamination Occurring on Lamb Carcasses Processed in the United States
- P101 Sampling of Dairy Cattle for *Listeria* monocytogenes
- P102 Incidence and Antibiotic Resistance of Salmonella spp. Cultures Isolated from Animal Hide and Beef Carcasses
- P103 Surveillance of *Arcobacter* in Various Environmental Sources

- P104 Presence of Campylobacter, Escherichia coli and Salmonella in Retail Meats
- P105 Antibiotic Resistance Pattern of Campylobacter spp. Isolated from Boilers Processed in Air and Immersion Chill Processing Facilities
- P106 Characterization of Antibiotic Resistance in Shiga Toxin-producing Escherichia coli
- P107 Evidence of Toxin Production by Bacillus Strains Isolated from Street-vended Foods in Johannesburg, South Africa
- P108 Microbiological Quality of Bottled Water
- P109 Identification and Molecular Characterization of Amine-producing Strains of Stenotrophomonas maltophilia Isolated from White Muscle of Fresh and Frozen Albacore Tuna (Thunnus alalunga)
- P110 Microbial Ecology of Muffins Based on Cassava and Other Non-wheat Flours

## **TUESDAY AFTERNOON — AUGUST 8, 2000** 1:30 p.m. - 5:00 p.m.

**General Session** — (1:30 p.m. – 3:30 p.m.)

#### **Bioterrorism and Food Protection**

- Strategic Bioterrorism and the Food Supply
- Bioterrorism as a Public Health Event
- Bioterrorist Targets in the Agricultural Industry
- Medical Implications of a Foodborne Bioterrorist Event
- Responding to a Bioterrorist Event
- The Role of Food Protection Organizations in Contributing to Preparedness against **Bioterrorist Events**

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

## **WEDNESDAY MORNING — AUGUST 9, 2000** 8:30 a.m. - 12:00 p.m.

#### S15 Food Biotechnology: Perspectives, **Challenges and Opportunities**

- Perspectives on Biotechnology: Past, Present and Future
- **Understanding Consumer Perceptions of** Biotechnology
- Biotechnology in Production Agriculture: A Scientific Perspective
- The Environmental Impact of Biotechnology
- Food Product Enhancement through Biotechnology

Detecting Biotechnologically Derived Ingredients in Food

#### S16 Biosensors and Real-time Detection **Systems**

- Fundamentals of Biosensors and Real-time **Detection Systems**
- Use of Colorimetric Sensors for Detection of Foodborne Pathogens
- Rapid Detection of Salmonella Using an Immunoassav-based Biosensor
- Detection of Pathogens by Imunomagneticelectrohimiluminescence (IM-ECL)
- Application of Flow Cytometry Techniques as Real-time Detectors
- Integration and Application of Real-time Detection and Information Systems for Food Safety

#### \$17 Transportation of Raw Milk and **Finished Dairy Products**

- Regulating Haulers/Drivers
- Inspection of Farm Bulk Tankers
- Cleaning and Sanitizing Farm Bulk Tankers
- Sampling Issues
- Owner/Operator Issues
- Hauling of Finished Dairy Products

#### S18 Significance of Mycotoxins in the Global **Food Supply**

(Sponsored by ILSI-NA)

- Worldwide Mycotoxin Problems
- Aflatoxins
- **Fumonisins**
- Deoxynivalenol
- Detection Methods for Mycotoxins in Foods
- Control of Mycotoxins in the Food Supply: A Food Industry Perspective

#### T4 **Inactivation and Control Methods II**

- Continuous On-line Processing of Fecal and T37 Food Contaminated Poultry Carcasses
- T38 Efficacy of Electrolyzed Water in Inactivating Listeria monocytogenes and Salmonella enteritidis on Shell eggs
- Effect of Pre-chill Skinning on the Level of Campylobacter Recovered from Broiler Parts
- Ability of Oleic Acid to Reduce the Number of T40 Bacteria on Poultry Skin and in Rinsates of Poultry Skin

#### (Wednesday morning, continued)

- Comparison of Three Commercial Competitive Exclusion Products on Reducing Salmonella
- Effectiveness of Potassium Lactate and Lactic T42 Acid Against Campylobacter and Psychrotrophic Bacteria on Chicken Breasts
- Application of Natural Antimicrobial Systems T43 to the Surfaces of Cooked Meat for Control of L. monocytogenes
- Comparative Study of Semisynthetic Derivative of Natamycin and the Parent Antibiotic on the Spoilage of Shredded Cheddar Cheese
- Co-60 Irradiation for Inactivation of Giardia lamblia Cysts in Water and on Tomatoes
- Inhibitory Effect of Gamma Irradiation on the T46 Growth of Fusarium moniliforme and **Fumonisin Production**
- Resistance of Poliovirus to Inactivation by High T47 **Hydrostatic Pressures**
- The Effect of Thermal Processing Schedules and T48 Unit Operations on the Quality of Blue Crab (Callinectes sapidus) Meat

#### P4 **Microbiological Methods**

- (10:00 a.m. 1:00 p.m.)
- P111 Evaluation of Universal Preenrichment Broth for Growth of Heat-injured Pathogens
- P112 Characterization of Listeria monocytogenes from Cold Smoked Fish Plant by Pulsed-field Gel Electrophoresis (PFGE)
- P113 Listeria monocytogenes Detection in Food using an ELISA-based Method
- P114 Factors Affecting the Isolation and Enumeration of Escherichia coli O157:H7 on Alfalfa Seeds
- P115 Efficacy of Various Non-selective Resuscitation Media for Increased Detection of Heat-injured Escherichia coli O157:H7
- P116 Phosphate Buffer Increases Recovery E. coli O157:H7 from Frozen Apple Juice
- P117 Evaluation of FDA/BAM and Rapid Methods for Enumeration and Detection of E. coli O157:H7 from Farm Animal Environments
- P118 Rapid and Sensitive Identification of Viable Escherichia coli O157:H7 in Food by Reverse Transcription PCR
- P119 Comparison of Selective Media for Evaluating Survival of E. coli O157:H7 in Fruit Juices
- P120 Multiple Target Medium to Screen for Enterobacteriaceae and Escherichia coli in Meats
- P121 Media Evaluation for Recovery of Injured Cells of Escherichia coli O157:H7 and Salmonella spp.
- P122 Comparison of Selective Enrichment Media to Recover Salmonella from Acidified Barbecue and Liquid Non-dairy Products

- P123 Evaluation of a Lateral Flow Device for Detecting Salmonella enteritidis in Raw Eggs and Chicken Feces
- P124 Improved Isolation of Salmonella from Chocolate
- P125 Recovery of Salmonella from Artificially Contaminated Dairy Feeds
- P126 Selective and Differential Properties of Chromogenic Media for Isolation of Salmonellae from Foodstuffs
- P127 Detection of Campylobacter jejuni in Dairy Silage
- P128 A Comparison of Isolation Protocols for Recovery of Campylobacter jejuni from Cattle
- P129 A Rapid Method to Identify and Enumerate Foodborne Pathogens Using Machine Vision
- P130 Detection of Guaiacol Produced by Alicyclobacillus acidoterrestris in Apple Juice by Sensory and Chemical Analyses
- P131 Sampling Technique Efficacy for Arcobacter butzleri from Live Chickens
- P132 Detection of Coliforms on Food Contact Surfaces
- P133 Detection of Zearalenone by Fluorescence Polarization Immunoassay and Its Application
- P134 Screening of Deoxynivalenol Producing Fungi from Greenhouse Horticulture Soils and Products by ALP/NADP Method
- P135 A Comparison of Methods for Monitoring Food **Contact Surface Cleanliness**
- P136 Spreadsheet Tool for Recording and Evaluating Microbiological Environmental Sampling Data
- P137 Reverse Dot-Blot DNA/DNA Hybridization Method for the Detection of Bacteria Involved in Amine Formation in Albacore Tuna (Thunnus alalunga)
- 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**
- P139 Detection of Shigella Using a Digoxigeninlabeled Polynucleotide DNA Probe

## **WEDNESDAY AFTERNOON - AUGUST 9, 2000** 1:30 p.m. - 5:00 p.m.

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

- The Role of NLVs in Foodborne Disease
- Environmental Contamination in a Large Hotel with a Prolonged NLC Outbreak
- Detection of NLVs in Foods

- Genetic Relatedness of NLVs in Foodborne Disease Outbreaks
- Dose-response Relationships of Norwalk Virus from Human Challenge Studies
- Control of NLV Outbreak in a Large Hotel Casino

#### International Trends in On-farm Food Safety

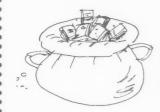
- The Australian Experience
- The Irish Experience: The Clean Green Island -Food Safety Assurance Schemes
- The Canadian Experience Canadian On-farm Food Safety Program
- The US Experience
- The Latin American Experience
- Comparison of EU/US/Australian On-farm QA/ **Food Safety Schemes**
- The Emerging International Standard: On-farm Food Safety and Codex

# **S21** The Earth is Curved (And so are Kinetic

- Historical Perspective on Microbial Inactivation Data Analysis: Linear Treatments - What, How, Why (Not)
- Non-linear Treatments of Microbial Inactivation Data - What, How, Why
- Modeling Thermal Inactivation of Clostridium botulinum Spores
- Modeling the Effect of Relative Humidities on Heat Resistance of Salmonella Typhimurium
- Implications of Non-linear Inactivation Kinetics for Risk Assessment

#### **Risk Assessment and Miscellaneous**

- T49 Risk Assessment of Salmonella enteritidis in Canadian Shell Eggs
- A Risk Assessment Model for Salmonella spp., Campylobacter jejuni, and Chicken
- Risk Assessment for Harmful Algal Blooms -Can Vibrio vulnificus be a Model for These Agents?
- Cyclospora oocysts on Raspberries from Guatemala - A Qualitative Risk Assessment
- Safety and Quality Evaluation of Thai Fermented Sausage (Nham)
- T54 The Use of Household Shopping Patterns to Identify Sources of Foodborne Disease
- T55 Quantification and Variability Analysis of Bacterial Cross-contamination Rates in the Kitchen
- T56 The Use of Notational Analysis to Assess Cross Contamination during Domestic Food
- Contamination of Kitchen Surfaces after Domestic Food Preparation
- The Significance of Hand Drying after Handwashing
- T59 Changes of Aflatoxins during the Ripening and Storage of Korean Soy Sauce and Soybean Paste and the Characteristics of the Changes
- Migration of Pencillium spinulosum from Paperboard Packaging to Extended Shelf-life



# **Make your Contributions Today** to the International Association for Food Protection Foundation Fund!

Help us reach our goal of \$100,000 in 2000. Your contribution is welcome. Call the Association office at 800.369.6337 or 515.276.3344 for more information on how you can support the Foundation.





# ATLANTA

## **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



August 6-9

Atlanta, Georgia

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-thecentury 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 lunch 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!



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

Mail:

## 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



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.

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

#### **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.)



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

#### **Attendee Registration Form** August 6-9, 2000, Atlanta, Georgia

	Name (Print or type your name as you wish it to appear on name badge)						
and it	Title		Employer				
	Mailing Address (Pl	ease specify:	□ Work)				
MAL ASSOCIATION FOR FOOD PROTECTION	City	State/Province	Country	Postal/Zip Code			
Can Annual Meeting	Telephone  First time attending mee		Memi	mail ber since:			
Member Number:		ADA, please attach a brief descr					
REGISTRATION FEES: Registration (Awards Banquet inclu Association Student Member* Retired Association Member* One Day Registration:  Mon.  Spouse/Companion* (Name):  Children 15 & Over* (Names):  Children 14 & Under* (Names): *Awards Banquet not included	Tues.	######################################	\$395 (\$445 late) Not Available Not Available \$200 (\$225 late) \$ 40 (\$ 40 late) \$ 25 (\$ 25 late) FREE	TOTAL			
EVENTS:  Golf Tournament (Sunday, 8/6)  Student Luncheon (Sunday, 8/6)  Monday Night Social, Fernbank Mus  Children 14 and under  Dinner at Stately Oaks (Tuesday,  (Limited tickets available)  Awards Banquet (Wednesday, 8/9)	8/8)	\$ 90 (\$105 late) \$ 5 (\$ 10 late) \$ 39 (\$ 44 late) \$ 34 (\$ 39 late) \$ 60 (\$ 65 late)	# OF TICKETS				
DAYTIME TOURS: (Lunch included in all daytime tours) Pop Topics (Sunday, 8/6) Peach Buzz (Monday, 8/7) Diaries of the South (Tuesday, 8/8)		\$ 56 (\$ 61 late) \$ 53 (\$ 58 late) \$ 65 (\$ 70 late)					
Payment Options:  Check Enclosed  Name on Card	VISA	TOTAL AMO	JOIN TODAY A  (Attach a completed Men (See page 316 of for a membership	nbership application) of this issue			
Signature		Ev	niration Date				

# 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

r. Douglas Powell is an Assistant Professor in the department of plant agriculture at the University of Guelph. 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. Hisbook, 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.



## **Annual Meeting Workshops**

Sponsored by



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

Workshop II — Using Information **Technology to Manage Food Safety Risks** 

his 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 II TOPICS**

From EpiInfo to FoodNet: Impraving Surveillance and Outbreak Respanse

**Automating Audits and Inspections with Mabile Computing Salutians** 

eHACCP: Temperature Data Acquisitian and Electronic **Data Management** 

Improving Lab Information Management for Better Decision-Making

Clean Behind the Ears: Using Handheld Technology for Audits and HACCP Verification

#### WORKSHOP INSTRUCTORS

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

Dr. John E. Griggs, GSC Mobile Solutions, East Lansing, MI Dick Ohaus, Tangent Systems, Inc., Hoffman Estates, IL 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 Registration — 8:00 a.m. Continental Breakfast Workshop — 8:30 a.m. - 4:30 p.m. Lunch - Provided

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

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

#### WORKSHOP I TOPICS

**Module A: Sample Callectian Protocols** and Recardkeeping

Module B: Sampling Plans for Faadborne Pathagens and HACCP Pragrams

**Module C: Sampling Plans for Food Processing Environments** 

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

Madule E: Sampling Plans far Starage or Shelf-life Studies

#### WORKSHOP INSTRUCTORS

Jaseph 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 II.

#### 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 Registration — 8:00 a.m. Continental Breakfast Workshop — 8:30 a.m. - 4:30 p.m. Lunch - Provided



## Donate an Item Today for the 3rd Annual Foundation Fund Silent Auction!

The Third Annual Foundation Fund Silent Auction will be held at the 87th Annual Meeting in Atlanta, Georgia, August 6-9, 2000.

Why donate an item to the auction?

Last year's auction raised over \$2,000 for the Foundation Fund. Promote your state or organization by donating items now to help the Foundation exceed its goal of \$100,000 in 2000. The Foundation benefits the Ivan Parkin Lecture, the Developing Scientist Competition, the Audiovisual Library, and co-sponsorship of the Crumbine Award. It also provides surplus *JFP* and *DFES* journals to developing countries.

If you would like to donate an item, contact Frank Zuehlke at the Association office, Phone: 800.369. 6337; 515.276.3344; or E-mail: fzuehlke@foodprotection.org A listing of auction items and donors will be included in the Annual Meeting Program and Abstract Book. Notification of donated items must be received by June 15, 2000 to be listed in the Program and Abstract Book.



International Association for FOOD Protection

Visit our Web site at www.foodprotection.org for the most current Annual Meeting information.



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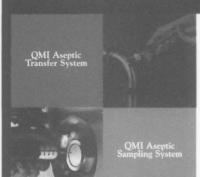
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## Make Your **Hotel Reservations** Today for the 87th Annual Meeting

Identify yourself as an International Association for Food Protection Annual Meeting attendee to receive a special rate of \$119 per night. Make your reservations as soon as possible; this special rate is only available until July 7, 2000.

Phone: 404.659.2000

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Weber Scientific

# **Coming Events**

#### MAY

- ·2. Northern California Institute of Food Technologists Suppliers' Expo 2000, Oakland Convention Center, Oakland, CA. For more information, call 650. 802.0888.
- · 4-5. Introduction to Microbial Risk Analysis Workshop, Marriott Inn and Conference Center at the University of Maryland, College Park, MD. Sponsored by the International Association for Food Protection. For additional information visit our Web site at www. foodprotection.org or phone: 800. 369.6337; 515.276.3344; fax: 515. 276.8655.
- · 7-11. 8th World Salt Symposium Salt 2000, in The Hague. Participants will be informed of the developments that are important for their respective activities in relation to salt. For further information, contact Dr. Justus M. de Jong, phone: 31.74.2443908; fax: 31.74.2443272; E-mail: Salt.2000@inter.NL.net.
- ·7-12, 3-A Sanitary Standards Annual Committee Meetings, Four Point Sheraton Hotel, Milwaukee, WI. For additional information, contact Philomena Short at 703.761.
- ·11-12, Only the Strong Survive! A Guide for Food Industry Consumer Affair Professionals Conference, Royal Sonesta Hotel. New Orleans, LA. This conference features an in-depth look at the areas of human resources and communications-oral, written and electronic. For additional information, contact National Food Processors Assn., at 202.639.5954; fax: 202.639.5941; Web site: www.fpi-food.org.
- · 15-17, Coagulants and Flocculants 2000, Sheraton National Hotel, Arlington, VA. For more information, contact Julie Bernier at

- Intertech Conferences, 19 Northbrook Dr., Portland, ME 04105: phone: 207.781.9800; Fax: 207.781. 2150; E-mail: jabernier@intertechusa.com.
- ·16-17, Pennsylvania Assn. of Milk, Food & Environmental Sanitarians Meeting at the Nittany Lion Inn. State College, PA. For further information, contact Eugene Frey at 717.397.0719.
- ·31, Massachusetts Milk, Food & Environmental Inspectors Association, Parwick Center, Chickopee, MA. For additional information, contact Fred Kowal at 413,592,5914.
- · 31-June 2, HACCP II: Development of Your HACCP Plan, Guelph Food Technology Centre. Guelph, Ontario, Canada. This program is ideal for personnel from companies ready to conduct their hazard analysis. For additional information, contact Marlene Inglis, Guelph Food Technology Centre, 88 McGilvray St., Guelph, Ontario N1G 2W1 Canada, phone: 519.821.1246; fax: 519.836.1281; E-mail: gftc@ uoguelph.ca.

#### JUNE

- ·1-2, Quality Systems for Food Processors, Lake Tahoe, NV. This two-day short course is designed to assist quality 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.
- · 5-7, Texas Assn. of Milk, Food & Environmental Sanitarians, Holiday Inn South, Austin, TX.

- For further information, contact Ron Richter at 409.845.4409.
- · 7-8, Associated Illinois Milk, Food & Environmental Sanitarians Field Representative Meeting. For further information, contact Tom Gruetzmacher at 815.
- · 10-14, IFT's Annual Meeting and Food Expo, Dallas, TX. For additional information, contact Angela Dansby at 312,782,8424 ext. 227; fax: 312.782.8348; E-mail: aldansby@ift.org.
- · 14-17, Dalian Seafood Expo 2000, Dalian Xinghai Convention & Exhibition Centre, Dalian, China. For further information, phone: 852.2865.2633; fax: 852.2866.2076; E-mail: enquiry@bitf.com.hk.
- ·27-28, 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.

#### JULY

- · 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.
- ·19-21, 3rd Annual Florida Foodborne Pathogen Analysis Conference, Tradewinds Resort, St. Pete, Beach, FL. For further information, contact Dr. Joanne Brown,

Chief. Bureau of Food & Residue Laboratories, Florida Dept. of Agriculture and Consumer Services, 3125 Conner Blvd., Bldg. 4, Tallahassee, FL 32399-1650; phone: 850. 488.0670; fax: 850.488.4226.

·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 87th Annual Meeting Workshops, Atlanta, GA. Workshop I "Microbiological Sampling Plans and Sample Collection for Food Processors," and Workshop II "Using Information Technology to Manage Food Safety Risks". For additional information, phone: 800. 369.6337; 515.276.3344; fax: 515. 276.8655; E-mail: info@food protection.org. or visit our Web site at www. foodprotection.org for the most current Annual Meeting information.

· 6-9, International Association for Food Protection 87th Annual Meeting, Atlanta, GA. Registration information available in this issue of DFES on page 307 or contact the Association 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**

· 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.

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



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118	133	148	164	178	193	208	223	238	253	268
119	134	149	165	179	194	209	224	239	254	269
120	135	150	166	180	195	210	225	240	255	270
121	136	151	167	181	196	211	226	241	256	271
122	137	160	168	197	107	212	227	2.12	257	272

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