

DAIRY, FOOD AND ENVIRONMENTAL

Sanitation

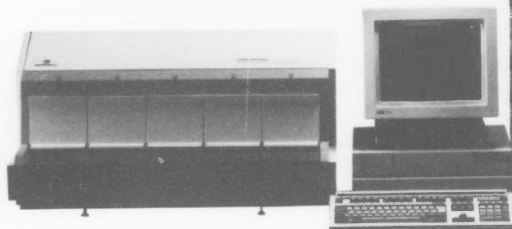
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APRIL 1998

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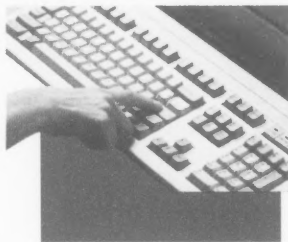


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Why should I contribute to the IAMFES Foundation Fund?

Any contribution, no matter how large or small will help build a secure Foundation for the future of IAMFES. The future of IAMFES depends on how well we can meet the needs of our membership in providing educational programs, journals, products, and services, and on how well IAMFES fulfills its mission. The Foundation Fund was created to provide a long-lasting legacy of information and service for protecting the milk, food, water, and environment throughout the world.

ABOUT THE COVER...

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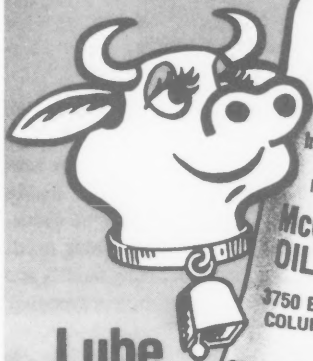
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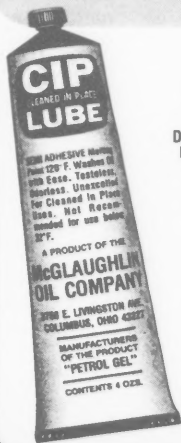
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ADVANCE NOTICE OF AVAILABILITY OF RESEARCH FUNDS

**DEPARTMENT OF HEALTH AND HUMAN SERVICES
Food and Drug Administration**

Research Studies on Microbiological Hazards Associated with the Food Animal Production Environment, Including Animal Feeds; Availability of Cooperative Agreements; Advance Notice of Request for Applications

AGENCY: Food and Drug Administration, HHS.

ACTION: Advance Notice.

SUMMARY: The Food and Drug Administration (FDA), Center for Veterinary Medicine (CVM) is planning to publish a request for applications (RFA) in the Federal Register announcing the availability of research funds for fiscal year (FY) 1998. These funds will support cooperative agreements to study the microbiological hazards associated with the food animal production environment, including animal feeds. Approximately \$1.0 million will be available in FY 1998. FDA anticipates making six to twelve Cooperative Agreement awards at \$100,000 to \$200,000 per award per year (direct and indirect costs). Support for these agreements may be for up to three years. The number of agreements funded will depend on the quality of the applications received and the availability of Federal funds to support the projects.

DATES: We anticipate that the RFA will publish in the Federal Register in March-April 1998. FDA will not accept any materials prior to the actual published due date for submission. This is only an advance notice and no activity should be taken by any organization prior to the submission and award of an application.

FOR FURTHER INFORMATION CONTACT:

David B. Batson, Ph.D., Office of Research, Center for Veterinary Medicine (HFV-502), Food and Drug Administration, 8401 Muirkirk Road, Laurel, MD 20708, Tel. (301) 827-8021, FAX (301) 827-8250.

If you wish to receive a copy of the RFA after publication in the Federal Register please contact: Robert L. Robins, Grants Management Officer, (HFA-520), Food and Drug Administration, 5600 Fishers Lane, Park Bldg., rm. 3-40, Rockville, MD 20857, Tel. 301-443-6170.

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COMMENTS

FROM YOUR PRESIDENT



By GALE PRINCE
IAMFES President

“We must look at fulfilling the needs of our members both now and in the future.”

What do you expect from your Association Membership? I need your input.

The Executive Board will meet with the IAMFES staff at the May Board Meeting to review the business plan for the coming year, and also to revisit our long-range business plan. As we look at the IAMFES business plan, we must look at fulfilling the needs of our members both now and in the future.

“The Mission of IAMFES is to provide food safety professionals worldwide with a forum to exchange information on protecting the food supply.”

When you sit back and look at the IAMFES Mission, you realize we accomplish our mission primarily through our publications, committees and annual meetings. This provides the membership with state-of-the-art information on food safety. IAMFES publications are often cited as a source of information on the latest research in food safety. I frequently hear the comment “If you are involved in food safety, the IAMFES Annual Meeting is the place to be.” It speaks well of the IAMFES leadership over the years and their ability to focus on the organization.

I don't need to remind you of how fast our own everyday life challenges are changing in our attempt to keep pace in this cyber world. We must keep pace with the rapidly changing job demands placed upon IAMFES members. In addition to our publications, we now have the IAMFES Web page on the Internet. Have you checked it out? With all the information

presented, it is just the beginning of what is possible. What would you like to see offered through our Web site?

Another question for you is should IAMFES offer a certification program for food safety professionals to enhance the creditability of our members? If so, what should be the focus of such a program? Who should be certified? The food safety field is becoming more complex and requires greater skills. The profile and importance of the food safety professional needs more recognition.

Is it appropriate that IAMFES offer some basic food safety training seminars to not only serve our membership but others in the early stages of their careers? There is a great need in the food industry for training of new employees on the basics of food safety. More advanced, specialized training is also needed to keep pace with new technology. Should IAMFES be a major player in this arena?

Should IAMFES be more proactive in communicating food safety information to consumers or should we leave this area to others? Should we be providing consumer educational materials about food safety on the Internet or should this be left to university extension services and regulatory agencies? If so, should we change the IAMFES Mission?

Your thoughts on these or other ideas would be most appreciated! Please contact me at 513.762.4209; Fax: 513.762.4372 or E-mail: gprince@kroger.com with your thoughts and ideas.

THANK YOU!

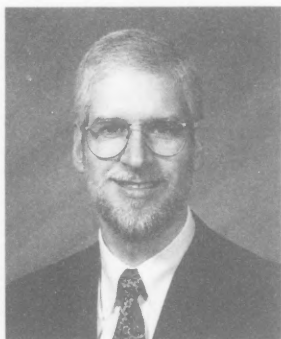
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The above list represents individual contributors to the IAMFES Foundation Fund through March 10, 1998. In addition, a portion of the Sustaining Member dues are allocated to support this Fund. Your contribution is welcome. Call the IAMFES office at 800.369.6337 or 515.276.3344 for more information on how you can support the Foundation.

COMMENTARY

FROM THE EXECUTIVE DIRECTOR



By DAVID W. THARP
IAMFES Executive Director

“A new name for IAMFES”

Name. A word or words by which any entity is designated and distinguished from others. A word or words used to describe or evaluate. These dictionary definitions for “name” provide a good justification to look at the name of our association and to analyze its effectiveness. Our name certainly distinguishes us from others, but does it effectively describe or designate us in the appropriate manner?

President Gale Prince addressed this issue in his February 1998 column and pointed out that many people with a great deal of involvement with and exposure to IAMFES are unable to recite the full name; International Association of Milk, Food and Environmental Sanitarians. If they know about IAMFES, we have a good chance that they know why we exist. If the individual is not aware of IAMFES, the first few minutes of conversation revolve around what the acronym means and what mission the association has.

To people not familiar with IAMFES, when an explanation is offered about our name, most of these people will come to one of two conclusions. The first conclusion reached is “Oh, you are an association focusing on milk.” Or the second conclusion is “Your members are sanitarians.” While neither is incorrect, neither gives a full picture of IAMFES.

In our fast-paced world, we need a name that is descriptive of our association and its mission. The time has come to initiate a change in the association’s name. Over the past year or so, there have been opportunities to discuss the pros and cons of changing the association’s name. In Orlando at the 1997 IAMFES Annual Meeting, discussions took place with our Committee, Professional Development Group and Task Force Members. Overall reaction was very positive. Gale Prince received many positive comments from his February column and I can report that I have received overwhelming support from members I have talked with about changing our name.

The proposed name is the International Association for Food Protection. Do you notice anything familiar sounding about this name? “Food Protection?” This name coordinates a visible identity that we have from the *Journal of Food Protection* with our mission of “exchanging information on protecting the food supply.” Because a name is so very important, we wanted to give ample opportunity for your input. We want to hear your comments; whether you agree or disagree, your input is important!

You may be interested in a timeline for implementation of a name change. There are many details to coordinate and they all take time. The goal is to continue discussion of the name change at this year’s Annual Meeting in Nashville, then we have some legal issues to put in order prior to a Membership vote at the 1999 Annual Meeting in Dearborn. If everything falls into place, the projection is for the association’s name change to become effective at the beginning of 2000!

The International Association for Food Protection. A new name for IAMFES! This name effectively describes and designates us in an appropriate manner. Immediately you know that our members strive to protect the food supply. Immediately you know the association’s focus and purpose. The International Association for Food Protection. A name that describes us and distinguishes us from all others! Please let us know now if you are in support of this new name. Contact me at 800.369.6337 or E-mail: dtharp@iamfes.org. You may also contact any member of the IAMFES Executive Board with your comments.



IAMFES ANNUAL MEETING
GOLF TOURNAMENT
AT THE
**HERMITAGE GOLF
COURSE**

Sunday, August 16, 1998
6:00 a.m. – Bus Leaves the Hotel

*Come early and enjoy 18 holes of golf at the famous
Hermitage Golf Course*

Before we deal with problems involving food safety and protection, let's get together for some fun and a GREAT round of golf! IAMFES has organized a FUN, BEST-BALL tournament with you in mind. EVERYONE IS WELCOME, regardless of skill.

About the Golf Course:

We have arranged to play the Hermitage Golf Course on the banks of the Cumberland River, near President Andrew Jackson's stately Hermitage home. The Hermitage Golf Course hosts many tournaments during the year, but is best known for the LPGA's Sara Lee Classic. Its large bent-grass greens, bermuda tees and cool seasonal grasses give the course a rich, green presentation year-round. The course is designed by internationally prominent Course Architect Gary Roger Baird and is 6,800 yards of championship golf at its best!

To join your friends and colleagues in a round of golf, call the IAMFES office at 800.369.6337 (or 515.276.3344) or Fax us at 515.276.8655 to request a registration form. Hurry! Registration deadline is July 15, 1998!

Companies:

Are you looking for a unique way to promote your company at the IAMFES Annual Meeting? IAMFES is looking for sponsorship support for this event. If you will consider providing quality prizes (or cash prizes) for the IAMFES Golf Tournament, we would like to hear from you. Call David Tharp at the phone numbers listed above for more details.

Hazard Analysis Critical Control Point Training for Foodservice Operators in Kansas

Betsy Barrett, Karen Penner, Karen Blakeslee, and Kevin Sauer

SUMMARY

Estimated cases of foodborne illness range from 6.5 million to 33 million per year and result in 9,000 to 10,000 deaths. Of these, a majority have occurred in foodservice operations. To prevent foodborne disease, implementation of a Hazard Analysis Critical Control Point (HACCP) system in foodservice operations has been recommended by the Food and Drug Administration. The purpose of this study was to conduct and assess the effectiveness of six hours of HACCP training in five locations throughout Kansas. The "post-then-pre" method allowed participants to rate their post- and pre-training knowledge and ability regarding the HACCP system as well as their confidence about implementation of food safety activities in their operations at the conclusion of the training. Paired *t*-tests analyzed differences in means between post- and pre-ratings. The results indicated that the 132 participants gained significant ($P=.001$) HACCP knowledge and ability during the training. The greatest mean difference between post- and pre-ratings were in participants' knowledge and ability about the HACCP system. However, participants indicated in their ratings that they were not confident about their ability to implement a HACCP system. HACCP training can be effective, but six hours of training may be inadequate to enable foodservice personnel unfamiliar with HACCP to comprehend the system completely and feel comfortable about implementing a HACCP program.

INTRODUCTION

Estimated cases of foodborne illness in the United States range from 6.5 million to 33 million each year (1) and result in 9,000 to 10,000 deaths (2). Of the 7,219 reported outbreaks between 1973 and 1987, 79% of traceable outbreaks occurred in commercial and noncommercial foodservice operations (1). An average outbreak can cost an implicated foodservice operation as much as \$75,000. Therefore, foodservice operations need to develop a food safety program that will ensure that foodborne illness outbreaks do not occur as a result of consuming food prepared in their operations.

The Food and Drug Administration (FDA) (3) has recommended that the Hazard Analysis Critical Control Point (HACCP) system be implemented in foodservice operations. This problem-solving system is effective and efficient and ensures that food products are as safe as possible. It was developed by the Pillsbury Company for the National Aeronautical Space Administration (NASA) to ensure the safety of food in space (11). In 1988, the National Advisory Committee on Microbiological Criteria for Foods (7) developed the seven HACCP principles. These include: (1) conducting a hazard analysis; (2) identifying critical con-

TABLE 1. Program for "getting a jumpstart on HACCP"

Topics	Exercises
Welcome, Introduction, Objectives	
What is HACCP; Why do you need HACCP?	
Food Safety Hazards	
Physical	
Chemical	
Biological	
Standard Operating Procedures	Identifying acceptable personal hygiene practices
Seven Principles of HACCP – Overview	
Principle One – Identifying Hazards in Your Operations	Menu review/hazard identification Identifying PHF's in menus Risk assessment
Principle Two – Identifying Critical Control Points	Identifying critical control points in recipes Writing CCP's into flow charts
Principle Three – Establishing Control Procedures	Writing CCP's into recipes Developing standards for operations Writing standards for flow charts
Principle Four – Establishing Monitoring Procedures	Establishing monitoring procedures for standards Writing monitoring procedures into flow charts
Principle Five – Establishing Corrective Action	Establishing corrective actions for standards Writing corrective actions into flow charts
Principle Six – Establishing Effective Record Keeping Procedures	Establishing record keeping procedures for standards Writing record keeping procedures into flow charts
Principle Seven – Establishing Procedures for Verification	Discussion "How to Verify HACCP"
Implementing Your HACCP Program	Discussion – "How to implement HACCP in your operation" Outlining HACCP plan for selected menu items
Questions/Answers, Evaluation	

trol points (CCP's); (3) establishing critical limits for preventive measures associated with each identified CCP; (4) establishing a monitoring system; (5) establishing corrective action when monitoring indicates a deviation from an established critical limit; (6) establishing effective record-keeping procedures that document HACCP; and (7) establishing verification procedures to ensure that the HACCP system is working correctly (7). Using these principles, foodservice operators identify their CCP's and then monitor them to help assure that potentially hazardous foods do not reach the consumer in an unsafe condition. When properly implemented, HACCP can be used to control any point in the food production system that contributes to a hazardous situation, whether microbiological, chemical, or physical (7).

The 1997 FDA Food Code (3) states that implementation of a HACCP program by foodservice operations will enhance the food safety of the public. The 1997 Food Code further states that regardless of size of operation, a HACCP plan for preparation of safe food needs to be designed and implemented. The success and effectiveness of the HACCP program in an operation will be based on the strength of the education, training and supervision of all personnel (3). The purpose of this study was to conduct HACCP training for foodservice personnel and to assess the effectiveness of this training.

METHODS

The HACCP training was funded in part by USDA Cooperative State Research, Education and Extension Service (CSREES) under the Food

Safety and Quality Initiative special projects and was conducted in five locations throughout Kansas. Potential attendees were contacted using mailing lists from the Kansas Restaurant and Hospitality Association, the Kansas School Food Service Association, the Kansas Department of Aging, and the Kansas Department of Health and Environment.

The six-hour training, entitled, "Getting a Jump Start on HACCP," was developed for this study using materials obtained from *SERVS SAFE Serving Safe Food Certification Coursebook (1995) (12)*, *The HACCP Food Safety Manual (4)*, *SERVS SAFE Managing a Food Safety System (5)*, *The 1993 Food Code (2)*, and *Food for Fifty (6)*. Topics included discussion of the importance of implementing HACCP, potential hazards, the seven principles of HACCP, and hands-on activities (refer to Table 1

TABLE 2. Foodservice operator's knowledge about food safety post- and pre-training

Food Safety Knowledge	Post Mean Std. Dev.	Pre Mean Std. Dev.	Mean Diff.	T Value	P Value
Factors of personal hygiene essential for employees	4.508 0.559	4.099 0.932	0.409	6.84	<0.001
Characteristics of potentially hazardous foods	4.099 0.700	3.397 0.990	0.702	9.48	<0.001
Potential hazards and their severity in a foodservice or processing operation	4.008 0.670	3.219 1.003	0.789	10.10	<0.001
Environmental conditions that encourage growth of microorganisms	3.917 0.782	3.159 1.040	0.758	9.76	<0.001
Microorganisms that cause foodborne illness	3.788 0.772	2.970 1.018	0.818	11.36	<0.001
Requirements that must be met at each critical control point	3.779 0.768	2.741 1.120	1.038	11.50	<0.001
The Hazard Analysis Critical Control Point System	3.733 0.700	2.168 1.117	1.565	18.04	<0.001
Procedures to monitor critical control points	3.718 0.844	2.580 1.202	1.137	11.02	<0.001
HACCP corrective action strategies	3.588 0.812	2.229 1.231	1.359	12.35	<0.001
HACCP record keeping systems	3.523 0.865	2.085 1.188	1.439	12.50	<0.001

n = 132

Reliability analysis post (Alpha) = 0.907

Reliability analysis pre (Alpha) = 0.895

Scale:

1 = **NO** knowledge, 2 = **LITTLE** knowledge, 3 = **MODERATE** knowledge, 4 = **MUCH** knowledge, 5 = **COMPLETE** knowledge

for program outline). These activities involved reviewing menus to identify potentially hazardous foods, adding critical control points to recipes, and developing flow charts for food products. Attendees paid a \$75.00 registration fee and were provided a 60-page notebook with HACCP information, overheads used, exercises, and blank forms (flow charts, forms for time/temperature recording).

After the session, the attendees were asked to rate their knowledge of HACCP, their opinion of their ability to implement HACCP, and their perception of the execution of food safety activities in their foodservice operation post-training and then pre-training. The "post-then-pre" method was used, because at the beginning of a program, participants may have too little knowledge to assess accu-

rately baseline behaviors. In this method, the participants rate their knowledge and ability as a result of the program, and then they retrospectively rate their knowledge/ability before the training. At that point, they have sufficient experience to answer the questions validly (9).

In this study, participants rated knowledge about food safety and about HACCP for 10 concepts, using a 5-point Likert scale from 1 – no knowledge to 5 – complete knowledge. The nine statements for "ability to implement HACCP" were rated on a 5-point Likert scale from 1 – no ability to 5 – complete ability. The 20 food safety activities performed in the foodservice operation were rated based on time spent on the activity in the operation. A 5-point Likert scale rated the time from 1 – never to 5 – always.

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) (8). Descriptive statistics including frequencies and means were computed. Paired *t*-tests were performed to analyze differences in means between post- and pre-ratings.

RESULTS

Of the 132 participants who attended the five workshops, 80% were female; the mean age was 43; and 36% were employed in school foodservice, 16% in healthcare, 10% in aging programs, 8% in commercial foodservice, and 29% in "other." The "other" category included extension agents, sanitarians, students, and faculty. Of those employed in foodservice, 71% were managers, 17%

TABLE 3. Abilities of foodservice operator's to implement food safety or HACCP, post- and pre-training

Ability Statements	Post Mean Std. Dev.	Pre Mean Std. Dev.	Mean Diff.	T Value	P Value
Take corrective action when something is wrong*	3.879 0.811	3.046 1.145	0.833	9.00	<0.001
Recognize potential hazards and assess their severity*	3.833 0.743	2.689 1.147	1.144	12.27	<0.001
Identify critical control points*	3.727 0.848	2.470 1.188	1.258	12.22	<0.001
Modify recipes so that they identify critical control points*	3.599 0.898	2.182 1.222	1.417	13.10	<0.000
Develop a basic record keeping system*	3.530 0.903	2.477 1.201	1.053	10.36	<0.001
Verify that the HACCP system is working**	3.397 0.903	2.031 1.183	1.366	11.80	<0.001
Develop flow charts**	3.366 0.962	2.053 1.261	1.313	12.11	<0.001
Implement a HACCP system*	3.280 0.876	1.818 1.025	1.462	14.54	<0.001
Train employees to implement a HACCP system*	3.258 0.970	2.008 1.201	1.250	11.74	<0.001

*n = 132

Reliability analysis after (Alpha) = 0.944

Reliability analysis before (Alpha) = 0.941

**n = 131

Scale: 1 = **NO** ability, 2 = **LITTLE** ability, 3 = **MODERATE** ability, 4 = **MUCH** ability, 5 = **COMPLETE** ability

were assistant managers, and 12% were cooks.

The knowledge statement rated highest by participants both post- and pre-training was "factors of personal hygiene essential for employees" ($4.5 \pm 0.56 / 4.10 \pm 0.93$) (Table 2). The lowest rated statement was "knowledge about HACCP record-keeping systems" ($3.52 \pm 0.87 / 2.09 \pm 1.19$). All ratings were significantly different ($P < .001$) between post-training and pre-training. The statement for which the mean rating difference or increase in knowledge was greatest between pre- to post-training was "knowledge about the Hazard Analysis Critical Control Point System." The reliabilities for knowledge were $\alpha = 0.907$ for the post-scale and $\alpha = 0.895$ for the pre-scale.

For the nine ability statements, participants gave the highest post- and pre-ratings to their ability "to take corrective action when something is wrong" ($3.88 \pm 0.81 / 3.05 \pm 1.15$) (Table 3). Post- and pre-training, they rated lowest their ability "to train employees to implement a HACCP system" ($3.26 \pm 0.97 / 2.01 \pm 1.20$). As in the knowledge statements, comparison of means showed that all responses significantly differed at the $P < .001$ level for post- and pre-ratings. The concept with the greatest mean difference between post- and pre-ratings was their ability to implement a HACCP system. The reliabilities for the post-scale were $\alpha = 0.944$ and for the pre-scale $\alpha = 0.941$.

The food safety activities performed most in foodservice

operations were "ensuring that plastic gloves are worn over cuts and abrasions," "using FIFO procedures," and "ensuring that employees wash hands" (Table 4). Those activities performed half the time or less included "recording time and temperatures of foods during service," "checking temperatures of foods held in the refrigerator," and "using a thermometer to ensure potentially hazardous foods are received at 40°F or 0°F." The differences analyzed by paired *t*-tests were significant ($P = .000$) for all 20 activities for post- compared to pre-ratings. Activities with the greatest mean differences were those that had the lowest post- and pre-ratings and were related to checking and recording temperatures. The reliabilities were $\alpha = 0.948$ for the post-scale and $\alpha = 0.923$ for the pre-scale.

TABLE 4. Food safety activities of foodservice operators, post- and pre-training

Food Safety Activity	Post Mean Std. Dev.	Pre Mean Std. Dev.	Mean Diff.	T Value	P Value	N
Ensure that plastic gloves are worn over cuts and abrasions	4.667 0.637	4.360 0.932	0.306	4.91	<.001	111
Use FIFO procedures when storing food products	4.646 0.737	4.346 0.962	0.300	5.25	<.001	110
Ensure that employees wash hands before beginning to work and after any potential contamination	4.602 0.675	4.080 1.019	0.522	7.22	<.001	113
Cook (and monitor) PHF to appropriate internal temperatures (poultry, stuffed meats and leftovers 165°F, pork and ground beef 155°F)	4.595 0.679	3.991 1.116	0.604	7.72	<.001	111
Keep PHF out of the temperature danger zone (40 to 140°F) during preparation	4.545 0.793	3.955 1.085	0.589	7.39	<.001	112
Cover, label, and date all stored food products	4.545 0.683	4.170 1.039	0.375	5.30	<.001	112
During service, hold foods at 140°F and monitor temperatures at least every two hours	4.496 0.749	3.883 1.077	0.613	7.96	<.001	111
Store raw food products below cooked products	4.493 0.890	3.857 1.287	0.616	6.85	<.001	112
Thaw frozen potentially hazardous foods (PHF) in refrigerators, under potable running water at 70°F or in the microwave	4.473 0.958	4.071 1.198	0.402	5.18	<.001	112
Check cleaning and washing sanitizer for appropriate concentrations	4.464 0.697	3.866 1.053	0.598	7.81	<.001	112
Discard PHF foods not cooled within the time frame allowed	4.444 0.813	3.528 1.343	0.917	8.50	<.001	108
Hold transported foods at 140°F and check temperatures	4.386 0.934	3.615 1.272	0.740	7.82	<.001	104
Cool hot PHF from 140°F to 70°F in two hours and to 40°F within four hours	4.367 0.790	3.431 1.100	0.936	9.49	<.001	109
Send ill employees home	4.342 0.803	3.784 1.123	0.559	6.39	<.001	111
Ensure that employees' hands do not touch ready-to-eat foods	4.318 0.741	3.800 1.090	0.518	6.72	<.001	110
Check sanitizing temperatures (3-compartment sink)	4.243 0.891	3.505 1.349	0.738	7.21	<.001	103
Pay more attention to food temperatures than to the cleanliness of your operation	4.044 0.921	3.226 1.060	0.817	10.26	<.001	115
Record time and temperatures for preparation, service, cooling, and reheating of foods	4.028 0.937	2.752 1.341	1.275	11.16	<.001	109
Check temperatures of foods held in refrigerators to ensure they are 40°F or below	3.982 0.945	2.752 1.278	1.230	11.53	<.001	113
Use a numerically scaled thermometer to check temperatures of PHF when they are received and reject products not at 40°F or 0°F	3.912 1.061	2.632 1.358	1.281	11.67	<.001	114

Scale: 1 = Never, 2 = Less than half the time, 3 = Half the time, 4 = More than half the time, 5 = Always
 Reliability analysis after (Alpha) = 0.948 Reliability analysis before (Alpha) = 0.923

DISCUSSION

Statistical analysis indicated that the HACCP training was effective. All differences were significant at the $P < .001$ level for ratings between post- and pre-training. As stated in the 1997 FDA Food Code (3), education and training are essential for HACCP implementation. Although foodservice operators were much more knowledgeable about HACCP after than before the training, the question remains: Will they implement HACCP? Another concern is the small number (131), out of the thousands of foodservice personnel working in Kansas, that participated in these HACCP training workshops. Because the training has proven to be effective and because the 1997 Food Code emphasizes the importance of HACCP, the training should be offered on a continuous basis. A majority of those who attended the training were employed in non-commercial settings, where food safety and training are encouraged. Commercial operators, for whom profit (which equates to time) is the key to success, did not attend the training.

As for knowledge and ability, mean post- and pre-ratings, indicated that participants were more comfortable with their knowledge about food safety and the HACCP system than they were with their ability to implement the components of a HACCP system. For food safety activities, participants indicated following the workshop that they would complete each activity in their operation at least half the time. These food safety activities encompassed many of the activities involved in implementing a HACCP system.

However, participants indicated through their ratings that they were not highly confident about their ability to implement a HACCP system. This implies that foodservice personnel may have difficulty understanding what is needed, or may not want to take the time, to implement a complete HACCP system.

These results indicate that HACCP training can be effective. However, six hours of training may not be enough for foodservice personnel unfamiliar with HACCP to comprehend the system completely and to feel comfortable implementing an entire system. Or, the results may indicate that training is only one factor in successful implementation of HACCP. As trainers, we may need to develop more activities and in-depth training materials that can help the participants. Furthermore, a HACCP program geared to foodservice that can be implemented easily and quickly and that focuses on critical control points, corrective action and flexibility needs to be developed.

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Hygienic Design: International Issues

John T. Holah

SUMMARY

This article supports a presentation on 'Hygienic design on a world stage: Issues and harmony' given at the 84th IAMFES Annual Meeting, Orlando from July 6 to July 9, 1997. The paper describes the importance of good hygienic equipment design and tells where guidance on the subject can be obtained. For a readership typically more familiar with observing the texts of 3-A standards, this article outlines the position of hygienic design standards in Europe and gives examples of the type of guidance given. It also indicates the links between American and European groups of hygienic equipment manufacturers, users, regulators, and researchers. In addition, the text highlights the current novel work by ISO/TC199/WG2 on risk assessments to identify equipment suitable for a range of hygienic purposes. The verification of such 'fitness for purpose' is also discussed. The article concludes by indicating the need for hygienic design training and stresses the significance of working internationally to secure common hygienic design goals.

HYGIENIC DESIGN — WHAT IS IT?

It is generally acknowledged that there are three environmental routes of food product contamination during processing: surfaces, people (and other animals) and the air. Surfaces are probably the most important route of infection, both directly via product contact surfaces

(production equipment) and indirectly as reservoirs of infection for product contamination via the other routes (e.g., drains, floors, wash-room surfaces). Fundamental to the control of contamination from surfaces of equipment is attention to hygienic equipment design.

Hygienic equipment design provides the following three major benefits to food manufacturers:

Quality

Good hygienic design maintains product in the main product flow. This ensures that product is not "held-up" within the equipment where it could deteriorate and affect product quality on rejoining the main product flow and that, for example in flavorings manufacture, one batch could not taint a subsequent batch.

Safety

Good hygienic design prevents the contamination of the product with substances that would adversely affect the health of the consumer. Such contamination could be microbiological (e.g., pathogens), chemical (e.g., lubricating fluids, cleaning compounds, and other toxic materials) or physical (e.g., glass).

Efficiency

Good hygienic design reduces the time required to clean an item of equipment. This increases the equipment's potential production output and reduces its cleaning cost.

HYGIENIC DESIGN — HOW CAN I GET GUIDANCE?

Hygienic design advice can be obtained, in the form of 'guidelines' or legislative requirements, from a range of sources.

In-house

Many large international equipment manufacturers have engineers dedicated to hygienic design who are

conversant with both internal and external knowledge bases. Similarly, large international food manufacturers have staff specializing in the selection of hygienic equipment and may have hygienic specifications to which equipment suppliers must comply. Many smaller equipment and food manufacturers, however, have no detailed knowledge of this area.

Academic/research associations

A relatively few academic texts have been published on hygienic design, though texts by Jowitt and Campden & Chorleywood Food Research Association (CCFRA) are internationally recognized (1, 2, 31, 32, 33).

Scientific/marketing trade associations

Foremost among the scientific/marketing trade associations that have produced hygienic guidelines specifically for their industry is the International Dairy Federation (20, 21). Currently a group (B36 - Hygienic design of equipment used in dairy plants) is active and in 1996 has published some general recommendations for the hygienic design of dairy equipment in IDF Bulletin 310.

Equipment manufacturers/users/regulators consortia

Within Europe and the United States, a number of organizations exist to foster consensus in hygienic design, and the use of these organizations' guidelines can have a quasi legal status. In 1989 an independent group, the European Hygienic Equipment Design Group (EHEDG) was formed; its approximately 100 members are research organizations, government representatives, equipment manufacturers or food processors. The purposes of the group are to

1. ensure that food products are processed hygienically and safely,
2. provide Standards Organizations with specialist views on hygienic aspects of equipment design,

3. ensure that in the future there will be no confusion about whether, and under which conditions, equipment is microbiologically safe for the processing and packaging of food, and
4. identify areas where knowledge of hygienic and aseptic design on which recommendations must be based is insufficient and to encourage research and development in such areas.

The EHEDG has produced 15 guidelines to date covering a range of hygienic design, verification and processing subjects (3, 19) as extended abstracts in the journal *Trends in Food Science and Technology* and in full by CCFRA (in English), ASEPT (in French) and PAVO (in Dutch). (Please note that in the reference list the *Trends in Food Science and Technology* reference, which has the same title, is given in parentheses after the CCFRA reference). Further information on the EHEDG can be obtained from the Secretariat, which is currently held by CCFRA.

In the United States, a number of guidelines in the form of third party approval schemes have been developed for the dairy industry (the 3-A standards) and food service equipment industry (the National Sanitation Foundation - NSF). The structure of these schemes is commendable in that representatives of equipment manufacturers, users and regulatory bodies are all involved in the implementation of recommendations. In particular, the 3-A standards group has been producing hygienic design standards, particularly for the dairy industry in the United States, for over 50 years and regularly publishes its documents in the journal *Dairy, Food and Environmental Sanitation* (18), readers of which will therefore be familiar with the text of these documents.

Harmonization is currently being explored between the EHEDG, 3-A, and NSF, and all three organizations will jointly publish hygienic guideline documentation in the future.

Standards

A number of countries have national standards and/or directives applicable to the hygienic design of food machinery, but there are relatively few international standards and these apply predominantly to the dairy industry (22-27). In addition, Japan is known to have adopted hygienic design standards (28, 29).

In the EC, the Council Directive on the approximation of the laws of Member States relating to machinery (89/392/EEC) was published on 14 June 1989. The Directive includes a short section dealing with hygiene and design requirements, which states that machinery intended for the preparation and processing of foods must be designed and constructed so as to avoid health risks. It also contains seven hygiene rules that must be observed. These rules are concerned with the suitability and cleanability of materials in contact with food; surface finish and design features such as joints, absence of ridges and crevices; avoidance of the use of fasteners, e.g., screws and rivets; the design of internal angles and corners; drainage of residues from equipment surfaces; dead spaces and voids; and bearings and shaft seals. The Directive requires that all machinery sold within the EC after January 1995 shall meet these basic standards and be marked accordingly to show compliance (the 'CE' mark).

In addition to these hygiene rules, Section 2.1 contains a requirement that machinery manufacturers must indicate the recommended products (chemicals) and methods for cleaning, disinfecting, and rinsing both open equipment (e.g., conveyors) and closed equipment (e.g., pipelines, valves, and pumps) where clean-in-place (CIP) procedures must be used.

The Commission turned to the European Standards Organization (CEN) to produce standards as one means of interpreting this Directive, and CEN/TC 153 is concerned with the hygiene specifications of food processing machinery. A European "C" level Standard EN 1672-2 "Food processing machinery - Safety and hygiene requirements - Basic concepts,

Figure 1. Hygienic and unhygienic screwed pipe couplings (DIN 11851). (Please note that in this figure and all appropriate subsequent figures 'X' refers to a design that is believed to present a hygiene risk whereas '✓' refers to a design that is hygienically acceptable.)

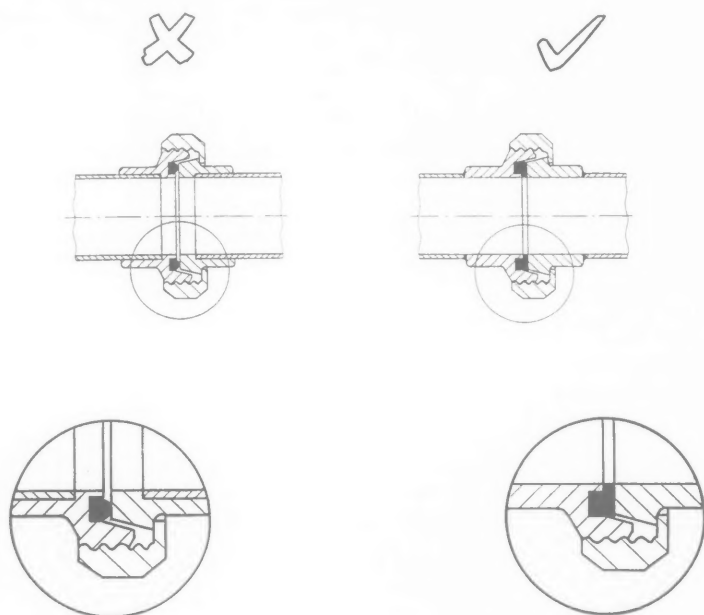
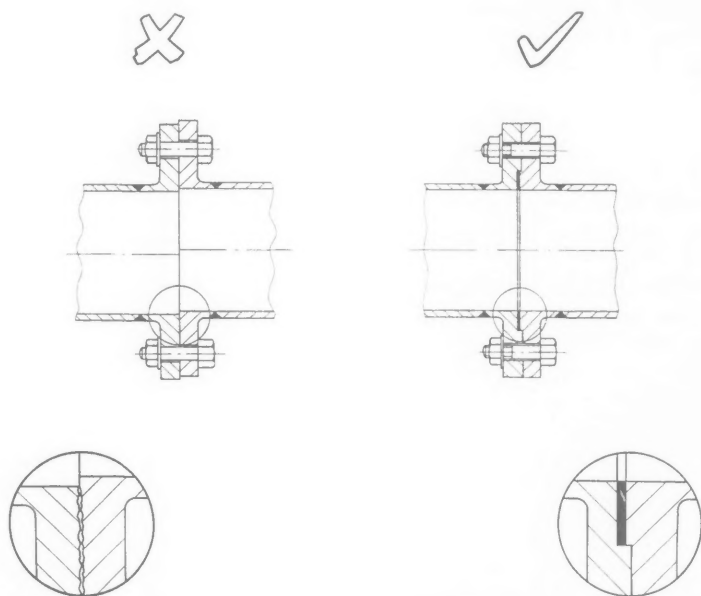


Figure 2. Hygienic and unhygienic flanged joints.



Part 2; Hygiene requirements" recently has been adopted. In addition, a number of Working Groups of CEN/TC 153 are producing specific standards on equipment design relevant to bakery products, meats, catering, edible oils, vending and dispensing, pasta, bulk milk coolers, cereal processing, and dairy products.

At an International level, a committee ISO/TC 199/WG 2 has been established to produce a "B" level standard on the hygienic aspects of machinery design relevant to any manufacturing sector in which hygiene is critical (e.g., food, biotechnology, pharmaceuticals). This standard will be the base standard to which all other, more detailed, manufacturing sector standards will relate. A draft standard, strongly supported by American and European delegates, has been prepared and is currently being commented upon.

WHAT ARE TYPICAL HYGIENIC DESIGN FACTORS?

Following the work of the European CEN Technical Committee CEN/TC 153, the basic hygienic design requirements were grouped under eleven headings. These are described below. It should be noted that in Europe, hygienic design guidelines tend to be more generic in nature than the more prescriptive requirements American readers may be familiar with. Illustrative figures have been taken from CCFRA texts.

Materials of construction

Materials used for product contact must have adequate strength over a wide temperature range, and a reasonable life span; they must be non-tainting, corrosion and abrasion resistant, easily cleaned and capable of being shaped. Stainless steel usually meets all these requirements, and there are various grades of stainless steel that can be selected for their particular properties to meet operational requirements, e.g., Type 316, which contains molybdenum, is used where improved corrosion resistance is necessary.

Figure 3. Examples of unhygienic fasteners. A = Soil trap points, B = Metal to metal, C = Dead spaces.

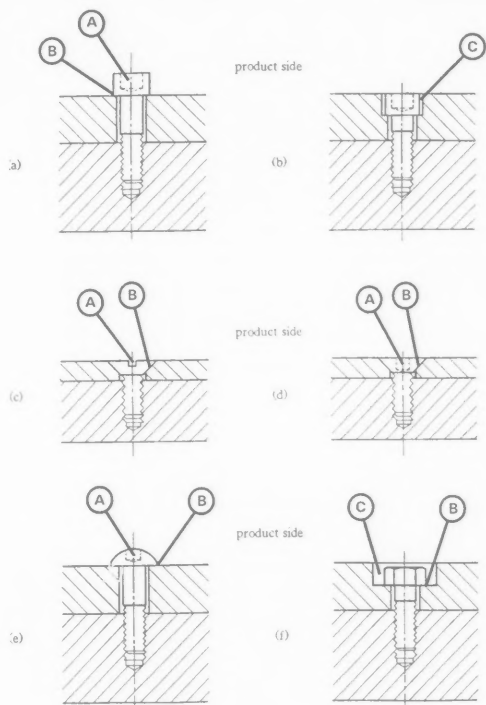
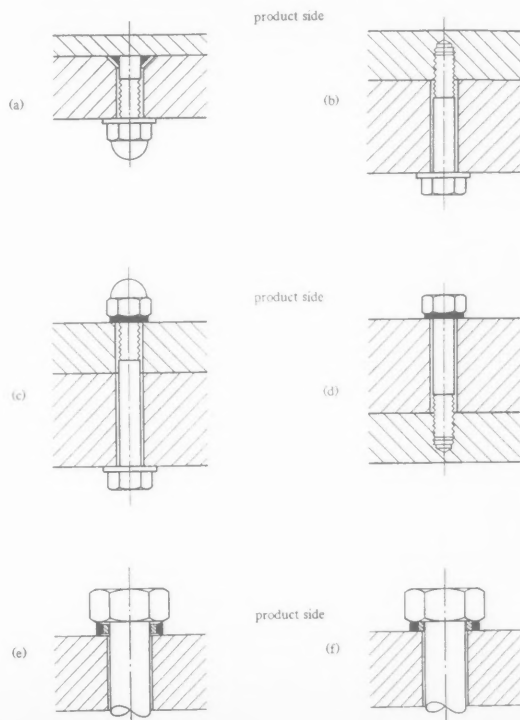


Figure 4. Examples of hygienic fasteners.



Surface finish

Product contact surfaces must be finished to a degree of surface roughness that enables them to be easily cleaned. Surfaces will deteriorate with age and wear (abrasion), making cleaning more difficult (19).

Joints

Permanent joints, such as those that are welded, should be smooth and continuous. Dismountable joints, such as screwed pipe couplings (Fig. 1), must be free of crevices and must provide a smooth, continuous surface on the product side. Flanged joints (Fig. 2) must be located with each other and sealed with a gasket because, although metal/metal joints can be made leak tight, they may still permit the ingress of microorganisms and other contaminants.

Fasteners

Exposed screw threads, nuts, bolts, screws and rivets (Fig. 3) must be avoided wherever possible in product contact areas. Alternative methods of fastening can be used (Fig. 4) where the washer used has a rubber compressible insert to form a bacteria-tight seal.

Drainage

All pipelines and equipment surfaces should be self draining because residual liquids can support microbial growth, or, in the case of cleaning fluids, result in product contamination (Fig. 5).

Internal angles and corners

Angles and corners should be well radiused to facilitate cleaning (Fig. 6).

Dead spaces

As well as ensuring that there are no dead spaces in the design of equipment, care must be taken to avoid introducing dead spaces during installation.

Bearings and shaft seals

Bearings should, wherever possible, be mounted outside the product area to avoid possible contamination of product by lubricants, except

Figure 5. Equipment should be self draining of product and cleaning fluids.

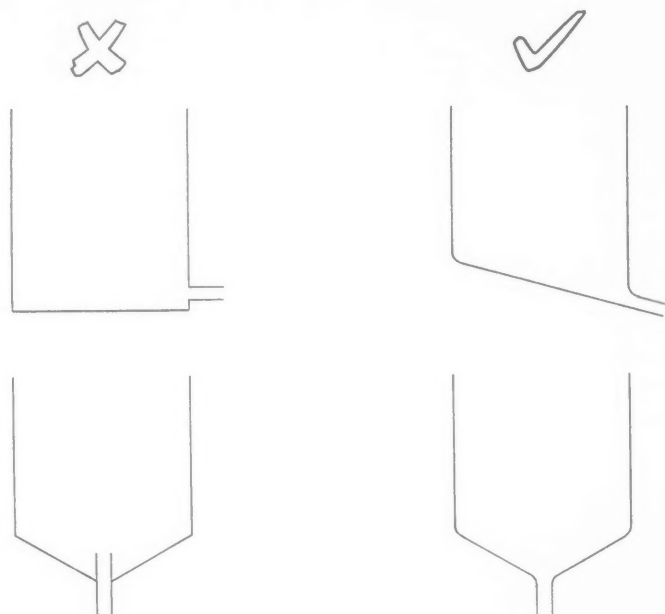
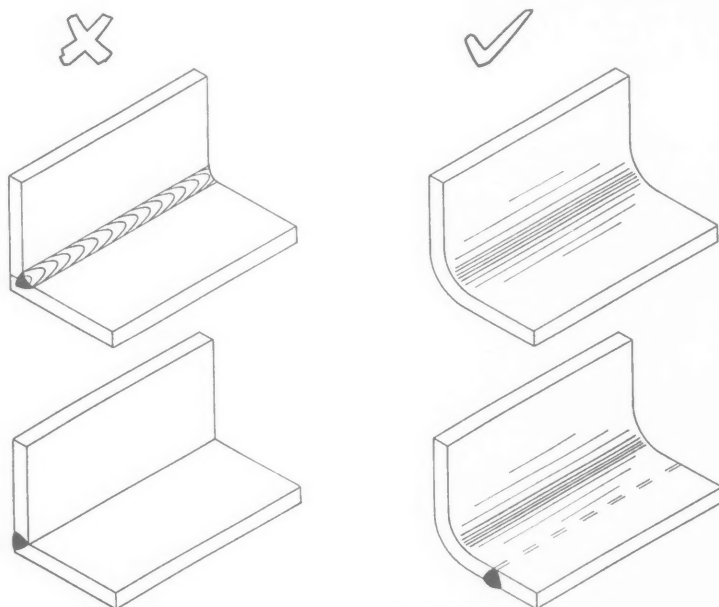


Figure 6. Internal angles and corners should be radiused to facilitate cleaning.



for edible lubricants, and to avoid possible failure of the bearings due to ingress of the product (Fig. 7). Shaft seals must be of such design as to be easily cleaned and, if not product lubricated, then lubricated only with edible lubricants. Where a bearing is within the product area, such as a foot bearing for an agitator shaft in a vessel, it is important that there is a groove completely through the bore of the bush from top to bottom, to permit the passage of cleaning fluid.

Instrumentation

Instruments must be constructed from appropriate materials and if they contain a transmitting fluid, such as in a bourdon tube pressure gauge, then the fluid must be approved for food contact. Many instruments are themselves hygienic but are often installed unhygienically (Fig. 8).

Doors, covers and panels

Doors, covers, and panels should be designed so that they prevent the entry and/or accumulation of soil. Where appropriate, they should be sloped to an outside edge, and they should be easily removed to facilitate cleaning.

Controls

Controls, particularly those that are repeatedly touched by food handlers to allow process operation, should be designed to prevent the ingress of contamination and should be easily cleanable (Fig. 9). Pathogenic microorganisms have been known to harbor in switches and be transferred to product every time the switch is operated.

WHAT IS SUITABLE FOR PURPOSE?

One of the key questions that has been addressed by ISO/TC 199/WG2 is what is suitable for the purpose. For example, why should a mixer, for raw meat be designed to the same hygienic level as a slicer for cooked meats? Similarly, why should an aseptic filler be designed to the same standard as a can filling machine? The

Figure 7. Bearings and shaft seals to indicate seal failure and oil leaks.

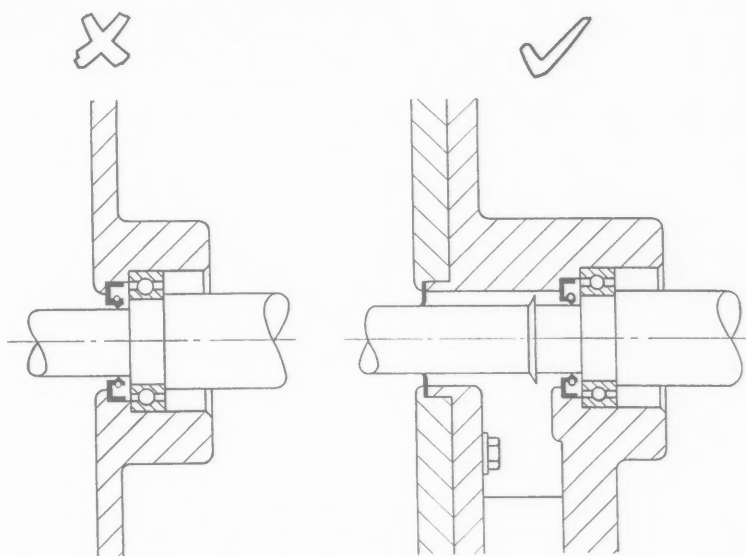
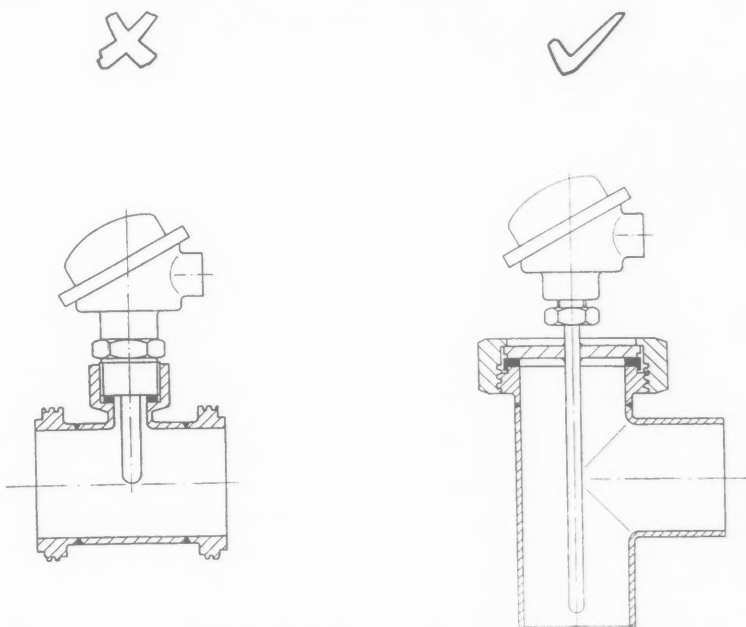


Figure 8. Poor positioning of instrumentation to create dead legs.



answer is related to the risk of a hazard being transferred to the product produced and thus to the consumer.

The degree of risk from eating foodstuffs depends largely on how that product has been processed, its degree of preservation, and what further cooking steps (if any) the consumer has to perform prior to consumption. For example, a stable preserved product, e.g., a canned or dried food, or one that requires thorough cooking prior to consumption, is less likely to confer a microbiological risk than a ready-to-eat chilled food. All of the above food products may, however, convey similar risks in terms of non-microbiological hazards, i.e., physical hazards (e.g., glass or plastic) or chemical hazards (e.g., lubricating fluids, cleaning chemicals, or pesticides).

When designing a piece of equipment, therefore, the manufacturer is required to undertake a hygiene risk analysis. This involves:

1. the identification of the process for which the machine is intended,
2. the relevant hazards associated with the products produced,
3. design methods/measures that can eliminate hazards or reduce their risk,
4. identification of any other hazards introduced by the methods used to reduce the hazard under analysis,
5. means of verification of the effectiveness of the hazard elimination or risk reduction, and
6. description of any residual risks and any additional precautions necessary for the machine's safe use.

To help equipment manufacturers meet this challenge, and thus both control the risk of transfer of a hazard to a food product during manufacture and produce the equipment in a cost effective manner, manufacturers should consider the following:

1. The intended use of the equipment: Will the equipment be used for one specific purpose

Figure 9. Rubber capped switches to allow easy cleaning.

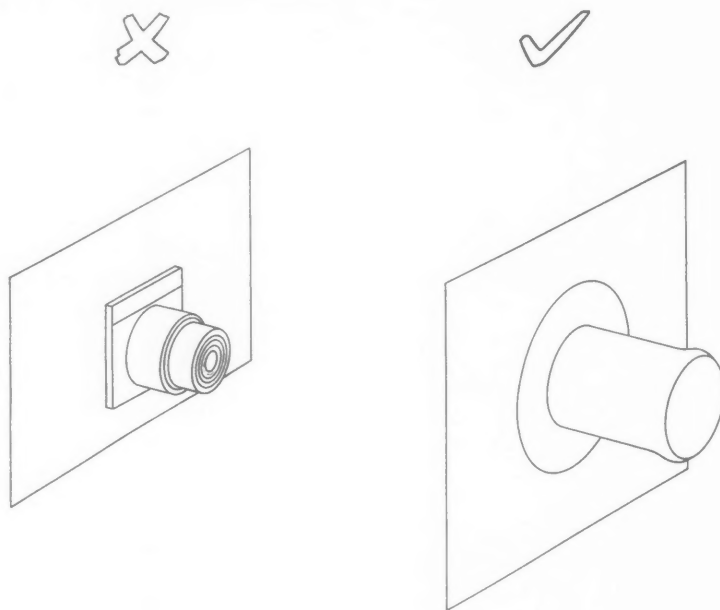
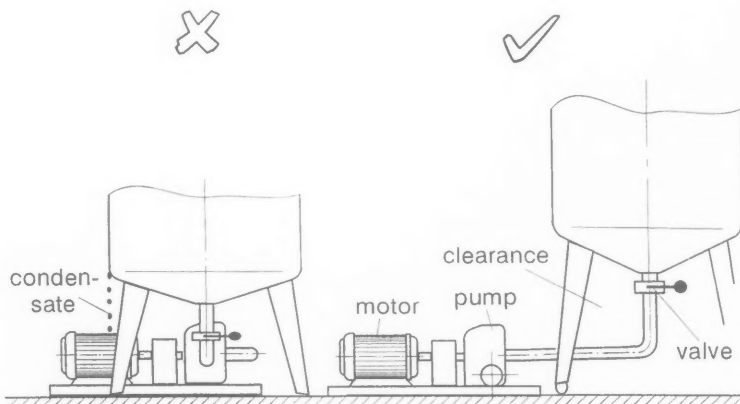


Figure 10. Installation of equipment to provide ease of cleaning and servicing.



only, for which the hazards are readily identifiable, or could the machine be used for a wide range of products in many industries (e.g., a pump)?

2. The product type to be processed: Will the product already contain high quantities of the hazard (e.g., a microorganism in a raw material) or will it be 'preserved' or 'aseptic'?
3. The degree of further product processing: will the product processed by the equipment subsequently undergo a further process that functions as a hazard elimination step (e.g., a heat treatment) or is the process for which the machine is intended the final process?
4. The degree of cleaning and/or inspection: Is the equipment to be cleaned and/or inspected after every use, routinely during the day, every day or every week, etc.?
5. The use of the machine: Is the equipment likely to be well maintained or used infrequently; is it designed for high or continuous use, or is it liable to abuse?

After a risk assessment has been made, it is possible to assign the suitability of an item of equipment to one of a number of categories for intended use. These range from equipment that satisfies the minimum requirements to make it safe for its intended purpose, through equipment that satisfies all the current hygienic design criteria and is thus fit for the production of high risk, short shelf-life foods to equipment designed for the production of aseptic foods and that thus must be bacteria tight and able to withstand a range of heating treatments.

HOW CAN HYGIENIC DESIGN BE VERIFIED?

The hygienic design of food processing equipment may need to be verified at various points and for a number of reasons, including the following:

1. During equipment development, e.g., to examine a new configuration or concept.
2. After design, to demonstrate compliance with relevant legislation, e.g., 89/392/EEC.
3. As a quality assurance technique during equipment manufacture.
4. As part of a "sign-off" procedure after installation at a customer's site.

Verification methods, at a simple level, involve the examination of 2/3 dimensional drawings of the equipment or an examination of the equipment itself (including dismantling). In Europe, for many pieces of open processing equipment this would probably be the limit of verification required to comply with 89/392/EEC and thus allow a 'CE' mark to be attached. For more complex equipment, particularly closed processing equipment, cleanliness tests may be necessary.

Cleanability tests consist of soiling and cleaning the equipment in a standardized way and assessing the degree of soil residues remaining. Soils may be organic, which can be used for QA tests and in factory environments, or microbiological, which require specialized laboratory procedures. As with hygienic design, cleanability should be considered on a risk analysis basis. Microbiological soil removal is a much harder challenge than organic soil removal and should be undertaken only for equipment used in processes in which the transfer of microorganisms to the food product at that manufacturing stage would be critical.

A number of cleanability tests have been developed as part of a European Commission funded program, coordinated by CCFRA, and several laboratories in Europe are able to make assessments of hygienic design, visually and by means of tests, on a commercial basis. Cleanability tests developed include:

1. Application of *Pseudomonas fragi* to open surfaces by spraying; detection by Total Viable Count (TVC), Adenosine triphosphate

bioluminescence (ATP) or Direct Epifluorescent Microscopy/Direct Epifluorescent Filter Technique (DEM/DEFT) methods as appropriate.

2. Application of *Bacillus thuringiensis* to open surfaces by spraying and to closed surfaces by circulation; detection by 2, 3, 5-triphenyltetrazolium-chloride (TTC) agar overlay.
3. Application of *Bacillus stearothermophilus* in a milk soil to closed equipment applied by circulation; detection by agar overlay.
4. Application of a margarine soil to closed equipment by circulation; visual detection of β -carotene residues.
5. Application of a starch, milk and oil soil to open surfaces by spraying and to closed surfaces by circulation; detection via calcium residues.

These tests are in various stages of development and test 3, based on EHEDG document No. 2 (4), has been assessed for repeatability and reproducibility and found suitable to be submitted for acceptance as a European Standard. In addition, test methods are available for assessing the pasteurizability, sterilizability and degree of microbial ingress into specialized food processing equipment.

WHAT ELSE IS IMPORTANT?

Once equipment has been hygienically designed to eliminate the hazards associated with its intended use, it must be installed in such a way that its hygienic integrity is maintained during its intended lifetime. There should be adequate access for safe servicing and cleaning (Fig. 10), and the potential for external routes of contamination of the equipment, e.g., air currents, condensate dripping, or splashing from other equipment, should be considered.

In addition, the equipment manufacturer should recommend typical routine procedures for cleaning, disinfection, rinsing and inspection for cleanliness. While it is the food

manufacturer's responsibility to determine cleaning methods and frequency, the equipment manufacturer should indicate cleaning compounds that are acceptable/not acceptable based on, for instance, the chemical resistance of the materials of construction.

In some cases it may be necessary to provide the equipment user with special instructions, e.g., additional guarding or specific processing conditions, especially if the design of the equipment involves any conflict in terms of reducing safety and hygiene hazards.

WHO IS RESPONSIBLE FOR HYGIENIC DESIGN?

The importance of hygienic design cannot be overstated. Regardless of the quality of the general design (fit for purpose) and execution of the sanitation program, contamination will never be controlled unless the areas in which soils can accumulate either are avoided by good hygienic design or can be readily exposed for cleaning.

Persons responsible for selecting equipment, ideally after a dialogue with engineers, microbiologists and production personnel, must be familiar with the principles of hygienic design to ensure that suitable equipment is purchased. Further, persons responsible for the management of sanitation programs, especially in 'high risk' food manufacturing areas, must also be familiar with basic hygienic design concepts to be sure that equipment is dismantled sufficiently so that surfaces are safe for food production. Similarly, anyone involved in the inspection of hygienic design from a regulatory viewpoint must be specifically trained in this field to ensure that suitable equipment is being used. Hygienic design training should, therefore, be targeted at engineers during their higher education and at key food processing staff.

CONCLUSIONS

In conclusion, and to echo some comments by my colleague Dr. Tom Gilmore, Technical Director of the

International Association of Food Industry Suppliers, the following points are essential if we are to fully harmonize international hygiene design standards.

1. Food safety is an international concern. 'farm to fork' is now a global issue, and we are all trying to achieve the same goals.
2. We must continue to work together on an international basis to promote cooperation in the sphere of intellectual, scientific, technological and economic activities. This should ensure mutual trust and allow for the best use of human and economic resources.
3. We should try to harmonize current national standards and guidelines to achieve technically equivalent hygienic design standards on a scientific and technical basis. We should seek to remove national or regional standards as nontariff barriers to trade, i.e., create a level playing field.

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Highlights of the Executive Board Meeting

February 1-3, 1998

Nashville, Tennessee

Following is an unofficial summary of Executive Board actions from the IAMFES Executive Board Meeting:

Approved the following:

- ◆ Minutes of October 26-28, 1997 Executive Board Meeting.
- ◆ Minutes of October 26 and 27 Executive Session.
- ◆ Votes taken by E-mail since October 1997 Meeting.
- ◆ Registration fees for the April 20, 1998 HACCP Workshop to be held in San Francisco/Bay Bridge area.
- ◆ Appointment of Martin Cole (2001), Mansel Griffiths (2001), Paul Hall (1999), Lee-Ann Jaykus (2001), Linda Kelly (2000), Roberta Morales (2001), Jeffrey Rhodehamel (2000) and Richard Whiting (2000) to the *Journal of Food Protection* Management Committee.
- ◆ Name change of the Program Advisory Committee to Program Committee pending vote at 1998's IAMFES Business meeting.
- ◆ Establishing a Fruit and Vegetable Safety Professional Development Group.
- ◆ Combining Meat Safety and Quality and Poultry Safety and Quality Professional Development Groups to form a Meat and Poultry Safety and Quality Professional Development Group.

Discussed the following:

- ◆ Nelson-Jameson will support the Educator Award.
- ◆ Settlement reached in the employment discrimination case.
- ◆ Long-range planning.

- ◆ Proposed Association name change to International Association for Food Protection – desired implementation by the year 2000.
- ◆ Progress by the Committee on Communicable Diseases Affecting Man on revising the Procedures to Investigate Foodborne Illness manual.
- ◆ Presentation of the IAMFES Fellows Award at this year's Opening Session.
- ◆ NFPA Food Safety Award.
- ◆ Written criteria for the Affiliate Awards.
- ◆ Nominations received for IAMFES Awards (deadline for submission 2/20/98).
- ◆ Updates to the IAMFES Policy and Procedures Manual.
- ◆ Executive Board Member attendance and presentations at Affiliate Meetings.
- ◆ IAMFES' Web Page.
- ◆ Installation of Membership software.
- ◆ Recruiting efforts for new IAMFES Members.
- ◆ Retention program for existing IAMFES Members.
- ◆ Role of IAMFES in the fall '98 ILSI sponsored conference.
- ◆ 1998 IAMFES Annual Meeting planning.
- ◆ Program Advisory Committee meeting held January 30-31, 1998.
- ◆ Revisions to Poster Session and Exhibitor schedules for 1998's Annual Meeting.
- ◆ Planning for 1999, 2000, 2001, 2002 and 2003 IAMFES Annual Meetings.
- ◆ International Affiliate Developments.
- ◆ 3-A/IAMFES/IAFIS agreement.
- ◆ 1998 IAMFES workshops.

For further information, contact President, Gale Prince or Executive Director, David Tharp.

Call for Symposia

1999 IAMFES Annual Meeting
August 1-4, 1999
Dearborn, Michigan

The Program Advisory Committee invites IAMFES members to submit symposia proposals for presentation during the 1999 IAMFES Annual Meeting. Proposals may be submitted by mail to IAMFES headquarters (for receipt prior to July 30, 1998) or by presenting the proposal to the Program Advisory Committee at its meeting on Sunday, August 16, 1998 in Nashville, Tennessee. Proposals may be prepared by individuals or by committees.

Generally, each symposium will be a half-day session (8:30 to Noon or 1:30 to 5:00) with a scheduled break. Symposia emphasize a central theme and usually consist of six 30-minute presentations by each speaker. Proposals will be evaluated by the Program Advisory Committee for relevance to current science and to IAMFES members.

Guidelines for submitting proposals:
Use the printed Symposium Proposal form

that appears on the following page or reasonable facsimile. The following information must be included: (1) Title of symposium, (2) Names, telephone numbers, fax numbers, and complete mailing addresses of the person(s) organizing the symposium and convenors of the session, (3) Topics for presentations, suggested speakers, affiliations, complete addresses, (4) Description of audience to which this topic would be of greatest interest, and (5) Signature of submitter.

Organizers for accepted proposals will be contacted after the 1998 Annual Meeting to secure speaker commitment.

Questions? Contact the Program Advisory Committee Chairperson for the 1999 IAMFES Annual Meeting:

Dr. Jeff Farber, Health Canada, Banting Research Center, Ontario, Canada K1A 0L2; Phone: 613.957.0895; Fax: 613.941.0280; E-mail: jeff_farber@inet.hwc.ca.

Symposium Proposal

1999 IAMFES Annual Meeting
August 1-4, 1999
Dearborn, Michigan

Title of symposium: _____

Organizer's name: _____

Address: _____

Phone: _____ Fax: _____ E-mail: _____

Topics for Symposium — Suggested Speakers (Complete address and phone number of Speaker) — Affiliation

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

Convenors of Session — Address — Phone — Fax — E-mail

Description of Audience: _____

Signature of Submitter: _____

Submit by July 30, 1998 to: IAMFES
6200 Aurora Avenue, Suite 200W
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or Contact: Dr. Jeff Farber
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- Procedures to Investigate Foodborne Illness – 4th Edition
- Procedures to Investigate Arthropod-borne and Rodent-borne Illness
- Procedures to Implement the Hazard Analysis Critical Control Point System
- Pocket Guide to Dairy Sanitation
- Before Disaster Strikes...A Guide to Food Safety in the Home

For Order Information,

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at 800.369.6337; 515.276.3344;

Fax: 515.276.8655; E-mail: iamfes@iamfes.org



UpDates

Flavorite Laboratories, Inc. Names Tom Haney Vice President of Technical Services

Flavorite Laboratories, Inc. is pleased to announce the promotion of Tom Haney to Vice President of Technical Services. In this role, he will oversee Flavorite's Quality Assurance and Research & Development departments. He will take the lead in developing new, customized seasonings, sauces and gravies for Flavorite customers and ensuring the company's high quality standards are met.

Haney has over 30 years experience in the food industry and with research and development. His previous position at Flavorite was Manager of Product Development. Prior to joining Flavorite, Haney worked with Reckitt & Colman, Durkee, McCormick, Ore-Ida and General Foods.

Haney received his BS degree in food technology from Ohio State University and his MBA, with a concentration in marketing, from Montclair State University.

Langreck Joins Motomco

Kelly Langreck joined Motomco Ltd. in November as an Inside Sales Representative.

As part of Motomco's sales and marketing team, she provides inside sales and marketing support to Motomco distributors and end-users, as well as to Motomco's Sales Manager and Technical Sales Representatives.

Based in Motomco's office in Madison, WI, Langreck is available to directly assist Motomco custom-

ers and the Inside Sales Reps for Motomco accounts with information on products and other service matters. She is also a service link between customers and Motomco's Technical Sales Reps.

Langreck coordinates Motomco's promotional programs, including SPIFF and co-op advertising, and will represent the company at selected trade shows.

A 1993 graduate of the University of Wisconsin-Eau Claire, Langreck had worked in customer service and quality assurance for Nelson Industries. She is currently earning a second bachelor's degree in marketing.

Quality Chekd Announces New Organization and Names New Officers and Board Members

Quality Chekd Dairies, Inc., has strengthened its organization with a newly structured Board of Directors as well as newly elected officers and Board members who will lead Quality Chekd throughout the coming year. The Board has been streamlined to include nine members instead of 15. The result will enable Quality Chekd to be even more responsive in meeting member needs and providing leadership to the industry.

Quality Chekd President, Paul Arbuthnot of Sunshine Dairy, Inc., Portland, OR, noted that the Board includes members with a broad range of expertise, and this diversification of backgrounds will be a distinct advantage for Quality Chekd. Board representatives include executives with varied backgrounds through earlier work experience and responsibilities, as well as diversified company owner-

ship. Quality Chekd owners vary from companies owned independently, cooperatively, vertically integrated, and other corporations.

Elections were held during the recent Quality Chekd Annual Meeting in Indian Wells, CA, and included the selection of officers to serve on the Board. Paul Arbuthnot was reelected as President, and Lynn Oller, Hiland Dairy Company, Springfield, IL, was reelected Vice President. Also reelected to positions on the Board were: Larry Losasso, Treasurer, Sinton Dairy Foods Company, Colorado Springs, CO; Dennis Winter, Secretary, Super Store Industries, Stockton CA.

The Quality Chekd Board added a newly elected member in Randy Benson, Parmalat Canada, Toronto, Ontario, Canada.

Other members continuing to serve on the Board in 1998 are: Jim Miklinski, Wendt's Dairy, Niagara Falls, NY; Doug Parr, Dean Foods, Franklin Park, IL; H. Lee Richards, Hygeia Dairy Co., Harlingen, TX; Ron Richardson, Hiland-Roberts Ice Cream Co., Norfolk, NE; Dan Soehnen, Superior Dairy, Inc., Canton, OH; Jerry Teel, Vitamilk Dairy, Inc., Seattle, WA; and Steve Turner, Turner Dairies, Inc., Memphis, TN.

Kittleson Appointed President/CEO

DCI, Inc., St. Cloud, MN has announced the appointment of Gary J. Kittleson to the office of President/CEO. Kittleson has served on DCI's Board of Directors for the past 15 years and has extensive experience in industrial engineering and manufacturing management.

New Penn State Major Explores Ecology-Based Agriculture

A new major in Penn State's College of Agricultural Sciences, involving the departments of Agronomy, Entomology, Horticulture and Plant Pathology, will prepare students to answer such questions. In December, the Agroecosystems Science (AGESS) major was approved and will begin accepting students immediately.

"Many times a student will take courses in various disciplines, such as plant production, soils, pathology or economics, but never really see how each discipline fits into the total picture," says Elwood Hatley, Professor of agronomy and Program Coordinator. "Our effort in this major is to keep it holistic – to continually enforce the idea that we're working in a system."

Potential employers are very positive about the major, which offers options in plant science and integrated crop management (ICM). Graduates from the plant science option will be prepared for careers in agricultural and environmental education or policy development, and industrial research. They also will be well-prepared for graduate school.

Graduates of the ICM option will be prepared for careers in environmental and agricultural consulting, agribusiness, sustainable agricultural production, environmental and agricultural education and advocacy, and governmental policy, regulatory and enforcement agencies.

In fall 1998, the college will begin offering the new AGESS courses, which will be taught by multidisciplinary teams. Students will build on information learned in previous courses by using such technologies as "expert systems," computer programs that emulate the way a human expert would think through a problem. "We haven't used expert systems this



way in a class before and we're very interested in how it works out," Hatley says.

The culminating course, Integrated Crop Management, will be taught using case studies developed around actual situations where individuals had to make decisions. "This course is designed after the Harvard Business School's MBA program," explains Hatley. "Many medical schools also are using this technique to help interns and residents think about whole systems and the factors that come into play when practicing health care."

For more information about the AGESS major, write to the Department of Agronomy, 116 Agricultural Sciences and Industries Building, University Park, PA 16802, or call 814.865.6541.

Educational Foundation's Gescheidle Announces Retirement

Daniel A. Gescheidle, FMP, President of The Educational Foundation of the National Restaurant Association, announced his retirement at The Foundation's Board of Trustees meeting in Palm Beach, FL. Gescheidle was the first President of the organization and served in that capacity for the past 10 years.

The Educational Foundation was formed in 1987 through a merger of the National Institute for the Foodservice Industry and the educational division of the National Restaurant Association. Gescheidle built the organization into a nationally-recognized source for education and training programs for the restaurant and foodservice industry.

To improve food safety training, Gescheidle oversaw the development of the ServSafe® food safety program and the creation of the International Food Safety Council. To more effectively address recruitment and retention issues and offer career opportunities for youth, Gescheidle created the Hospitality Business Alliance, a joint effort between the National Restaurant Association and its Educational Foundation and the American Hotel and Motel Association and its Educational Institute.

During the transition to new leadership and the search for his successor, Gescheidle will continue as trustee emeritus, serving as an Ambassador for selected Foundation educational initiatives.

Federation of Animal Science Societies Formed

The American Dairy Science Association (ADSA), the American Society Animal Science (ASAS), and the Poultry Science Association (PSA) have formed the Federation of Animal Science Societies. FASS will provide a unified voice for animal agriculture, support common interests, and become an effective advocate for scientific perspectives to the general public.

FASS will be an effective means for disseminating scientific information, and advancing animal agriculture and animal science, while preserving the member societies' identity and autonomy.

FASS provides a unique opportunity for these societies, and similar organizations, to form a

strong voice for animal agriculture, and provide expanded services at the greatest possible economy. One important aspect of FASS is the unified voice on public policy issues. FASS has appointed an Executive Vice President for Scientific Liaison who will be responsible for providing the member societies a unified voice in Washington, D.C.

While each society will continue to maintain its autonomy there will be areas of their association management that will benefit from the sharing of services. Services include membership management services, marketing and meeting administration, editorial services, production and publication services, network and data processing, accounting, and human resources. FASS will provide different levels of services to the founding societies and similar organizations.

Dairy Executive Gignac Receives Community Award

The Lawndale Peoples Planning and Action Conference (LPPAC) has given its Don Buik/Roscoe Company Business/Community Spirit Award to Elgin Dairy Foods President, Kenneth E. Gignac. The company is celebrating its 75th Anniversary in the dairy business this year.

Gignac, who started with the company in 1963 and became its President in 1978, played a key role in Elgin's decision to rebuild its dairy processing operation on its Lawndale site following a devastating fire in 1985. The decision to rebuild entailed an initial investment of millions of dollars by the company. This and subsequent investments over the years have helped make Elgin's state-of-the-art dairy facilities among the most modern and technologically advanced in the country.

Gignac has also demonstrated his commitment to the Lawndale area by serving as a member of the Board of Directors and Treasurer of the Lawndale Industrial Council and as a member of the Board of H.I.C.A., a Lawndale-based community organization.

Mechanical Ventilation Systems Need Cleaning, Maintenance

Mechanical ventilation in livestock buildings benefits animals by removing moisture, heat, carbon dioxide, and other airborne contaminants. But ventilation systems need regular cleaning and maintenance. This allows them to operate effectively and efficiently, says Kevin Janni, Engineer with the University of Minnesota Extension Service.

"Most mechanical ventilating systems for livestock housing have two or more fans," says Janni. The fans are staged to turn on and off to provide different ventilating rates for cold weather, mild weather, and hot weather. A fan creates a static pressure difference between the inside and outside of a building to overcome flow restrictions through the fresh air intakes, inlets, and fan shutters and guards. Plugged air intakes and inlets and other flow restrictions reduce a fan's ability to move air and provide fresh air exchange.

Janni says recent research with 36-inch diameter fans commonly used for poultry house ventilation showed as much as a 16 percent reduction in airflow rate due to dust accumulation after 42 days of use. Using fans and shutters for a second flock without cleaning reduced flow rate as much as 24 percent and research with small, well-used fans equipped with guards and shutters showed that dirt accumulating on the guards

and shutters reduced flow rates by 23 to 39 percent.

Maintenance recommendations in the MidWest Plan Service publication "Mechanical Systems for Livestock Housing Handbook," MWPS-32, are to clean shutters every month. "Shutter hinges should be lubricated with graphite and not with oil or grease, which can get gummed up with dirt," says Janni. "Cleaned and lubricated shutters can open more fully and easily and allow passage of greater airflow."

Most fan motors have sealed bearings and do not need lubrication, the Minnesota Engineer points out. Follow the fan manufacturer's recommendations for maintenance of other parts of the fan. Belt driven fans should be checked every month to ensure proper belt tension and alignment.

"Check gable and soffit air intakes every three months for possible blockage and plugging by dust accumulation," says Janni. "In addition, check room inlets to minimize blockage and ensure uniform fresh air distribution."

Walker Stainless Reorganizes

Walker Stainless announces the formation of the Stationary Products Group. This reorganization consists of integrating two business units together — the Custom Fabricated Products Group with the food, dairy and beverage group.

Larry Willer, Director of Sales, is responsible for the inside sales group, Walker's Regional Sales Managers, and coordinating sales for Walker's potential venture in China. Steve Olson, Marketing Manager is responsible for distribution channels, National Accounts management, advertising and developing international markets.

Walker Stainless' Stationary Products Group provides stainless steel tanks and equipment for the food, dairy, beverage, pharmaceutical and chemical industries.

Walker-Carlisle is part of Carlisle Companies, a diversified operating company of general industry, transportation, and food service equipment located in Syracuse, NY.

Information for Dairy and Beef Producers — Protein Feed Rules

Dairy and beef cattle producers are now prohibited from feeding to their cattle certain commonly used protein feed ingredients made from rendered mammalian tissue. The rules, issued in August 1997 by the U.S. Food and Drug Administration (FDA), are designed to prevent the establishment and spread in the U.S. of bovine spongiform encephalopathy (BSE). The disease, commonly known as "Mad Cow Disease," has been found in European cattle herds, but has not been diagnosed in the U.S.

The rule bans most types of protein made from mammalian tissue from feeds given to cattle and other ruminants (four-stomached animals). An example of this protein is meat and bone meal made from cattle byproducts. Cattle may become infected with BSE when they eat contaminated protein products made from rendered diseased animals.

Feed manufacturers, protein blenders, and rendering companies are required to label any feeds or feed ingredients containing prohibited material with the warning statement, "Do not feed to cattle or other ruminants." FDA can take action against a company that sells

prohibited material that does not have the warning label on it, especially if that feed is sold to cattle producers.

The rule has several provisions that apply to you, as a dairy or beef cattle producer: You must watch for that warning label, and avoid using any prohibited feed in cattle rations; If you suspect that feed may contain prohibited ingredients, do not accept it until you are sure it does not. Buy feed products only from companies that comply with the new rules; If you mix feed for both cattle and non-ruminant animals (such as hogs and poultry) and you use prohibited material in the non-ruminant feed, you must either use a completely separate mixer for the cattle feed or carefully clean out your mixer to be sure no prohibited material contaminates the cattle feed. Even if you do not mix your own feed, but purchase feed for both cattle and non-ruminants, you must take steps to make sure that any prohibited material intended for your non-ruminant animals is not accidentally fed to your cattle; and you must keep records for a minimum of one year concerning all animal protein ingredients you buy and use with your cattle. For one year, keep copies of purchase invoices and labeling of all feeds that you receive containing animal protein products. The copies must be available for government inspectors. Keep at least one representative copy of the label from each type of feed you buy. FDA on-farm records inspections will be limited, but will be needed to verify that prohibited material is not being sold for feeding to cattle.

If you are careful in selecting feed and feed ingredients, and you keep adequate records, then you will not be found in violation of FDA's rules. More important, you will be doing all you can to protect your herd from risk of this disease.

Dairy Publications on Greenhouse Barns, Bunker Silos Available

Publications for dairy producers on greenhouse barns and bunker silos are available through the University of Minnesota's Department of Biosystems and Agricultural Engineering. The publications were developed by MidWest Plan Service (MWPS), a cooperative organization representing 12 midwest land grant universities.

Greenhouse Barns for Dairy Housing, AED-40, describes greenhouse barns and their environmental control, design considerations and economics. *Managing and Designing Bunker and Trench Silos*, AED-43, provides design principles, management techniques and key concepts to consider before choosing to use bunker or trench silos.

Glickman Extends Comment Period, Encourages Public Participation in Organic Standards Rulemaking

Agriculture Secretary Dan Glickman extended for an additional 45 days the public comment period for USDA's proposed regulation establishing national organic standards. Glickman strongly encouraged the public to participate in the rulemaking process and submit comments during this extended period. Glickman also committed the Department to provide the opportunity for additional participation after all comments are reviewed.

In a notice to be published in the Federal Register, the comment period will be extended for 45 days and will now close on April 30, 1998.

Regarding some of the concerns that have been raised about the proposed rule, Glickman added, "I want to emphasize that this is only a proposal. This is not the final rule and should not be read to reflect how USDA will finally resolve the many difficult issues involved."

"We want everyone to participate fully in this process and to give us their thoughts and recommendations for making improvements in the proposal," Glickman said. "Our goal is to develop a final rule that the organic community and all the public can embrace."

Glickman also noted that the Department is not proposing to allow the use of genetically engineered organisms, irradiation, or bio-solids. Instead, the proposal

simply asks for comment on whether they should be included or not under the organic standards.

Dairy Farmers of America Forms Joint Venture with New Zealand

A new joint venture to process and market grated cheese has been formed by Dairy Farmers of America, Inc. (DFA) and Milk Products Holdings (North America) Inc. (MPH), a wholly owned subsidiary of the New Zealand Dairy Board.

According to Lonnie Spurgeon, Chief Operating Officer for Italian cheese, butter, and dry milk products, the joint venture is based on current business which DFA (formerly Mid-America Dairymen, Inc.) operates. The facilities in

Greenwood and Chili, WI include equipment for filling, packaging, and storing Parmesan and Romano cheese under a multitude of different labels and package configurations for retail, institutional, and industrial markets. "This joint venture recognizes the rapid changes taking place in global dairy markets," said Spurgeon.

Jim Hepburn, Chief Executive Officer of Milk Products Holdings (North America), said the arrangement gives dairy farmer members of DFA and the shareholders of MPH an opportunity to work together in their common interest to expand the markets for dairy products.

Spurgeon said customers should expect no changes to business operations during the transition. Orders and inquiries will continue to be handled through the DFA Springfield officers.

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ALL Quality Assurance Products is introducing a new bi-metal thermometer. It measures from 0° to 220°F and has an easy-to-read one-inch dial. Its stainless steel needle measures five inches in length and comes with a pocket clip, needle protector, neck strap and does not need batteries.

This needle-tip thermometer works best with food having a high liquid content, but can be used to measure the temperature of many foods. It is an ideal thermometer for those needing an inexpensive way to measure food temperature quickly. It's so economical, you can afford to put one in everybody's hand.

All QA Products, Inc.,
Gainesville, FL

Reader Service No. 373

New Purifier® HEPA Filtered Enclosure Offers Protection from Particulate Contaminants

Labconco Corporation introduces the Purifier® HEPA Filtered Enclosure, which is designed to protect personnel and the environment from particles and aerosols. Suitable applications include weighing chemical and mineral powders, media rehydration, handling pollen, asbestos testing, seedling inoculations and other procedures that generate fine dusts or aerosols.

The internal blower draws air in, around the technician through the work area, and then into a 99.99% efficient HEPA filter. The HEPA-filtered exhaust air can be recirculated back into the room, or the cabinet can be connected to an exhaust system and ducted to the outside. All contaminated areas are under negative pressure so that if a leak should occur, contaminated air is forced through the HEPA filter, not into the room. The two-light filter condition indicator displays differential pressure across the HEPA filter. A green light indicates normal filter condition; an amber light indicates that service is required.

The front sash and side panels are made of scratch-resistant 1/4" thick laminated safety glass. The angled sash tilts up for easy clean-

ing and loading of the cabinet. A front air foil directs air into the work area providing maximum containment. Fluorescent lighting illuminates the work area.

Labconco Corporation, Kansas City, MO

Reader Service No. 374

Water-Free, Catalyst-Free Anaeropack™ Now Available

Breakthrough speed, convenience and reliability are now available to everyone involved in the cultivation of anaerobic and microaerophilic bacteria. International BioProducts' new Mitsubishi AnaeroPack™/AnaeroPouch™ is setting a new standard in gas generating systems.

The AnaeroPack™ system's unique ascorbic acid-based technology requires neither water nor catalyst to achieve superior results. Simply remove an AnaeroPack™ sachet from its foil pouch and place in an anaerobic Mitsubishi jar. No longer is it necessary to re-generate catalysts or contend with messy water transfers and formation. With AnaeroPack™, there are no hazardous substances to ship and store.

In addition to ease of use, AnaeroPack™ offers unparalleled performance, replacing the need to wait and wonder with rapid, reliable results. In side by side

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studies, existing products required 70 to 370 minutes to generate an O₂ concentration of less than .5%, with a failure rate of 10 to 15%. Pack-Anaero achieved the same atmospheric profile within 35 minutes, with a zero rate of failure.

The AnaeroPack™ System includes Pack-Anaero for the generation of an anaerobic environment, Pack-Campylo for a microaerophilic environment, Pack-CO₂ for a carbon dioxide-enriched environment, and Pouch-Keep for reduced CO₂ in media during storage. Sachets are available in both Pack and Pouch sizes to accommodate a range of volumes, from 2 to 36 Petri dishes. Anaerobic jars, rectangular in shape for easy stacking and storage, are available in .4 L, 2.5 L and 5.5 L sizes.

International BioProducts,
Redmond, WA

Reader Service No. 375

Bioscience Offers Expanded Range of Micro-COD Test Reagents

Bioscience, Inc. now offers five prepackaged reagent ranges for its accu-TEST™ Micro-COD System, including mercury-free reagents for low and standard ranges. The tests will detect from 5 to 4500 mg/l of chemical oxygen demand (COD) and are fully compatible with EPA 410.4 and Standard Methods 5220. The upper limit of all accu-TEST reagents can be extended by varying the sample size. The high range reagent can be used for homogenous wastewaters with up to 22,500 mg/l COD.

The Bioscience test costs approximately 75 percent less than standard laboratory methods and can provide results for non-reporting purposes in as little as 15 minutes for readily oxidized wastes. EPA approved methods require 2 hours of processing at 150°C.

To improve quality control and efficiency, Bioscience also offers a

PC-based COD Data Management Software System that calibrates the spectrophotometer used to read the sample vials, records the absorbance, prompts for standard curves, checks calibrations, calculates COD values, stores the data and prints a report.

COD testing is being used increasingly in connection with rapid BOD tests to determine the strength, biodegradability and treatability of industrial effluents going to municipal wastewater treatment plants.

Bioscience, Inc., Bethlehem, PA

Reader Service No. 376

Lenox Instrument to Feature Advanced Color Videoprobe; Small-Diameter Flexible Borescope at Quality Expo

Lenox Instrument Company, Inc., will feature its advanced VIEW-A-PIPE®II videoprobe system, which permits direct inspection of pipe and tubing interiors, and high-resolution, small diameter (6 mm) flexible fiberoptic borescope in Booth 21072 at the Quality Expo, Rosemont Convention Center, Chicago, IL, April 21-23.

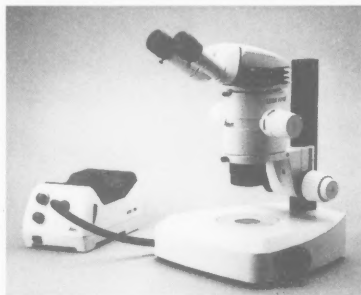
The second-generation VIEW-A-PIPE II features a .500-inch-diameter videoscope and offers a flexible 50° field of view which permits easy inspection of hard-to-reach areas deep inside heat exchangers, air frame fuselages and other tubular structures. It shows clean, crisp, color images on a CCTV monitor. VIEW-A-PIPE II provides greater viewing flexibility than competitive systems priced thousands of dollars higher. It includes a lens-camera combination with built-in fiberoptic light guide, high-resolution color monitor, control unit and flexible CCTV camera cable.

Lenox will also display its small-diameter (6 mm) flexible borescope, which can be snaked through narrow, curved sections

and obstructions of JRT engines, heat exchangers and many other types of equipment, allowing closeup visual inspection. The flexible fiberoptic scope provides a high-resolution crisp, clear image. Affordably priced, it is available in a variety of lengths, including 40", 60", 80" and 120".

Lenox Instrument Co. Inc.,
Trevose, PA

Reader Service No. 377



Leica Inc.

Leica Introduces the New HL (High Level) Transmitted Light Stand

Transmitted light is the correct way to illuminate certain unprepared translucent specimens, including insects, plants and foraminifera. Certain colored objects, such as thin specimens or smears, can also be examined in this manner. The full potential of transmitted light can be fully realized if the angle of incidence of the light beam is variable, as with the new HL transmitted light stand.

It is possible to produce bright-field, inclined illumination or pseudo darkfield. The light for the HL transmitted light stand originates from a fiber optic light guide attached to an external cold light source. As a result, no heat is produced which could damage the specimen. Precise guidance of the light ensures that the field of view is illuminated uniformly and very brightly.

Leica Inc., Deerfield, IL

Reader Service No. 378

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Sigma, St. Louis, MO

Reader Service No. 379

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Pall Gelman Sciences, Ann Arbor, MI

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IAMFES Constitution and Bylaws

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

(As amended July 2, 1996)

CONSTITUTION

ARTICLE I.

ASSOCIATION

There is hereby created the International Association of Milk, Food and Environmental Sanitarians, Inc., not for pecuniary purposes, which shall hereinafter be referred to as IAMFES.

ARTICLE II.

OBJECTIVES

1. Provide a forum for professionals in the areas of milk, food and environmental safety and quality.
2. Improve the professional status of the members.
3. Assist members in their technical work and professional development.
4. Disseminate information regarding the protection of milk, food and the environment.
5. Develop, improve and promote sanitary methods and procedures for the development, production, processing, distribution, preparation and serving of milk and food.
6. Develop, improve and promote methods and procedures for supervision and inspection of the production, processing, distribution, preparation and serving of milk and food.
7. Develop and promote improved methods for the examination of milk, food and environmental samples.
8. Promote the development and adoption of uniform equipment and quality standards to improve the sanitary handling of milk and food.
9. Develop, improve and promote methods and procedures for protecting and improving the environment.
10. Cooperate with other professional groups in the improvement and promotion of milk, food and environmental sanitation.

ARTICLE III.

MEMBERSHIP

- Section 1.** The classes of membership in IAMFES shall be Regular, Student, Retired, Sustaining and Honorary Life Members.
- Section 2.** The qualifications of the several classes of members, the dues of each, the manner of their election to membership, and their respective rights and privileges shall be prescribed in the Bylaws, except as otherwise provided in this Constitution.

ARTICLE IV.

OFFICERS, EXECUTIVE BOARD, AND AFFILIATE COUNCIL

- Section 1.** The officers of IAMFES shall be President, President-Elect, Vice President and Secretary, who shall hold these offices for one year or until their successors are elected or appointed, as provided in the Bylaws.
- A. At the termination of each Annual Meeting, the President-Elect, Vice President, and Secretary shall automatically succeed to the offices of President, President-Elect and Vice President, respectively.
- B. The Secretary will be nominated, on a rotating basis, from educational, government and industry members.
1. The Secretary shall be elected by majority ballot of votes cast.
- Section 2.** The Executive Board shall consist of the Officers of IAMFES, the Immediate Past President and the Chairperson of the Affiliate Council.
- Section 3.** The Executive Board must include, at all times, members officially connected with education, government, and industry.

There must be at least one representative from each of the three categories at all times.

- A. If the status of any member of the Executive Board changes after election, or during the term of that office, or after protem appointment as provided in the Bylaws, so that the composition of members officially connected, as stated herein, is not maintained in the Executive Board, then such member shall be deemed ineligible without prejudice and such office shall be declared vacant.
- B. The elective officer(s) will continue in their respective office(s) until their successor(s) are duly elected.

Section 4. An Affiliate Council shall be created, which shall consist of a duly authorized representative for each Affiliate Association, and the Immediate Past President of IAMFES.

- A. Each Affiliate Association shall have one vote.
- B. The Affiliate Council parliamentary procedure shall be governed by Operational Guidelines, adopted by majority vote of Affiliate Representatives representing all of the member affiliates and approved by the IAMFES Executive Board. A copy of the current Affiliate Council Operational Guidelines shall be filed with the IAMFES Executive Director.
- C. The Affiliate Council shall, elect its Chairperson and other officer(s) as set forth in the Affiliate Council Operational Guidelines, shall keep a record of its proceedings and authorized representations, and shall submit its recommendations to the Executive Board.
- D. The Chairperson of the Affiliate Council shall represent the Affiliate Associations as a voting member of the IAMFES Executive Board.
- E. It shall be the function of the Affiliate Council:
 - 1. To be an advisory body to the Executive Board;
 - 2. To represent the interests of the Affiliate Associations to the Executive Board and IAMFES members; and
 - 3. To serve as the means for the interchange of ideas and recommendations on programs, activities,

awards and procedures among and between the Affiliate Associations and the Executive Board.

ARTICLE V.

AFFILIATE ASSOCIATIONS

- Section 1.** IAMFES members residing in the same geographical area, and, also, functioning organizations of milk, food and/or environmental sanitarians or closely related groups whose objectives are consistent with those of IAMFES, may apply for a Charter as an Affiliate Association, under conditions stipulated in the Bylaws.
- Section 2.** Each Affiliate Association shall have one representative on the Affiliate Council. The representative shall be a member of IAMFES.

ARTICLE VI.

MEETINGS

- Section 1.** Each year, IAMFES shall hold an Annual Business Meeting.
 - A. A quorum, for any meeting to conduct business, shall consist of at least 50 voting members.
- Section 2.** Other meetings of IAMFES may be called by the Executive Board by duly announcing any called meeting in the official publication of IAMFES at least 60 days prior to the date of the meeting.
- Section 3.** In case there is no quorum present to transact necessary business, the Executive Board is authorized to act for the best interests of IAMFES.
- Section 4.** The Executive Board shall meet at each IAMFES Annual Business Meeting and at such other times as the President shall deem necessary.
 - A. A quorum for Executive Board meetings shall consist of at least four members and decisions shall be by a majority vote of those present.
 - B. In the event of a tie vote, the presiding officer will be permitted to vote.

ARTICLE VII.

AMENDMENTS

- Section 1.** Any member may propose amendments to the Constitution by submitting them

in writing to the Executive Director, at least 60 days before the date of the next announced Annual Meeting.

- A. The Executive Director shall notify all members, at least 30 days before the Annual Meeting that the proposed amendments will be open for discussion at that meeting.
- B. Such proposed amendments, upon a majority affirmative vote of the members present shall, within 60 days, be submitted to the entire membership of IAMFES by the Executive Director.
- C. All members voting on such amendments shall, within 45 days after issuance of such notification, register their vote in writing with the Executive Director, on ballots furnished by IAMFES.
- D. These ballots shall be opened, recorded and filed, and the results shall be reported by the Executive Board to the IAMFES membership.
- E. If the proposed amendments are passed by a two-thirds vote of those members who register their votes with the Executive Director, they shall become a part of the Constitution from the date of such report and notice by the Executive Board.

ARTICLE VIII.

BYLAWS

- Section 1.** The IAMFES parliamentary procedure shall be governed by Bylaws, adopted by majority vote of voting members in attendance at a duly called meeting.

BYLAWS

ARTICLE I.

MEMBERSHIP AND DUES

- Section 1.** Regular Members
- A. Regular members of IAMFES shall be those persons who are engaged in milk, food or environmental inspection, or the laboratory control of, or the administration of such function, or engaged in research or education work relating to any aforesaid function or otherwise interested in the objectives of IAMFES.
 - B. Regular members may attend meetings of IAMFES and shall be entitled to vote and hold office.

Section 2. Student Members

- A. Students pursuing undergraduate or graduate degrees in colleges or universities are entitled to membership in IAMFES at one-half (1/2) the dues of regular members.
- B. Student members may attend meetings of IAMFES, be accorded privilege of the floor, but shall not be entitled to vote.
- C. Student members may not hold office in IAMFES, but may serve on committees, as Affiliate representatives and as appointed representatives of IAMFES.

Section 3. Retired Members

- A. Retired members who are no longer receiving compensation for work relating to the objectives of IAMFES and who have been regular members for at least ten (10) years are entitled to membership at one-half (1/2) the dues of regular members.
- B. Retired members may attend meetings of IAMFES and shall be entitled to vote and hold office.

Section 4. Sustaining Members

- A. Sustaining members shall be organizations or persons who are interested in the objectives of IAMFES.
- B. Sustaining members are entitled to special services as determined by the Executive Board of IAMFES.
- C. Sustaining members shall be entitled to one (1) Regular membership in IAMFES for their representative at no additional cost.
 - 1. The name of the representative must be submitted to the Executive Director of IAMFES at the time of membership.
 - 2. Other persons associated with the Sustaining Member's organization are not members of IAMFES unless they have individual memberships.

Section 5. Honorary Life Members

- A. The Honorary life membership shall be composed of persons who, on account of their substantial contributions to the objectives of IAMFES, have been nominated by a member(s) and confirmed by the Executive Board.

- B. Honorary life members shall not be required to pay dues.
- C. Honorary life members may not hold office in IAMFES, but may serve on committees, as Affiliate representatives and as appointed representatives of IAMFES.
- D. Honorary life members may attend meetings of IAMFES, be accorded privilege of the floor, and shall be entitled to vote.

Section 6. Composition of Executive Board and Committees

- A. Any person serving as an officer of IAMFES must be a regular or retired member of IAMFES.
- B. Any person serving on IAMFES committees, as an Affiliate representative, or as an appointed representative of IAMFES, shall be a current regular, student, retired or honorary life member of IAMFES.

Section 7. Any person desiring membership in IAMFES shall submit an application to the Executive Director. It is the responsibility of the Executive Board to insure that applicants meet the eligibility requirements for membership.

Section 8. The Executive Board is authorized to set dues as may be necessary to achieve the objectives of IAMFES and shall notify the members of amount of dues.

Section 9. Any person, having once become a member, may continue membership in IAMFES so long as the annual membership dues are paid, except as provided in Article II, Section 5, Subsection F of these Bylaws.

- A. Any member who shall fail to pay annual dues by due date shall be placed in the inactive list.
 - 1. Members on the inactive list shall not receive publications of IAMFES.
- B. Such member(s) may be reinstated within 90 days thereafter, upon payment of dues.
- C. Any member who is delinquent in dues after 90 days will be dropped from the inactive list.
 - 1. Membership may be renewed by filing an application and payment of annual dues.

Section 10. Each paid-up member of IAMFES, in good standing, shall receive, at no extra cost, the regular issues of the Official Publication and such other publications as the Executive Board may direct, for the period in which the dues are paid.

Section 11. Collection of Dues:

- A. The Executive Director shall collect annual membership dues for each member paying directly to IAMFES.
- B. Affiliate Associations may authorize the Executive Director to bill their members for both Affiliate and IAMFES dues. In such case, the Executive Director will forward to the Affiliate, within 30 days of collection, the dues paid for Affiliate membership.
- C. Affiliate Associations may collect both the Affiliate and IAMFES dues. In such case, the Treasurer of the Affiliate will forward to IAMFES, within 30 days after collection, the dues paid for IAMFES membership.
- D. Members of IAMFES who pay local dues to more than one Affiliate Association will pay annual membership dues only once to IAMFES and shall receive only one annual subscription to the official publication of IAMFES.

ARTICLE II.

DUTIES OF OFFICERS AND THE EXECUTIVE BOARD

Section 1. The President shall preside at all meetings of IAMFES and the Executive Board.

- A. The President shall appoint all Committees, unless otherwise directed by the Constitution and Bylaws.
- B. The President shall perform such other duties as the usually devolve upon the presiding officer or are required of this officer by the Constitution and Bylaws.

Section 2. The President-Elect shall perform the duties of the President, in the latter's absence, and shall succeed the President when the latter's term expires.

- A. The President-Elect shall coordinate the planning of the Annual Meeting.
- B. The President-Elect will also appoint the Teller's Committee and the Nominating Committee.

- Section 3.** The Vice President shall perform the duties of the President and President-Elect in their respective absences.
- A. The Vice President shall study the organization and operation of the committees of IAMFES and make recommendations to the Executive Board regarding said committees.
- Section 4.** The Secretary shall perform the duties of the President, President-Elect and the Vice President, in their respective absences.
- A. The Secretary shall be responsible for maintaining correspondence and minutes of IAMFES proceedings.
- B. The Secretary, with the assistance of the Executive Director and Staff, shall record and report all minutes of meetings of the Executive Board, including the Business Meeting at the Annual Meeting.
- Section 5.** The full management of the affairs of IAMFES shall be in the hands of the Executive Board as provided in the Constitution. The duties of the Executive Board shall be:
- A. To direct the administrative work of IAMFES, including all matters connected with its collaboration with other groups, institutions and its professional development;
- B. To act as trustee of IAMFES property;
- C. To fix the time and place for the Annual Meeting;
- D. To plan the Annual Meeting in cooperation with the Affiliate Local Arrangements Committee and the Program Advisory Committee.
- E. To act for and in behalf of IAMFES in any administrative, financial, educational, or other capacity as IAMFES may direct, or to act on its own initiative between meetings and report such action at the next Annual Meeting;
- F. To make protem appointments to fill any vacancy or vacancies that may occur among the officer(s) between IAMFES meetings, and to recommend the replacement of an officer at the Annual Meeting, because of inability or inactivity or for other causes which may be in the best interest of IAMFES;
- G. To recommend expulsion from membership for cause by two-thirds of all votes

cast, but in no case to recommend revocation without giving the member written notice of reasons for the contemplated action at least one month before action is taken and an opportunity for a hearing in person and/or a rebuttal in writing;

- H. To employ an Executive Director for the association and fix his or her compensation and duties;
- I. To execute the policies of IAMFES and report to the members at the business meeting at the Annual IAMFES Meeting, any action taken that was not specifically authorized;
- J. To set the amount of the Registration Fee for the Annual Meeting;
- K. To authorize the issuance or revocation of a Charter to an Affiliate Association.
- L. In the absence of an Executive Director, due to illness, death, resignation, or prolonged absence, the Executive Board will be responsible for all duties shown in Article III for these Bylaws.

ARTICLE III.

EXECUTIVE DIRECTOR

- Section 1.** The Executive Board shall hire an Executive Director to perform the following duties:
- A. Keep a list of members and their addresses.
- B. Assemble and transmit to the Editors of the publications of IAMFES, all papers, addresses, and other matter worthy of publication in a timely manner after receipt from authors.
- C. Keep a current list of names and addresses of IAMFES members entitled to receive the publications.
- D. Issue notices of all meetings, conduct correspondence pertaining to the affairs of IAMFES and perform other duties incident to the office as the Executive Board may authorize.
- E. Receive all monies due IAMFES, giving receipt therefore, and keeping account thereof.
- F. Faithfully care for all monies received, paying out expenses as authorized by the Executive Board and keeping account thereof.

- G. File a surety bond with the President of IAMFES in an amount as directed by the Executive Board.
- H. Provide a detailed statement of the financial condition of IAMFES at the Business Meeting of the Annual Meeting.
- I. With the approval of the Executive Board, employ all staff and fix their compensation in accordance with the approved budget, as well as define their specific duties.
- J. Provide other services as directed by the Executive Board.

ARTICLE IV.

AFFILIATE ASSOCIATIONS

- Section 1.** The conditions for authorizing the issuance of a Charter to an Affiliate Association are as follows:
- A. When a regional group of members of IAMFES want to form an Affiliate Association, a group of at least ten members of IAMFES will sign the application and forward it to the Executive Director of IAMFES with the following information:
 - 1. A list of the names, addresses and phone numbers of the IAMFES members forming the proposed Affiliate Association;
 - 2. A list of names, addresses and phone numbers of the temporary officers of the proposed Affiliate Association, at least one of which shall be a member of IAMFES;
 - 3. The name of the proposed Affiliate Association, and
 - 4. A definition of the geographical area desired to be covered.
 - 5. A copy of the proposed Affiliate Constitution and Bylaws.
 - B. When an already-existing organization with at least ten (10) members of IAMFES wants to become an Affiliate Association, the Secretary or other duly authorized officer of the applicant organization will make written request for affiliation status and provide the following information:
 - 1. A list of the names, addresses and phone numbers of the IAMFES members forming the proposed Affiliate Association;

- 2. A list of names, addresses and phone numbers of its officers, at least one of which shall be a member of IAMFES;
- 3. The name of the organization;
- 4. A definition of the geographical area desired to be covered;
- 5. A copy of the Affiliate Constitution and Bylaws, and
- 6. An attested copy of the minutes authorizing said application.

Section 2. Upon majority vote of the Executive Board, the Executive Director, or, in the absence thereof, the Secretary of IAMFES will notify the responsible officer of the applicant organization concerning the action taken.

- A. Upon receipt of any further information requested by the Executive Board, a Charter will be executed to an Affiliate Association in form and substance as approved by the Executive Board.
 - 1. The Charter will be presented to the duly authorized Affiliate representative member at the IAMFES Annual Meeting or at the Annual Meeting of the Affiliate.
- B. After the granting of the Charter by IAMFES, and yearly thereafter, the Secretary of the Affiliate Association or other duly authorized officer shall submit the names, addresses and phone numbers of each IAMFES member and Affiliate member, and other official business to the Executive Director of IAMFES.

Section 3. Any Affiliate Association may use the expression "Affiliated with the INTERNATIONAL ASSOCIATION OF MILK, FOOD AND ENVIRONMENTAL SANITARIANS, INC." or an equivalent legend that is approved by the IAMFES Executive Board.

Section 4. An Affiliate Association Charter may be revoked by the IAMFES Executive Board:

- A. Upon recommendation by the Affiliate Council, on two-thirds (2/3rds) vote of the total number of votes cast by that Council after due and reasonable notice has been given in writing at least three months before such a vote is to be taken and a reasonable opportunity is given for a hearing.

- B. A Charter may be revoked for the following causes:
 1. When the affairs of the Affiliate Association are not conducted consistent with the Constitution and Bylaws of IAMFES.
 2. When the Affiliate Association has ceased to function for two years, or
 3. When the Affiliate Association fails to maintain at least ten (10) members in IAMFES for two (2) consecutive years.

**ARTICLE V.
COMMITTEES**

Section 1. Standing committees of IAMFES shall consist of the following: Program Advisory Committee, Journal of Food Protection Management Committee, Journal of Dairy, Food and Environmental Sanitation Management Committee and Past Presidents' Advisory Committee.

- A. The Program Advisory Committee shall consist of a chair, vice-chair and other individuals appointed by the Executive Board. These appointments shall be for 3-year terms on a rotating basis with balanced representation from education, government and industry.
 1. The Committee shall assist the Executive Board in developing the scientific and technical content of the Annual Meeting.
 2. The Committee shall meet at each Annual Meeting and other times as deemed necessary.
- B. The journal management committees shall consist of chairpersons, appointed by the President, the editors of the IAMFES publications, members appointed for 3-year terms, and the Managing Editor of the publications, unless otherwise designated by the Executive Board.
 1. The Committees shall handle all editorial matters concerning publications of the Journal(s) and other publications of IAMFES, with the approval of the Executive Board.
- C. The Past Presidents' Advisory Committee shall be composed of Past Presidents of IAMFES.

1. The Immediate Past President will act as liaison between this committee and the Executive Board.
2. This committee will meet at each Annual Meeting.
3. In the absence of all Executive Board members, this committee would select interim officers until new officers could be elected.
4. Advise Executive Board on any IAMFES matters as deemed advisable.

Section 2. Each year, prior to the Annual Meeting, the President-Elect shall appoint a seven member Nominating Committee.

- A. At least one member shall have served on the Nominating Committee the previous year, and the members should be representative of geographical and membership groups.
- B. The Chairperson of the committee shall be announced at the Annual Meeting, and published in the official publication of IAMFES the month following the Annual Meeting, together with the date by which candidates for nomination(s) for office(s) shall be submitted.
- C. The Nominating Committee shall submit the names of at least two nominees for the office of Secretary to the Executive Director as directed by the President-Elect. The names, with pictures and biographical sketches, shall be published in the official publication of IAMFES not later than April 1 of the year in which the election is to be held.
- D. Ballots shall be distributed by the Executive Director as directed by the Executive Board and must be returned to the Executive Director by June 1, for checking against the IAMFES eligible voter list and then forwarded to the Teller's Committee for counting.
- E. The person receiving the greatest number of votes shall be certified to the President at least one month in advance of the Annual Meeting.

Section 3. The President-Elect shall appoint a Teller's Committee composed of three persons for the purpose of certifying the results of each election of Officers.

Section 4. Other special committees and regular continuing committees may be authorized by the Executive Board or by the President for special work or assignment.

- A. The need for continuation of such committees shall be subject to annual review of the Executive Board.
- B. All appointments of Chairpersons to continuing committees shall be made by the President-Elect prior to the Annual Meeting and shall be subject to annual review of the Executive Board. Proposed members of committees will be designated by the Committee Chairperson and presented to the Executive Board for approval.

Section 5. The terms of office of all committee Chairpersons shall expire at the end of the Annual Meeting next following their appointment, except as provided in the Bylaws.

ARTICLE VI. MEETINGS

Section 1. Each year, IAMFES shall hold an Annual Business Meeting.

- A. A quorum for any meeting to conduct business shall consist of at least 50 voting members.

Section 2. Other meetings of IAMFES may be called by the Executive Board, by duly announcing any called meeting at least 60 days prior to the date of the meeting.

Section 3. The Executive Board and the Affiliate Council shall meet at the Annual Meeting.

Section 4. When, in the discretion of the Executive Board, it is considered advisable to conduct a vote on a question by mail ballot, a majority of the votes cast will be necessary to carry the proposition.

Section 5. Robert's Rules of Order shall govern the procedures at all meetings. Voting by proxy shall not be permitted.

ARTICLE VII. PUBLICATIONS

Section 1. All publications of IAMFES will be issued under the authority of the Executive Board.

- A. Any Affiliate Association may publish its own material but must assume full responsibility therefore, and obligate IAMFES in no way.

Section 2. *Dairy, Food and Environmental Sanitation* shall be the official publication of IAMFES and the *Journal of Food Protection* will be the scientific publication.

- A. These Journals will be the property of IAMFES, which will own the copyrights and all the articles published therein.
- B. The Editors will serve at the pleasure of the Executive Board.

Section 3. The Executive Board will authorize and direct other publications of IAMFES.

ARTICLE VIII. AMENDMENTS

Section 1. Any member may propose amendments to these Bylaws by submitting them in writing to the Executive Director at least 60 days before the date of the next announced meeting.

- A. The Executive Director shall notify all members, at least 30 days before the next announced meeting, that the proposed amendment(s) will be open for discussion and voting at the next meeting.
- B. These Bylaws may be amended by majority affirmative vote of the voting members present.

Preliminary Program

of the IAMFES 85th Annual Meeting

MONDAY MORNING — AUGUST 17, 1998

Basic Dairy Field Workshop Part 1

- Dairy Farm Regulations and Inspection — CHARLES PRICE, FDA, Chicago, IL, U.S.A.
- Industry Quality Control Bacterial Standards — RUTH FUQUA, Quality Check Dairy Products Assn., Mt. Juliet, TN, U.S.A.
- Somatic Cell Count — NORM CORLETT, Dairy Farmers of America, Strongsville, OH, U.S.A.
- Drug Residues — CHARLES PRICE, FDA, Chicago, IL, U.S.A.

Change and Unintended Microbial Consequences — Along the Farm to Fork Continuum

- Historical Perspectives on Inadvertent Changes that Led to Foodborne Microbial Hazards: Lessons to be Learned — DON ZINK, Nestle, U.S.A., Inc., Glendale, CA, U.S.A.
- Aquaculture: Practices with Unintended Consequences — SPENCER GARRETT, National Marine Fisheries Service, Pascagoula, MS, U.S.A.
- Bovine Spongiform Encephalopathy: Opportunities for Emergence with Altered Animal Food Preparation Practices — NORMAN SIMMONS, Guy's Hospital, London, England, UK
- *Pfisteria*: Creating the Niche for Its Emergence — KEVIN SELLNER, National Oceanographic and Atmospheric Adm., Silver Springs, MD, U.S.A.
- *Cyclospora*: A New Pathogen to a Non-Immune Population — BARBARA HERWALDT, CDC, Atlanta, GA, U.S.A.

Food Safety & Quality of Meat & Poultry — Technical Session

- Determination of End-Point Temperature in Cooked Ground Beef Patties by Near-Infrared Reflectance Spectroscopy — WILLIAM WINDHAM, USDA-ARS-RRC-QARU, Athens, GA, U.S.A.

- Acid Phosphatase Activity and Myoglobin Denaturation as End-Point Temperature Indicators in Cooked Ground Beef Patties — CARL DAVIS, USDA-ARS-RRC-PPMQ, Athens, GA, U.S.A.
- Recovery of *Salmonella*, *Campylobacter jejuni* and *Clostridium perfringens* from a Poultry Broiler House — PAULA FEDORKA-CRAY, USDA-ARS-RRC-PMSRU, Athens, GA, U.S.A.
- Nonthermal Inactivation Models for *S. typhimurium* in Poultry Processing — LI MA, University of Arkansas, Fayetteville, AR, U.S.A.
- Quantitative Risk Assessment for *Campylobacter jejuni* in Fresh Chicken — AAMIR FAZIL, Health Canada, Guelph, Ontario, Canada
- Experimental Infection of Birds with *Arcobacter butzleri* — IRENE WESLEY, USDA-ARS-NADC, Ames, IA, U.S.A.
- Occurrence of *E. coli* O157:H7, *Salmonella* and Other Shiga-Like Toxin-Producing *E. coli* in Retail Fresh Ground Beef — MARK BARBOUR, Qualicon, Inc., Wilmington, DE, U.S.A.
- Improved Isolation of Verotoxin - Producing *E. coli* from Ground Beef — LESLIE MACDONALD, Health Canada, Guelph, Ontario, Canada
- Immunoassays for the Detection of Spinal Cord in Product from Advanced Meat Recovery Systems — LYNDIA KELLEY, PMSRU-USDA-ARS, Athens, GA, U.S.A.
- Triclosan-Incorporated Plastic for Reducing Bacteria on Meat Surfaces — CATHERINE CUTTER, USDA-ARS-Roman L. Hruska, Clay Center, NE, U.S.A.
- Studies to Characterize and Optimize the *E. coli* Sponge Sampling Method for Slaughter Process Control Monitoring — RANDY PHEBUS, Kansas State University, Manhattan, KS, U.S.A.
- Ecology and Control Strategies for *Salmonella* in Broiler Chickens — STAN BAILEY, USDA-ARS-RRC, Athens, GA, U.S.A.

Seafood HACCP Reflections after Implementation

- FDA's Reflection on HACCP Implementation — DONALD KRAEMER, FDA, Washington, D.C., U.S.A.
- SSOP Reflections — Eight Months after Implementation — DEBRA DEVLIEGER, FDA, Bothell, WA, U.S.A.
- Web-HACCP and Seafood Safety Communication — ROBERT PRICE, University of California-Davis, Davis, CA, U.S.A.
- HACCP Implementation — Perspectives of a Small Family-Owned Business — JAMES JOHNSON, Washington Crab Co., Inc., Washington, NC, U.S.A.
- FDA Seafood HACCP Implementation — A Large Processor Experience and Key Learnings — RAYMOND JONES, Rich Seapak Corp., Simons Island, GA, U.S.A.
- Seafood HACCP Alliance: Reflections and Goals to 2000 — STEVEN OTWELL, University of Florida, Gainesville, FL, U.S.A.
- Emerging Pathogens and HACCP — DONN WARD, North Carolina State University, Raleigh, NC, U.S.A.
- *Pfisteria* – An Emerging Environmental Concern — JOANN BURKHOLDER, North Carolina State University, Raleigh, NC, U.S.A.

A Symposium on Fresh-Cut Produce: Field Sanitation, Packaging, Microbiology, Control, Programs, and Regulations — Part I

- The Future of the Produce Industry — To be announced
- Current Microbiological Concerns in the Produce Industry — JEFFREY FARBER, Health Canada, Ottawa, Ontario, Canada
- Methods of Controlling and/or Eliminating Foodborne Pathogens in Produce — LINDA HARRIS, University of California-Davis, Davis, CA, U.S.A.
- Epidemiological Investigation of Outbreaks Associated with Produce Items — JEFF FERRAR, California Dept. of Health Services, Sacramento, CA, U.S.A.
- Evolution of Packaging Films in Extended the Shelf life of Produce Items — ALAN HATHCOX, Cryovac GRACE Packaging, Duncan, SC, U.S.A.
- The Development and Implication of a Field Sanitation Program — DONNA GARREN, Boskovich Farms, Inc., Oxnard, CA, U.S.A.

Foodborne Pathogens — Poster Session

- Effectiveness of Trisodium Phosphate for Inactivation of *E. coli* O157:H7 on Apples — ATOBUNDU ATUGHONU, North Carolina A&T State University, Greensboro, NC, U.S.A.
- Cold Shocked *E. coli* O157:H7: Impact on Survival and Injury Following Either Freezing or Heating — JILL BOLLMAN, University of Manitoba, Manitoba, Canada
- Irradiation Inactivation of *E. coli* O157:H7 in Apple Juice — GLENN BOYD, USDA-ARS-ERRC, Wyndmoor, PA, U.S.A.
- Effect of pH-Dependent, Stationary Phase Acid Resistance on the Thermal Tolerance of *E. coli* O157:H7 — ROBERT BUCHANAN, USDA-ARS-ERRC, Wyndmoor, PA, U.S.A.
- Contamination of Intact Apples after Immersion in an Aqueous Environment Containing *E. coli* O157:H7 — SHARON EDELSON, USDA-ARS-ERRC, Wyndmoor, PA, U.S.A.
- Fate of *E. coli* O157:H7 in Four Varieties of Ground Apples Used in Cider Production — TOMEKA FISHER, The University of Tennessee, Knoxville, TN, U.S.A.
- Persistence of *E. coli* O157:H7 in Dairy Cattle Drinking Water — CLIFFORD JOHNSON, USEPA, Cincinnati, OH, U.S.A.
- Heat Inactivation of *E. coli* O157:H7 in Turkey, Pork and Lamb — VIJAY JUNEJA, USDA-ARS-ERRC, Wyndmoor, PA, U.S.A.
- Survival and Growth of *E. coli* O157:H7 during Sprouting of Inoculated Alfalfa Seeds — MARK KANTOR, University of Maryland at College Park, College Park, MD, U.S.A.
- Influence of Acidulant Identity on the Effects of pH and Acid Resistance on the Radiation Resistance of *E. coli* O157:H7 — BENNE MARMER, USDA-ARS-ERRC, Wyndmoor, PA, U.S.A.
- Antibiotic Resistance of *E. coli* O157:H7 Isolated from Animals, Foods and Humans — JIANGHONG MENG, University of Maryland at College Park, College Park, MD, U.S.A.
- Growth and Recovery of *E. coli* O157:H7 in Reconditioned Wastewater — KATHLEEN RAJKOWSKI, USDA-ARS-ERRC, Wyndmoor, PA, U.S.A.
- Attachment of *E. coli* O157:H7 to Lettuce Leaf Surfaces — KUN-HO SEO, University of Georgia, Athens, GA, U.S.A.

- Direct Observation of Viability of *E. coli* O157:H7 on Intact Lettuce — KUN-HO SEO, University of Georgia, Athens, GA, U.S.A.
- Enumeration of Verotoxigenic *E. coli* in Ground Beef — KRISTIN SLOAN, Health Canada, Guelph, Ontario, Canada
- Reduction of *E. coli* O157:H7 on Apples Using Acetic Acid, Hydrogen Peroxide, and Phosphoric Acid Wash Treatments — JIM WRIGHT, Virginia Tech, Blacksburg, VA, U.S.A.
- Tolerance of Acid-Adapted and Non-Adapted *E. coli* O157:H7 to Reduced pH as Affected by Type of Acidulant — L. R. BEUCHAT, University of Georgia, Griffin, GA, U.S.A.
- Antibacterial Effect of Lactoperoxidase System against *L. monocytogenes* and *E. coli* O157:H7 — C. I. CHUNG, Kon Kuk University, Seoul, South Korea
- Survival of *E. coli* O157:H7 in Apple Cider Containing Dimethyl Dicarbonate, Sulfur Dioxide, and Sodium Benzoate — TOMEKA FISHER, The University of Tennessee, Knoxville, TN, U.S.A.
- Suitability of Selective Media for Recovery of Heat-Stressed *E. coli* O157:H7 — TOMEKA FISHER, The University of Tennessee, Knoxville, TN, U.S.A.
- Thermal Resistance of *Salmonella* sp. in Chicken Broth as Defined by D- and Z-Values — VIJAY JUNEJA, USDA-ARS-ERRC, Wyndmoor, PA, U.S.A.
- Effect of Refined Liquid Smoke on Attachment of *Salmonella* sp. on Pork Skin — JOHN KOTROLA, Kansas State University, Manhattan, KS, U.S.A.
- Reduction of *Salmonella* spp. in Cut Cantaloupe — CARL OLSEN, University of California, Davis, CA, U.S.A.
- Enhanced Thermal Destruction of *S. enteritidis* in Liquid Egg Products Using Lysozyme, Lactoferrin- β , and EDTA — SARAH LEWIS, Tuskegee University, Tuskegee, AL, U.S.A.
- Effect of Inoculum Cell Phase, Heat Shock, and Osmolytes on the Lag Phase Duration of *L. monocytogenes* Scott A at 6°C — JEFFREY CALL, USDA, Wyndmoor, PA, U.S.A.
- Control of *L. monocytogenes* on Ground Turkey by Irradiation and Modified Atmosphere Packaging — DONALD THAYER, USDA-ARS-ERRC, Wyndmoor, PA, U.S.A.
- Fat Content, Storage Temperature and Background Microflora Influence the Growth of *L. monocytogenes* in Vacuum-Packaged Ground Beef — RUPINDER PANAYACH, University of Alberta, AFNS, Edmonton, AB, Canada
- Acid Adaptation of *L. monocytogenes* Offers Cross-Protection against an Activated Lactoperoxidase System — SADHANA RAVISHANKAR, University of Georgia, Athens, GA, U.S.A.
- The Effects of Varying Thermal Processing Schedules on *L. monocytogenes* and Indicative Microorganisms in Blue Crab (*Callinectes sapidus*) Meat — JENNIFER SMITH, Virginia Tech, Blacksburg, VA, U.S.A.
- Sensitivity of Strains of *L. monocytogenes* to Temperature and Lysozyme in Liquid Egg Products — YIBEI ZHANG, Tuskegee University, Tuskegee, AL, U.S.A.
- Evaluation of ISSC Interim Control Plan for Limiting *Vibrio vulnificus* Growth in Oysters — DONGJIN SHIN, University of Florida, Gainesville, FL, U.S.A.
- Inhibition of *Clostridium botulinum* by Phosphate-based Salts in Media and Process Cheese Spread — KATHLEEN GLASS, University of Wisconsin, Food Research Institute, Madison, WI, U.S.A.
- Prevalence of *Bacillus* Diarrhoeal Enterotoxin – Producing Organisms in Dairy Products — JILL GEBLER, Murray Goulburn Co-op Co. Ltd., Yarram, Vic, Australia

MONDAY AFTERNOON — AUGUST 17, 1998

Basic Dairy Field Workshop — Part 2

- Troubleshooting Quality Problems on Dairy Farms — PAUL DERSAM, Alden, NY, U.S.A.
- Dairy Farm Waste Management — ROBERT BURNS, University of Tennessee, Knoxville, TN, U.S.A.
- Milk Hauling — ROGER NORDTVEDT, Land O'Lakes, Inc., Arden Hills, MN, U.S.A.
- Dairy Field Person's Pocket Guide — CHARLES PRICE, FDA, Chicago, IL, U.S.A.

Farm to Table: Ecology of Pathogens Associated with Poultry

- *Salmonella* in Poultry — MARK BERRANG, Russell Research Center, Athens, GA, U.S.A.
- An Assortment of Other Foodborne Pathogens in Poultry — DON CONNER, Auburn University, Auburn, AL, U.S.A.
- *Clostridium perfringens* in Poultry — STEVE CRAVEN, Russell Research Center, Athens, GA, U.S.A.

- *Clostridium perfringens* in Poultry — JAMES LINDSAY, University of Florida, Gainesville, FL, U.S.A.
- Indicator Organisms to Some Foodborne Pathogens in Poultry — SCOTT RUSSELL, University of Georgia, Athens, GA, U.S.A.
- *Campylobacter* in Poultry — SIMON SHANE, Louisiana State University, Baton Rouge, LA, U.S.A.
- Hong Kong Flu in Poultry — DAVID SWAYNE, Southeast Poultry Research Laboratory, Athens, GA, U.S.A.

Microbiological Methods — Technical Session

- Characterization of the Antibiotic Resistance Locus in *S. typhimurium* DT 104 — LANCE BOLTON, USDA-ARS-PMS, Athens, GA, U.S.A.
- Response Surface Models for Effects of Previous pH, Temperature, and pH on Lag Time and Growth Rate of *S. typhimurium* — THOMAS OSCAR, USDA-ARS, Princess Anne, MD, U.S.A.
- Use of an Autobioluminescent *S. hadar* to Monitor the Effect of Decontamination Methods — DERRICK BAUTISTA, University of Saskatchewan, Saskatoon, Saskatchewan, Canada
- Evaluation of a PCR-TaqMan™ Assay for Detection of *E. coli* O157:H7 and *Salmonella* from Ground Beef — LALIT BOHRA, Kansas State University, Manhattan, KS, U.S.A.
- A Rapid and Specific Fluorogenic PCR-Based System for the Detection of Shiga Toxins Producing *E. coli* from Different Food Samples — MICHAEL HO, Perkin Elmer Applied Biosystems, Foster City, CA, U.S.A.
- *In vitro* Pathogenicity Assay of *Bacillus cereus* Using Hybridoma Cells — DEBORAH HOYT, University of Arkansas, Fayetteville, AR, U.S.A.
- Comparison between Automated Ribotyping and RAPD Analysis for 44 Different *Bacillus cereus* Isolates from the Dairy Industry — ANNIKA ANDERSSON, SIK Institute of Food & Biotechnology, Gothenburgh, Sweden
- Use of Automated Ribotyping to Trace Sources of *Pseudomonas* in a Ready-to-Eat Food Product — PATRICK GUSTAVSSON, SIK Institute of Food & Biotechnology, Gothenburgh, Sweden
- Development of a PCR Assay for the Detection of *Listeria* spp. in Food Production Environments — MARK BARBOUR, Qualicon, Inc., Wilmington, DE, U.S.A.

- *Campylobacter* Recovery and Enumeration from Broiler Carcasses — ERIC LINE, USDA-ARS-RRC-PMSRU, Athens, GA, U.S.A.

The Leading Edge of Foodborne Disease Surveillance

- Coordination of Local, State/Provincial and National Surveillance Systems for Foodborne Disease — JOHN GUZEWICH, USFDA, Washington, D.C., U.S.A.
- Pulsed-field Gel Electronic Surveillance Network for *E. coli* O157:H7 — TIMOTHY BARRETT, CDC, Atlanta, GA, U.S.A.
- Active Surveillance for Foodborne Disease: The U.S. FoodNet Surveillance Program — DREW VOETSCH, CDC, Atlanta, GA, U.S.A.
- The Canadian Information Highway for the Surveillance of Foodborne, Waterborne and Enteric Disease — Information in Real Time — PAUL SOCKETT, Health Canada, Health Protection Branch, Ottawa, Ontario, Canada
- The Enteric Disease 4-Year Study in England and Wales — PAUL SOCKETT, Health Canada, Health Protection Branch, Ottawa, Ontario, Canada

A Symposium on Fresh-Cut Produce: Field Sanitation, Packaging, Microbiology, Control, Programs, and Regulations — Part 2

- The Food Safety Programs of a Fresh-Cut Produce Processor, LARRY BEIL, Fresh Express Farms, Salinas, CA, U.S.A.
- The Role of Outside Laboratories in Developing Food Safety Programs for Produce Companies, JEAN ROBERTS, DFL Laboratories, Modesto, CA, U.S.A.
- UFFVA Efforts in Developing Produce Safety Guidelines, STACY ZAWEL, United Fresh Fruit and Vegetable Association, Alexandria, VA, U.S.A.
- A Discussion of the FDA and USDA Food Safety Guidelines for the Produce Industry, LEEANNE JACKSON, Washington, D.C., U.S.A.
- The Development and Implementation of Food Safety Guidelines by IFPA and the Western Growers Association for the Produce Industry, EDITH GARRETT, IFPA, Alexandria, VA, U.S.A.
- Discussion of the USDA Qualification Through Verification (QTV) Program, ERIC FOREMAN, USDA, Washington, D.C., U.S.A.

General Food Microbiology — Poster Session

- Development of Hybridoma Cell Line for the Production of Monoclonal Antibody to Residual Herbicide Atrazine — Duck-Hwa Chung, Gyeongsang National University, Chinju, Kyoungnam, Korea
- Partial Characterization of Aflatoxin B₁ Removal by Crude Extract from *Flavobacterium aurantiacum* — RONALD SMILEY, The University of Tennessee, Knoxville, TN, U.S.A.
- Screening of T-2 Toxin Producing Fungi from Agricultural Commodities in Korea by ELISA Method — DUCK-HWA CHUNG, Gyeongsang National University, Chinju, Kyoungnam, Korea
- Monte Carlo Simulation of Milk Spoilage as Influenced by Temperature and Initial Population — DONALD SCHAFFNER, Rutgers — The State University of New Jersey, New Brunswick, NJ, U.S.A.
- Predictive Model to Determine the Effects of Milkfat, pH, and Temperature on the Thermal Inactivation of *L. monocytogenes* — AMY TINKEY, Purdue University, West Lafayette, IN, U.S.A.
- Microbiological Quality and Safety of Ready-to-Eat Street Foods in Johannesburg City — FRANCINA MOSUPYE, University of the Witwatersrand, South Africa
- Efficacy of Lactate-Based Compounds as Bread Preservatives — TRACEY PATTISON, University of the Witwatersrand, South Africa
- Effect of Chemical Sanitizers on Bacterial Cell Morphology — ALEX VON HOLY, University of the Witwatersrand, South Africa
- Relative Hydrophobicity and Charge of Planktonic and Adhered Cells of *Enterococcus faecium* — NELIO ANDRADE, University of Minnesota, St. Paul, MN, U.S.A.
- Bacteriocidal Activity of Sanitizers against *Enterococcus faecium* Attached to Stainless Steel as Determined by Plate Count and Impedance Methods — NELIO ANDRADE, University of Minnesota, St. Paul, MN, U.S.A.
- Characterization of Two Bacteriocins Produced by Atypical *Enterococcus* Species — MARLENE JANES, University of Arkansas, Fayetteville, AR, U.S.A.
- Development of Whey Beverage Using Lactic Acid Bacteria — Y. K. JHA, G. B. Pant University of Agriculture and Technology, Pantnagar, India
- Comparison of Diluents and Media for Recovering *Zygosaccharomyces rouxii* in High-Sugar Foods — YONGSOO JUNG, University of Georgia, Griffin, GA, U.S.A.
- Effect of Heating Extract of *Angelica acutiloba* and *Glycyrrhiza uralensis* on Growth of Intestinal Microorganisms — KOOK-HEE KANG, Sung Kyan Kwan University, Seoul, Korea
- Effect on Selected Pathogens of Exposure to Naturally Occurring Volatile Compounds — ABIGAIL VILLALBA, University of Kentucky, Lexington, KY, U.S.A.
- Effect of Sugar and Citric Acid on the Quality of Canned Lychee — MING WU, University of Science and Technology, Pingtung, Taiwan
- Growth of *Alicyclobacillus acidoterrestris* in Acid Products — ISABEL WALLS, National Food Processors Assn., Washington, D.C., U.S.A.
- Model for the Implementation of HACCP in the Food Industry of Developing Countries — JAIRO ROMERO, Association Colombiana Cien, Bogota, Colombia
- Developing HACCP Training Materials for Food Service Employees — HEA-RAN ASHRAF, Southern Illinois University, Carbondale, IL, U.S.A.
- Indicative Microbial Quality of Gulf Coast Shucked Oysters Prior to Implementation of FDA Seafood HACCP Regulation — CUSTY FERNANDES, Mississippi State University, Pascagoula, MS, U.S.A.
- Biogenic Amine Analysis and Characterization of Histaminogenic Bacteria from Frozen Albacore — JORGE BARROS-VELÁZQUEZ, University of Santiago de Compostela, E.P.S., Lugo, Spain
- The Effect of Refrigerated Storage on the Safety and Quality of Raw Oysters (*Crassostrea virginica*) — TATIANA LORCA, Virginia Tech., Blacksburg, VA, U.S.A.
- Antimicrobial Spray of Poultry Carcasses: A Pilot Plant Study — ZHONGPING YANG, University of Arkansas, Fayetteville, AR, U.S.A.
- Microbiological Changes during Swine Carcass Dressing — SAMUEL PALUMBO, USDA, Wyndmoor, PA, U.S.A.
- Fate of *Arcobacter* spp. to Environmental Stresses of Temperature, pH and NaCl Levels — ELAINE D'SA, University of Georgia, Athens, GA, U.S.A.
- Antibiotic Resistance of Bacteria Isolated from Slaughtered and Retail Chickens in South Africa — PIETER GOUWS, University of the Western Cape, Bellville, South Africa

- Comparison of Two Molecular Techniques for Epidemiological Tracing of *Campylobacter jejuni* — NORMAN STERN, USDA-ARS-RRC-PMSRU, Athens, GA, U.S.A.
- Phenotyping and Genotyping of Foodborne *Campylobacter* from Recurrent Disease — Jorge BARROS VELÁZQUEZ, University of Santiago de Compostela, E.P.S., Lugo, Spain
- Detection and Distinction of *C. jejuni* and *A. butzleri* in Contaminated Food Products by Multiplex PCR — DEBRA WINTERS, University of Arkansas, Fayetteville, AR, U.S.A.
- Reduction in Microbiological Counts of Beef Variety Meats Exposed to Various Decontamination Treatments — ROBERT DELMORE JR., Colorado State University, Fort Collins, CO, U.S.A.
- Effect of Environmental and Substrate Factors on Survival and Growth of *Helicobacter pylori* — XIUPING JIANG, University of Georgia, Griffin, GA, U.S.A.
- Deposition of Salmonellae from Soil and Blossoms into Internal Tissue of Tomatoes — DONALD CONNER, Auburn University, Auburn, AL, U.S.A.
- Allyl Isothiocyanate as a Preservative in Non-Acidified, Refrigerated, Pickled Vegetables — BRIAN SHOFMAN, Oklahoma State University, Stillwater, OK, U.S.A.
- Pasteurization Process for Dairy Products — JOHN STAUFFER, Stauffer Technology, Greenwich, CT, U.S.A.
- Comparison of Chemical Treatments to Eliminate *E. coli* O157:H7 on Alfalfa Seeds — PETER TAORMINA, University of Georgia, Griffin, GA, U.S.A.
- Food Safety and Water Sanitation in Cambodia and China — EWEN TODD, Health Canada, Ottawa, Ontario, Canada
- Sensitivity of *E. coli* O157:H7 to Storage in Frozen Apple Juice — SHERYL YAMAMOTO, University of California, Davis, CA, U.S.A.
- Evaluation of the Food Safety Network as an Educational Tool — SARAH GRANT, University of Guelph, Guelph, Ontario, Canada
- The Provision and Evaluation of Daily Electronic Information Summaries to Identify Public and Scientific Animal Agricultural Issues Warranting Risk Analysis Activities: the Animal Network — JANIS HAZLEWOOD, University of Guelph, Guelph, Ontario, Canada
- An Evaluation of Food Safety Network (FSnet) as a Risk Analysis Tool — AMANDA WHITFIELD, University of Guelph, Guelph, Ontario, Canada

TUESDAY MORNING — AUGUST 18, 1998

Current Perspectives on the Use of Antibiotics in Animal Production Systems

- Relationship of Antibiotic-Resistant Bacteria in Foods to Antibiotic-Resistant Bacteria in Humans — STUART LEVY, Tufts University, Boston, MA, U.S.A.
- Veterinary Perspective on the Use of Antibiotics in Animal Production Systems — PAULA CRAY, USDA-ARS, Athens, GA, U.S.A.
- Antimicrobial Use and the Development of Resistance — FRED ANGULO, University of Georgia, Atlanta, GA, U.S.A.
- Update on *Salmonella* DT 104 — JOHN THRELFALL, Public Health Laboratory Service, London, England, UK
- World Health Organization Perspective on the Use of Antibiotics in Animal Production Systems — KLAUS STOHR, World Health Organization, Geneva, Switzerland

Food Safety Education/Safety & Quality of Produce — Technical Session

- Effect of Brief Blanching Treatments on the Microflora of Fresh Cucumbers — FREDERICK BREIDT, JR., USDA-ARS, North Carolina State University, Raleigh, NC, U.S.A.
- Outgrowth of *Bacillus coagulans* in Various Tomato Purees as Affected by pH and Acidity — ROCELLE CLAVERO, National Food Processors Association, Washington D.C., U.S.A.

Pest Management as We Approach 2000

- Integrated Pest Management Technology Update — JIM SARGENT, Copesan Services, Inc., Brookfield, WI, U.S.A.
- Heat Treatment as an Alternative to Chemical Fumigation for Pests — OLE DOSLAND, Copesan Services, Inc., Brookfield, WI, U.S.A.
- Ants — A Pest to Detest — KIM KELLEY TUNIS, McCloud Pest Control, Indianapolis, IN, U.S.A.
- Pest Management — A View from the Client Perspective — MARTY GUSHWA, Nestlé U.S.A., Inc., Glendale, CA, U.S.A.

**Viral and Parasitic Foodborne Disease
Associated with Produce: Epidemiology,
Detection, and Control**

- Detection of *Cyclospora* in Foods — GEORGE JACKSON, FDA, Washington, D.C., U.S.A.
- *Cryptosporidium* in Foods — Epidemiology, Detection and Typing — RON THAYER and JIM TROUT, USDA-ARS, Beltsville, MD, U.S.A.
- Epidemiology of a 1997 Outbreak of Hepatitis A Virus Associated with the Consumption of Frozen Strawberries — MIRIAM ALTER, U.S. CDC, MS G37, Atlanta, GA, U.S.A.
- Detection and Thermal Inactivation of Hepatitis A Virus in Foods — SYED SATTAR, University of Ottawa, Ottawa, Ontario, Canada
- Surface Inactivation of Hepatitis A Virus on Strawberries Using Chlorine — MARK SOBSEY, University of North Carolina, Chapel Hill, NC, U.S.A.

Microbiological Methods — Poster Session

- Resazurin as an Indicator of Growth in a New Medium for Measuring the Aerobic Plate Count in Food — CATHERINE SMITH, IDEXX Laboratories, Westbrook, ME, U.S.A.
- Rapid Detection (1 to 4 h) of Total and Thermotolerant Coliforms on Carcasses — GRO ØFJORD, Colifast Systems, ASA, Lysaker, Norway
- Development of an Impedance Selective Method for the Enumeration of Lactic Acid Bacteria — FABIEN DUBOEU, bioMérieux Vitek, Inc., Hazelwood, MO, U.S.A.
- A Rapid Method for the Detection of Gram Negative Organisms in Pasteurized Dairy Products — ANNE DAVIES, Celsis-Lumac, Evanston, IL, U.S.A.
- Practical Application of ATP-bioluminescence for the Estimation of Microbial Populations in Pork — MARK CARTER, Celsis-Lumac, Evanston, IL, U.S.A.
- Evaluation of Methods Used for Enumeration of Thermophilic and Mesophilic *Bacillus* Spores in Milk Powder — EDEN BELLENSON, Cal Poly State University, San Luis Obispo, CA, U.S.A.
- Rapid Detection *Staphylococcus aureus* Using a Membrane Biosensor — JIANMING YE, University of Rhode Island, W. Kingston, RI, U.S.A.
- Detection of *Clostridium botulinum* Type A Toxin in Culture Media and Food Systems by an Improved Colony Immunoblot Procedure — MICHELE PALMERTREE, University of Georgia, Athens, GA, U.S.A.
- Rapid Detection of Cytolethal Distending Toxin Genes in *Campylobacter* Isolates by Polymerase Chain Reaction — AYSEGUL EYIGOR, University of Kentucky, Lexington, KY, U.S.A.
- Improved Enrichment Protocol for Rapid Detection of Low Levels of *Salmonella* in Foods — MADELINE VELAZQUEZ, University of Minnesota, St. Paul, MN, U.S.A.
- Automated One-Day, Two-Step Detection of *S. enteritidis* in Eggs — WEI TAN, Wayne State University, Detroit, MI, U.S.A.
- Evaluation of a Novel 24-Hour Timed Release Enrichment System for the Rapid Isolation of *Salmonella* from Foods — PETER STEPHENS, OXOID Ltd., Basingstoke, Hampshire, U.K.
- Development of an Immunoassay for Detecting *Salmonella* on Chicken Carcasses — ROBERT HOLTSLANDER, Health Canada, Guelph, Ontario, Canada
- A Polymerase Reaction Procedure for the Detection of *S. enteritidis* — PIETER GOUWS, University of the Western Cape, Bellville, South Africa
- Isolation and Simultaneous PCR Detection of *E. coli* O157:H7 and *Salmonella* spp. from Enrichment Cultures of Foods and Other Samples — PINA FRATAMICO, USDA, Wyndmoor, PA, U.S.A.
- Detection of *Salmonella* in Dairy Samples Using BIND[®] — ELIZABETH EHRENFELD, IDEXX Laboratories, Cape Westbrook, ME, U.S.A.
- Selective Enrichment Procedures for the Bacterial Ice Nucleation *Salmonella* Detection (BIND[®]) System to Detect Salmonellae in Environmental Drag Swab Samples from Poultry Houses — CHUN-MING CHEN, IDEXX Laboratories, Inc., Westbrook, ME, U.S.A.
- Automated One-Day Screening Method to Detect Low Levels of *L. monocytogenes* in Milk — HUI PENG, Wayne State University, Detroit, MI, U.S.A.
- *Vidas Listeria* Assay: Environmental Surface Challenge Study — DEBORAH MCINTYRE, R-TECH Laboratories, St. Paul, MN, U.S.A.
- Evaluation of an Automated Immunoassay for the Detection of *Listeria* in Foods — THOMAS ARMSTRONG, bioMérieux Vitek, Inc., Hazelwood, MO, U.S.A.
- Evaluation of Different Selective and Differential Media for Direct Quantitation of *E. coli* O157:H7 from Irradiated Hamburger Meat — ANANTA DESSAI, Tuskegee University, Tuskegee, AL, U.S.A.

- Development of a Homogeneous PCR Assay for the Detection of *E. coli* O157:H7 in Food Samples — SUSAN TSENG, Qualicon, Inc., Wilmington, DE, U.S.A.
- Inhibitory Effect of Gamma Irradiation and Efficacy of Plating Media for Recovering Irradiated *E. coli* O157:H7 — DEOGHWAN OH, Kangwon National University, Chuncheon, Kangwon, Korea
- Effect of Surface Finish on the Cleanability of Stainless Steel — JOSEPH FRANK, University of Georgia, CFSQE, Athens, GA, U.S.A.
- A Comparative Evaluation of Sponging and Excising as Sampling Procedures for Microbiological Analysis of Beef Carcass Tissue — LORENZO WARE, Colorado State University, Fort Collins, CO, U.S.A.
- Shipping, Storage and Sampling-Sponge Effects on Bacterial Numbers Detected from Pork Carcass Skin and Fat Surfaces — JOHN SOFOS, Colorado State University, Fort Collins, CO, U.S.A.
- Recovery of *E. coli* Pure Culture Suspensions from Sponges Following Shaking or Stomaching — MINDY KAIN, Colorado State University, Fort Collins, CO, U.S.A.
- Survival of *Salmonella* During 4°C Storage in Sponge Bags Hydrated with Different Media — SCOTT RUEGER, Kansas State University, Manhattan, KS, U.S.A.

TUESDAY AFTERNOON — AUGUST 18, 1998

General Session — Crisis in Communication

- To be announced

IAMFES Business Meeting

WEDNESDAY MORNING — AUGUST 19, 1998

Bringing Science to the Restaurant Inspection

- The Reality of Cooling Foods in Restaurant Setting — GERALD BARNES, Multnomah County Health Dept., Portland, OR, U.S.A.
- Recipe-Based HACCP — PETE SNYDER, Hospitality Institute, St. Paul, MN, U.S.A.
- Tools for the Sanitarian — DANIEL MAXON, Clark County Health District, Las Vegas, NV, U.S.A.
- Teaching Science to the Operator — GREIG WARNER, Multnomah County Health Dept., Portland, OR, U.S.A.
- Implementing a HACCP System — FRANK BRYAN, Lithonia, GA, U.S.A.

Computerized Process Control and Record Keeping in the Dairy Industry

- Plant Modernization with Computerized Process Control — ROBERT COUTLEE, Dean Foods Technical Center, Rockford, IL, U.S.A.
- Proper Maintenance and Calibration of Electronic Instruments — WILLIAM WILSON, Anderson Instruments Co., Fultonville, NY, U.S.A.
- HACCP-Based Monitoring in the Dairy Plant — KENNETH ANDERSON, Harold Wainess and Associates, Northfield, IL, U.S.A.
- Acquisition, Storage and Review of Safety Data from a Commercial System for High Temperature, Short Time Pasteurization System — JOSEPH SCHLESSER, USDA-NCFST, Summit, IL, U.S.A.
- Regulations for Computerized Process Control and Recordkeeping — STEVEN SIMS, USDA, Washington, D.C., U.S.A.

Factors Affecting Bacterial Attachment to Meat Surfaces

- Mechanisms of Bacterial Attachment to Meat Surfaces: An Overview — JAMES DICKSON, Iowa State University, Ames, IA, U.S.A.
- The Role of Biofilm Formation/Colonization on Meat Surfaces — TOM MCMEEKIN, University of Tasmania, Hobart, Tasmania, Australia
- Methods for Preventing Bacterial Attachment to Meat Surfaces — JUDY ARNOLD, Russell Research Center, Athens, GA, U.S.A.
- Real Time Visualization of Bacteria on Meat Surfaces — GREGORY SIRAGUSA, USDA-ARS, Clay Center, NE, U.S.A.
- Direct Microscopic Observation of Tissue-Pathogen Interactions — JOSEPH FRANK, University of Georgia, Athens, GA, U.S.A.
- Effect of Sampling Methodologies and Bacterial Recovery from Meat Surfaces — WARREN DORSA, USDA-ARS, Clay Center, NE, U.S.A.

ILSI North America-Sponsored Research Update

- Effect of Diet and Rumen Microenvironment on the Proliferation and Fecal Shedding of *E. coli* O157:H7 in Calves: Preliminary Studies — CATHY BROWN, University of Georgia, Athens, GA, U.S.A.
- Effect of Dietary Stress and Antibiotic Use on *E. coli* Floral Stability and Prevalence of *E. coli* O157:H7 — DALE HANCOCK, Washington State University, Pullman, WA, U.S.A.

- Differentiation of Shiga-like Toxin Producing *E. coli* (SLTEC) that are Pathogenic for Humans from Those that are Nonpathogenic — CARLTON GYLES, University of Guelph, Guelph, Ontario, Canada
- Molecular Tools for Identification of Serotype 4b Strains and for Detection of the "Epidemic Clone" of *Listeria monocytogenes* — SOPHIA KATHARIOU, University of Hawaii at Manoa, Honolulu, HI, U.S.A.
- PCR Assay for the Detection of *Cryptosporidium* in Foods — MANSEL GRIFFITHS, University of Guelph, Guelph, Ontario, Canada
- Extension of Quantitative Microbial Risk Assessment Methods to Foodborne Pathogens: Preliminary Studies — CHARLES HAAS, Drexel University, Philadelphia, PA, U.S.A.
- Quantitative Risk Assessment for *E. coli* O157:H7, Verotoxigenic *E. coli* (VTEC) and *Listeria monocytogenes* — ANNA LAMMERDING, Health Canada, Guelph, Ontario, Canada

WEDNESDAY AFTERNOON

Symposium of Sensory Characteristics of Dairy Foods

- Principles and Pitfalls of the Sensory Evaluation of Dairy Foods — JOHN BRUHN, University of California-Davis, Davis, CA, U.S.A.
- Fluid Milks — ELLEN SPEAR, EMS Associates, Corpus Christi, TX, U.S.A.
- Cottage Cheese — ROBERT BRADLEY, University of Wisconsin, Madison, WI, U.S.A.
- Hard and Specialty Cheeses — MARK BATES, Washington State University, Pullman, WA, U.S.A.
- Frozen Dairy Desserts — ROBERT MARSHALL, University of Missouri, Columbia, MO, U.S.A.
- Profiles of Nutrients in Frozen Dairy Desserts — There is More than Sensory Pleasures — CHRISTINE BRUHN, University of California, Davis, CA, U.S.A.

Food Worker Hand Hygiene: A Factor in Foodborne Illness

- The Role of Hands in Transmission of Foodborne Illness — BERT BARTLESON, Olympia, WA, U.S.A.
- Handwashing and the Final Rule on Pathogen Reduction — JOHN DAMARE, Compounds Reg. Branch, FSIS, Washington, D.C., U.S.A.
- Foodworker Hand Disinfectants: Products, Uses and Regulatory Consideration — MICHAEL DOLAN, GoJo Industries Inc., Cuyahoga Falls, OH, U.S.A.

- Field Experience with Automated Handwashing — NOEL SEGAL, Forestville, MD, U.S.A.
- Gloves and Pathogen Control on Hands — DWANE CHARBONNEAU, Procter and Gamble, Mason, OH, U.S.A.

Microbiological Issues Associated with Pork

- Use of Risk Assessment for Preharvest Control of Zoonotic Parasites in Swine — RAY GAMBLE, USDA-ARS, Beltsville, MD, U.S.A.
- Occurrence of *Salmonella* in Swine — PAULA FEDORKA CRAY, USDA-ARS-RR, Athens, GA, U.S.A.
- Association and Incidence of *Arcobacter*, *Helicobacter*, and *Campylobacter* in Pork — IRENE WESLEY, USDA-ARS, Ames, IA, U.S.A.
- Results of FSIS's Microbiological Baseline Surveys of Market Hog Carcasses and Raw Ground Pork Sausage — ANN MARIE MCNAMARA, USDA-FSIS-OPHIS, Washington, D.C., U.S.A.
- FoodNet — Active Surveillance Related to Pork — DREW VOETSCH, CDC, Atlanta, GA, U.S.A.
- Beyond Microbiology: Applying Our Studies to Effective Food Safety Interventions — ANNE PETERSON, Oakton, VA, U.S.A.

Risk Management of Food from Farm to Fork

- Risk Management of Food from Farm to Fork — DON SCHAFFNER, Rutgers University, New Brunswick, NJ, U.S.A. and PETER SNYDER, Hospitality Inst. of Technology & Management, St. Paul, MN, U.S.A.
- "Eating Out: Will the Risk Manage Us or Will We Manage the Risk?" — FRANK YIANNAS, Walt Disney World Co., Lake Buena Vista, FL, U.S.A.
- A Consumer's Perspective of Acceptable Food Risk — CAROLINE SMITH DEWAAL, Center for Science in the Public Interest, Washington, D.C., U.S.A.
- A Food Manufacturer's Perspective of Food System Risk Management — DANE BERNARD and JENNY SCOTT, National Food Processor's Assoc., Washington, D.C., U.S.A.
- Food System Risk Management: The European Perspective — S. H. W. NOTERMANS, Bilthoven, The Netherlands
- The Role of HACCP as a Regulatory Tool for Risk Management — MICHAEL TAYLOR, King and Spalding, Washington, D.C., U.S.A.



GENERAL INFORMATION

IAMFES 85th ANNUAL MEETING AUGUST 16-19, 1998 NASHVILLE, TENNESSEE

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

■ Meeting Information

Register today to obtain valuable information on advancing food protection worldwide through the most contemporary methods of food microbiology, processing, safe handling, and current regulatory aspects of food safety. Registration fee includes all technical sessions; symposia; poster presentations; a Cheese and Wine Reception; admittance to the exhibit hall; and a program and abstract book containing general program information and abstracts of symposia, technical papers, and posters. Appropriate dress for the Meeting is business casual.

■ Registration Information

Please mail the registration form with payment today. Registrations post-marked after July 15, 1998 must pay the late registration fee. Checks should be made payable to: IAMFES, Inc., 6200 Aurora Avenue, Suite 200W, Des Moines, IA 50322-2863, U.S.A. For faster service, use your credit card and call 800.369.6337, or fax the completed registration form with credit card information to 515.276.8655.

■ Refund/Cancellation Policy

Requests for cancellations must be received in writing no later than July 31, 1998 (registration fee less a \$50 processing charge will be refunded). Cancellations received after July 31, 1998 will not receive a refund, but the registration may be transferred to a colleague with written notification.

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- \$ 75.00 Dairy, Food and Environmental Sanitation
- \$ 120.00 Dairy, Food and Environmental Sanitation and Journal of Food Protection
- \$ 37.50 *Student Membership with Dairy, Food and Environmental Sanitation or Journal of Food Protection
- \$ 60.00 *Student Membership with Dairy, Food and Environmental Sanitation and Journal of Food Protection

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SURFACE RATE - \$ 22.50 per journal title
AIRMAIL - \$ 95.00 per journal title

TICKET INFORMATION

■ Cheese and Wine Reception (August 16, 1998)

Share in what has become an IAMFES tradition for Annual Meeting attendees and guests. The Cheese and Wine Reception begins immediately following the Ivan Parkin Lecture on Sunday evening in the IAMFES exhibit hall. Enjoy conversation with exhibitors, colleagues, and friends.

■ Monday Night Social Event Hot Country Night — (August 17, 1998)

There's no time like a good time, and the Wildhorse Saloon is just the place to find it. The evening includes dinner, music, dancing, and a few surprises. Children ages 14 and under must be accompanied by an adult.

■ Awards Banquet — (August 19, 1998)

The IAMFES Annual Meeting concludes with an evening of recognition for deserving food safety professionals. A reception opens the evening outside the banquet hall. Dinner is served in an elegant setting prior to the award presentations. Additional tickets are available. Business attire is requested for this special evening.

■ Other Events

- Grand Ole Opry — Saturday, 8/15
- IAMFES Golf Tournament — Sunday, 8/16
- Music City Sites — Sunday, 8/16
- Historic Nashville — Monday, 8/17
- Jack Daniel's Distillery — Tuesday, 8/18
- Children's Banquet — Wednesday, 8/19

HOTEL INFORMATION

For reservations, contact the hotel directly and identify yourself as an IAMFES attendee to receive a special rate of \$116 per night, single or double. Please make your reservations as soon as possible, the room block is held only until July 14, 1998.

Renaissance Nashville Hotel
611 Commerce Street
Nashville, Tennessee 37203
Phone: 615.255.8400; Fax: 615.255.8163

CHILD CARE

Adult supervised activities for children ages 4 to 12 will be available Monday through Wednesday, 8:30 a.m. to 12:00 p.m. and 1:30 p.m. to 5:00 p.m. A pre-registration fee of \$20.00 per day for each child is required; snacks will be provided. The room is subject to a minimum attendance. Participants will be notified if cancellation is necessary by July 24, 1998.

REGISTRATION FORM

Please register me for the IAMFES 85th Annual Meeting – Nashville, Tennessee – August 16-19, 1998

FOR OFFICE USE
 Member # _____ First Initial Last name
 Registration # _____
 DFES

First Name (please print — will appear on badge) _____ M.I. _____ Last Name _____
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Please indicate here if you have a disability requiring special accommodations.

Status (Please check applicable boxes)

20 Yr. Member 30 Yr. Member 50 Yr. Member Past President Speaker Honorary Life Member Sustaining Member

REGISTER BY JULY 15, 1998 TO AVOID LATE REGISTRATION FEES

REGISTRATION:

Registration (Awards Banquet included) _____
 Student _____
 Retired IAMFES Member _____
 One Day Registration: Mon. Tues. Wed. _____
 Spouse/Companion (Name): _____
 Children (15 & Over, Names): _____
 Children (14 & Under, Names): _____
 Child Care (Ages 4 to 12): Mon. Tues. Wed. _____

MEMBERS

\$ 230 (\$280 late)
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 \$ 115 (\$140 late)
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 Not Available
 \$150 (\$170 late)
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AMOUNT

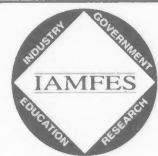
OTHER EVENTS:

Grand Ole Opry (Sat., 8/15) \$ 25 _____
 IAMFES Golf Tournament (Sun., 8/16) \$ 80 (\$ 95 late) _____
 Music City Sites (Sun., 8/16) \$ 28 (\$ 33 late) _____
 Historic Nashville (Mon., 8/17) \$ 41 (\$ 46 late) _____
 Hot Country Night (Mon. Night Social, 8/17) \$ 36 (\$ 41 late) _____
 Children's Rate (14 & Under) \$ 21 (\$ 26 late) _____
 Jack Daniel's Distillery (Tues., 8/18) \$ 29 (\$ 34 late) _____
 IAMFES Awards Banquet (Wed., 8/19) \$ 40 (\$ 45 late) _____
 Children's Banquet (Wed., 8/19) \$ 20 (\$ 25 late) _____

JOIN IAMFES TODAY AND SAVE!!! (Attach a completed membership application)

TOTAL AMOUNT ENCLOSED

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EXHIBITORS DO NOT USE THIS FORM

Tours and Special Events **of the IAMFES 85th Annual Meeting**

Saturday, August 15, 1998 — 5:00 p.m. — 9:30 p.m.
The Grand Ole Opry
Registration: \$25

Experience a true Southern tradition with a night at the world famous Grand Ole Opry. With your reserved seating at the Opry you can sit back and relax or jump in and clap along as renowned musicians, singers and comedians delight you with their talents. You never know who you'll see at the Grand Ole Opry.

Sunday, August 16, 1998 — 6:00 a.m. — 1:30 p.m.
IAMFES Golf Tournament
Registration: \$80 (Late \$95)

Join your colleagues for a great round of golf. Board the bus to travel to the Hermitage Golf Course located near President Andrew Jackson's stately Hermitage along the banks of the Cumberland River. Enjoy a continental breakfast before teeing off in the IAMFES BEST-BALL golf tournament. After your game, join us for prizes while eating lunch. Golf, breakfast, lunch and transportation all included! Tournament is open to golfers of all skill levels. To request a golf registration form, call IAMFES at 800.369.6337 or 515.276.3344.

Sunday, August 16, 1998 — 9:00 a.m. — 1:00 p.m.
Music City Sites
Registration: \$28 (Late \$33)
Lunch on your own

Don't miss this exciting tour of downtown Nashville, Second Avenue, Tennessee State Capitol, Governor's Mansion, and numerous other points of interest. The tour will also include a drive down the world famous Music Row and a stop at the Country Music Hall of Fame.

Sunday, August 16, 1998
Opening Session — 7:00 p.m.
Ivan Parkin Lecture

Lecturer: Christine Bruhn, University of California-Davis, Center for Consumer Research, Davis, CA.

Cheese and Wine Reception — (Exhibit Hall)
8:00 p.m. — 10:00 p.m.

Join friends and colleagues for complimentary refreshments while viewing the educational exhibits.

Exhibit Hall Hours

Sunday, August 16 — 8:00 p.m. — 10:00 p.m.

Monday, August 17 — 9:30 a.m. — 1:30 p.m.

3:00 p.m. — 6:30 p.m.*

Tuesday, August 18 — 9:30 a.m. — 2:00 p.m.

**Social Reception — 5:00 p.m. — 6:30 p.m.*

Monday, August 17, 1998 — 9:00 a.m. — 3:00 p.m.
Historic Nashville
Registration: \$41 (Late \$46)
Lunch included

This historic view of Nashville begins with a stop in Centennial Park and a tour of the Parthenon. You will then enjoy a wonderful buffet lunch at the Hermitage, the beloved home of President Andrew Jackson. Following lunch you will tour the Hermitage and its grounds.

Monday, August 17, 1998 — 6:00 p.m. — 9:00 p.m.
Hot Country Night
Registration: \$36 (Late \$41)
Children's Rate (14 & Under) \$21 (Late \$26)

There's no time like a good time, and the Wildhorse Saloon is just the place to find it. The evening includes dinner, music, dancing, and a few surprises. Children ages 14 and under must be accompanied by an adult.

Tuesday, August 18, 1998 — 9:00 a.m. — 4:30 p.m.
Jack Daniel's Distillery
Registration: \$29 (Late \$34)
Lunch on your own

Settle back as you wind through the beautiful Tennessee countryside to Shelbyville, home of Tennessee walking horses and the Walking Horse Museum. Then you will travel on to Lynchburg where you will step back in time on the historic square. You'll have a chance to stroll around the square and grab a bite to eat before your entertaining tour of the world famous Jack Daniel's Distillery.

Wednesday, August 19, 1998
IAMFES Annual Awards Banquet
Reception: 6:00 p.m. — 7:00 p.m.
Banquet: 7:00 p.m.
Registration: \$40 (Late \$45)

Wednesday, August 19, 1998
IAMFES Children's Banquet
Time: 6:30 p.m. — 9:30 p.m.
Registration: \$20 (Late \$25)

Child Care

Adult supervised activities for children ages 4 to 12 will be available Monday through Wednesday, 8:30 a.m. to 12:00 p.m. and 1:30 p.m. to 5:00 p.m. A pre-registration fee of \$20.00 per day for each child is required; snacks will be provided. The room is subject to a minimum attendance. Participants will be notified if cancellation is necessary by July 24, 1998.

Coming Events

MAY

• **7-8, HACCP for Foodservice**, offered by Select Concepts, Dallas, TX. This 2-day workshop covers prerequisite programs and HACCP principles. For more information, contact Leslie Wisniewski, Select Concepts, 3701 W. Northwest Hwy., Suite 169C, Dallas, TX 75220; or Phone: 214.350.8644.

• **12-13, 5th Annual Cultured Dairy Products Symposium**, at the Hyatt Regency Hotel, Milwaukee, WI. Presentations on current technical issues facing the cultured dairy products industry will be given. For more information, contact Chr. Hansen, Inc., 9015 W. Maple St., Milwaukee, WI 53214-4298; Phone: 414.607.5700; 800.558.0802; Fax: 414.607.5704.

• **18-19, PAMFES 1998 Annual Meeting**, at the Nittany Lion Inn, State College, PA. For additional information, contact Gene Frey at 717.397.0719.

• **19-21, Principles of Food Microbiology**, Philadelphia, PA. For further information, contact Silliker Laboratories, Phone: 800.829.7879; Fax: 708.957.8405.

• **20-21, Applied Dairy Chemistry**, offered by the University of Wisconsin-Madison, Dept. of Food Science, Madison, WI. This course will cover the chemistry of milk and milk products as they relate to specific dairy processing and control functions. For further information, contact Dr. Bill Wendorff at 608.263.2015.

JUNE

• **3-5, Fermentation Microbiology Workshop**, sponsored by the American Type Culture Collection. For more information, contact ATCC, Workshop Coordinator, 12301 Parklawn Dr., Rockville, MD 20852; Phone: 301.231.5566; 800.359.7370; Fax: 301.816.4364; E-mail: workshops@atcc.org.

• **3-5, Practical HACCP for Food Processors**, Chicago, IL. For further information, contact Silliker Laboratories, Phone: 800.829.7879; Fax: 708.957.8405.

• **4-5, Tennessee Assn. of Milk, Water & Food Protection Annual Meeting**, Ellington Center, Nashville, TN. For additional information, contact Ann Draughon, Phone: 423.974.7425.

• **7-12, 4th World Congress Foodborne Infections and Intoxications**, in Berlin. The continued increase of foodborne diseases and the emergence of new or newly recognized agents of diseases all over the world underline the importance of the Congress. For further information, contact Congress Office 4th World Congress, Federal Institute for Health Protection for Consumers and Veterinary Medicine, Diederdsdorfer Weg 1, D-12277 Berlin; Phone: 49.30.8412.2158; Fax: 49.30.8412.2957; E-mail: 4.wkoffice@bgvv.de.

• **8-10, Mykotoxin Workshop**, in Detmold, Germany. The workshop is organized by the Institute for Biochemistry of Cereals and Potatoes, Federal Centre for Cereal, Potato, and Lipid Research, Schutzenberg 12, D-32756 Detmold, Germany. For information, contact Dr. Wolff at Phone: 49.5231.741.121 (131); Fax: 49.5231.741.130 (100); E-mail: betsche.bagkf@t-online.de.

• **9-10, Food Plant Sanitation Workshop**, Atlanta, GA. This workshop focuses on the essential elements of today's rigid requirements for food safety and sanitation programs. For additional information, contact AIB International, 1213 Bakers Way, P.O. Box 3999, Manhattan, KS 66505-3999; Phone: 785.537.4750; 800.633.5137; Fax: 785.537.1493.

• **16-18, Hazard Analysis & Development of Your HACCP Plan**, Guelph. A practical, business approach to help you in designing your own HACCP plan. You'll build product descriptions, conduct a

hazard analysis, determine critical limits and control measures—all on your own processing line. For additional information, contact Guelph Food Technology Centre, 88 McGilvray St., Guelph, Ontario, N1G 2W1; Phone: 519.767.5036; Fax: 519.836.1281.

• **18-19, HACCP Workshop**, Cherry Hill, NJ. This format provides for an intensive evaluation of the HACCP principles and elements for developing a successful program at your facility. For additional information, contact AIB International, 1213 Bakers Way, P.O. Box 3999, Manhattan, KS 66505-3999; Phone: 785.537.4750; 800.633.5137; Fax: 785.537.1493.

• **19-20, IFT's 1998 Basic Symposium**, Atlanta, GA. Reaction flavors, biosynthesis, taste masking, interaction between flavors and food components, challenges in flavoring nutraceuticals, and flavor analysis are among the new developments to be covered. For more information, contact Dean Duxbury at 312.782.8427 ext. 171 or visit IFT's Web site: www.ift.org.

JULY

• **10-11, 18th International Workshop on Rapid Methods and Automation in Microbiology**, at Kansas State University, Manhattan, KS. Hands-on experiments, demonstrations, lectures, colloquium, scientific poster sessions and competition will occur. For scientific content, contact: Daniel Y. C. Fung, Director; Phone: 785.532.5654; Fax: 785.532.5681; E-mail: dfung@oz.oznet.ksu.edu. For registration information, contact: Janice Nikkel, U.S. Phone: 800.432.8222; Outside the U.S. 785.532.5575; Fax: 785.532.5637; E-mail: ksucon@dce.ksu.edu.

• **27-31, Laboratory Methods in Food Microbiology**, South Holland, IL. For further information, contact Silliker Laboratories, Phone: 800.829.7879; Fax: 708.957.8405.

AUGUST

• **16-19, IAMFES Annual Meeting**, in Nashville, Tennessee at the Renaissance Nashville Hotel. Registration information available in this issue of *DFES* on pages 256-257 or contact Julie Cattanach at Phone: 800.369.6337; 515.276.3344; Fax: 515.276.8655; E-mail: jccattanach@iamfes.org.

• **24-28, The 10th International Conference on Production Diseases in Farm Animals**, Utrecht, The Netherlands. For additional information, contact the Congress Secretariat: Royal Netherlands Veterinary Association, P.O. Box 14031, 3508 SB Utrecht, The Netherlands; Phone: 31 30 251 01 11; Fax: 31 30 251 17 87; E-mail: knmvd@pobox.ruu.nl; Internet: www.knmvd.nl.

SEPTEMBER

• **6-9, InterMopro 98, International Trade Fair for Dairy Products**, in Düsseldorf, Germany.

For further information, contact Dusseldorf Trade Shows, Inc., 150 N. Michigan Ave., Suite 2920, Chicago, IL 60601; Phone: 312.781.5180; Fax: 312.781.5188; Web site: www.dtsusa.com/dts/.

• **23-25, Microscopy/Photomicrography Workshop**, sponsored by the American Type Culture Collection. For more information, contact ATCC, Workshop Coordinator, 12301 Parklawn Dr., Rockville, MD 20852; Phone: 301.231.5566; 800.359.7370; Fax: 301.816.4364; E-mail: workshops@atcc.org.

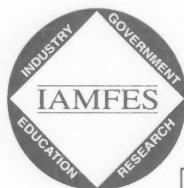
• **25-29, China Brew & Beverage '98**, at China International Exhibition Centre, Beijing, China. For details, contact Rebecca Chan or Ling Chan of Business & Industrial Trade Fairs Ltd., Unit 1223, 12/F Hongkong International Trade & Exhibition Centre, 1 Trademark Dr., Kowloon Bay, Hong Kong or Phone: 852.2865.2633; Fax: 852.2866.1770, 2866.2076.

NOVEMBER

• **8-12, 1998 International Exposition for Food Processors**, Chicago, IL. For more information, contact Cheryl Clark at Phone: 703.684.1080; Fax: 703.548.6563; E-mail: fpmsa@clark.net.

• **9-11, ASI Food Safety Consultants HACCP Workshop**, held at the Holiday Inn-Downtown Riverfront, St. Louis, MO. For further information, contact ASI Food Safety Consultants, Inc., Vorrie Strong or Christine VerPlank, Phone: 314.725.2555; 800.477.0778; Fax: 314.727.2563.

• **16-18, 1st NSF International Conference on Food Safety: HACCP - Science, Art, and Industry**, Hyatt Regency Albuquerque, Albuquerque, NM. For additional information, contact Wendy Raeder at Phone: 734.769.8010, ext. 205; Fax: 734.769.0109; E-mail: raeder@nsf.org.



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DFES April '98

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108	123	138	153	169	183	198	213	228	243	258	273	288	303	318	333	348	363	378	393
109	124	139	154	170	184	199	214	229	244	259	274	289	304	319	334	349	364	379	394
110	125	140	155	171	185	200	215	230	245	260	275	290	305	320	335	350	365	380	395
111	126	141	156	172	186	201	216	231	246	261	276	291	306	321	336	351	366	381	396
112	127	142	157	173	187	202	217	232	247	262	277	292	307	322	337	352	367	382	397
113	128	143	158	174	188	203	218	233	248	263	278	293	308	323	338	353	368	383	398
114	129	144	160	174	189	204	219	234	249	264	279	294	309	324	339	354	369	384	399

IAMFES Offers the Dairy Practices Council "Guidelines for the Dairy Industry"

IAMFES has agreed with the Dairy Practice Council to distribute their "Guidelines for the Dairy Industry." DPC is a non-profit organization of education, industry and regulatory personnel concerned with milk quality and sanitation throughout the United States. In addition, its membership and subscriber rosters list individuals and organizations throughout the United States, Canada and other parts of the world.

For the past 28 years, DPC's primary mission has been the development and distribution of educational guidelines directed to proper and improved sanitation practices in the production, processing, and distribution of high quality fluid milk and manufactured dairy products.

The DPC Guidelines are written by professionals who comprise six permanent Task Forces. Prior to distribution, every Guideline is submitted for approval to the State Regulatory Agencies in each of the member states which are now active participants in the DPC process. Should any official have an exception to a section of a proposed guideline, that exception is noted in the final document.

The Guidelines are renowned for their common sense and useful approach to proper and improved sanitation practices. We think that they will be a valuable addition to your professional reading library.

The entire set consists of 56 guidelines including:

- | | |
|---|---|
| 1 Planning Dairy Freestall Barns | 34 Butterfat Determinations of Various Dairy Products |
| 2 Effective Installation, Cleaning and Sanitizing of Milking Systems | 35 Dairy Plant Waste Management |
| 3 Selected Personnel in Milk Sanitation | 36 Dairy Farm Inspection |
| 4 Installation, Cleaning, & Sanitizing of Large Parlor Milking Systems | 37 Planning Dairy Stall Barns |
| 5 Directory of Dairy Farm Building & Milking System Resource People | 38 Preventing Off-flavors in Milk |
| 7 Sampling Fluid Milk | 39 Grade A Fluid Milk Plant Inspection |
| 8 Good Manufacturing Practices for Dairy Processing Plants | 40 Controlling Fluid Milk Volume and Fat Losses |
| 9 Fundamentals of Cleaning and Sanitizing Farm Milk Handling Equipment | 41 Milkrooms and Bulk Tank Installation |
| 10 Maintaining & Testing Fluid Milk Shelf-Life | 42 Stray Voltage on Dairy Farms |
| 11 Sediment Testing and Producing Clean Milk | 43 Farm Tank Calibrating and Checking |
| 13 Environmental Air Control & Quality for Dairy Food Plants | 44 Troubleshooting Dairy Barn Ventilation Systems |
| 14 Clean Room Technology | 45 Gravity Flow Gutters for Manure Removal in Milking Barns |
| 16 Handling Dairy Products from Processing to Consumption | 46 Dairy Odor Control |
| 17 Causes of Added Water in Milk | 47 Naturally Ventilated Dairy Cattle Housing |
| 18 Fieldperson's Guide to Troubleshooting High Somatic Cell Counts | 48 Cooling Milk on the Farm |
| 21 Raw Milk Quality Tests | 49 Postmilking Teat Dips |
| 22 Control of Antibacterial Drugs and Growth Inhibitors in Milk and Milk Products | 50 Farm Bulk Milk Collection Procedures |
| 23 Preventing Rancid Flavors in Milk | 51 Controlling the Accuracy of Electronic Testing Instruments for Milk Components |
| 24 Troubleshooting High Bacteria Counts of Raw Milk | 52 Emergency Action Plan for Outbreak of Milkborne Illness in the Northeast |
| 25 Cleaning and Sanitizing Bulk Pickup and Transport Tankers | 53 Vitamin Fortification of Fluid Milk Products |
| 28 Troubleshooting Residual Films on Dairy Farm Milk Handling Equipment | 54 Selection and Construction of Herringbone Milking Parlors |
| 29 Cleaning and Sanitizing in Fluid Milk Processing Plants | 55 Hazard Analysis Critical Control Point System |
| 30 Potable Water on Dairy Farms | 56 Dairy Product Safety (Relating to Pathogenic Bacteria) |
| 31 Composition and Nutritive Value of Dairy Products | 57 Dairy Plant Sanitation |
| 32 Fat Test Variations in Raw Milk | 58 Sizing Dairy Farm Water Heater Systems |
| 33 Brucellosis and Some Other Milkborne Diseases | 59 Production and Regulation of Quality Dairy Goat Milk |
| | 60 Trouble Shooting Microbial Defects: Product Line Sampling & Hygiene Monitoring |
| | 63 Controlling the Quality & Use of Dairy Product Rework |
| | 64 Control Points for Good Management Practices on Dairy Farms |
| | 65 Installing & Operating Milk Precoolers Properly on Dairy Farms |
| | 66 Planning a Dairy Complex - "100 + Questions to Ask" |

If purchased individually, the entire set would cost \$225. We are offering the set, packaged in three loose leaf binders for \$125 plus \$9 shipping and handling (outside the U.S., \$21 for shipping and handling).

Information on how to receive new and updated Guidelines will be included with your order.

To purchase this important source of information, complete the order form below and mail or Fax (515) 276-8655 to IAMFES.

Please enclose \$125 plus \$9 shipping and handling for each set of Guidelines. Shipments outside the U.S. are \$125 plus \$21 shipping and handling. Payment in U.S. \$ drawn on a U.S. Bank or by credit card.

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	Procedures to Investigate Waterborne Illness—2nd Edition	\$8.00	\$16.00	
	Procedures to Investigate Foodborne Illness—4th Edition	6.00	12.00	
	Procedures to Investigate Arthropod-borne and Rodent-borne Illness	6.00	12.00	
	Procedures to Implement the Hazard Analysis Critical Control Point System	6.00	12.00	
	*Pocket Guide to Dairy Sanitation (minimum order of 10)	.50	.75	
	*Before Disaster Strikes...A Guide to Food Safety in the Home (minimum order of 10)	.50	.75	

Multiple copies available at reduced prices.
Phone our order desk for pricing information on quantities of 25 or more.

Shipping/Handling (See Below)
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	Complete Set 3-A Dairy & Egg Standards	\$70.00	\$140.00	
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 or fax your order to 515.276.8655.

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**PAYMENT MUST BE ENCLOSED FOR
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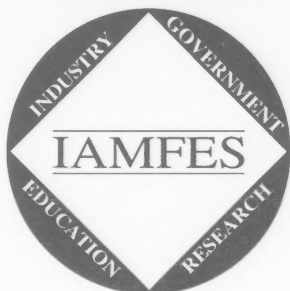
IAMFES booklets

Within U.S.
 First booklet \$2.00
 Each additional booklet \$1.00
 *Guide Booklets—per 10 \$2.50

Outside U.S.
 First booklet \$4.00
 Each additional booklet \$1.00
 *Guide Booklets—per 10 \$3.50

3-A Sanitary Standards
 Within U.S. (each item) \$6.25
 Outside U.S. (each item) \$10.25

Prices effective through August 31, 1998



Your Invitation to Join

The International Association of Milk, Food and Environmental Sanitarians, founded in 1911, is a non-profit educational association of food safety professionals with a mission "to provide food safety professionals worldwide with a forum to exchange information on protecting the food supply."

*** Who are IAMFES Members?**

The Association is comprised of a diverse membership of 2,800 from 50 nations. IAMFES Members belong to all facets of the food protection arena including: Industry, Government and Academia.

*** What are your Benefits as an IAMFES Member?**

Dairy, Food and Environmental Sanitation — A reviewed monthly publication that provides practical and applied research articles and association news, updates, and other related information for food safety professionals. All IAMFES Members receive this publication as part of their membership.

Journal of Food Protection — An international, refereed scientific journal of research and review papers on topics in food science and food aspects of animal and plant sciences. This journal is available to all individuals who request it with their membership.

The IAMFES Lending Library — Provides quality training videos dealing with various food safety issues. IAMFES Members are allowed free use of these videos.

The IAMFES Annual Meeting — Is a unique educational event; three days of technical sessions, symposia and exhibits provide attendees with over 200 presentations on current topics in food protection. IAMFES Members receive a substantially reduced registration fee.

*** To Find Out More...**

To learn more about IAMFES and the many other benefits and opportunities available to you as a Member, please call 515.276.3344 or 800.369.6337; Fax: 515.276.8655; E-mail: iamfes@iamfes.org.



International Association of Milk, Food and Environmental Sanitarians

MEMBERSHIP

Membership with JFP and DFES \$120.00
(12 issues of the *Journal of Food Protection and Dairy, Food and Environmental Sanitation*)

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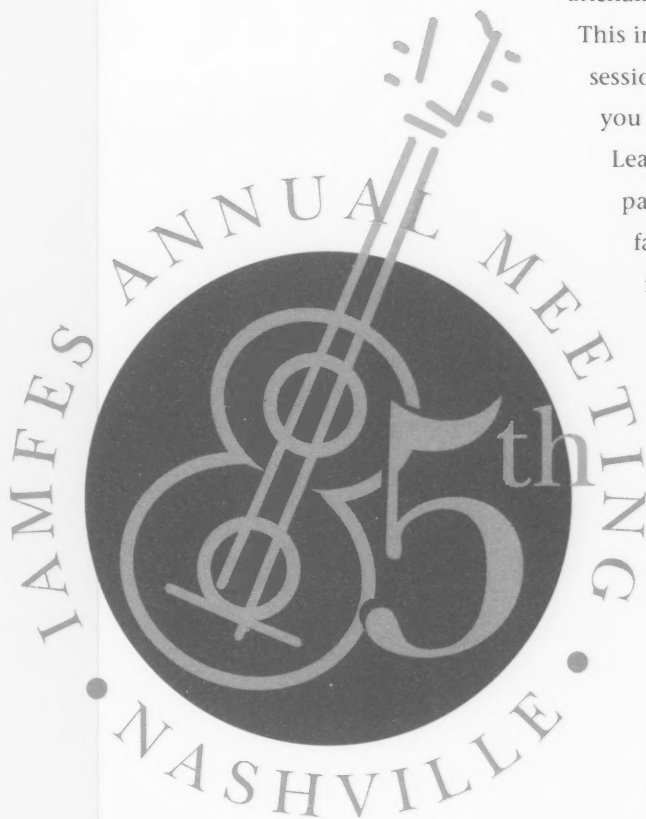
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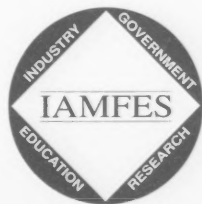
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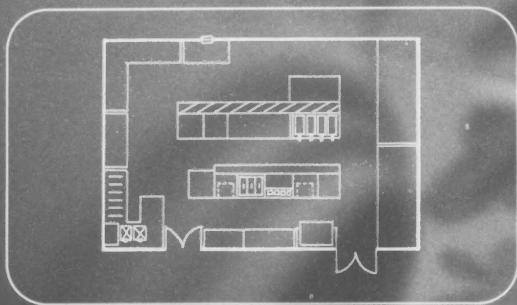
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