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A PUBLICATION OF THE INTERNATIONAL ASSOCIATION OF MILK, FOOD AND ENVIRONMENTAL SCIENTISTS, INC. SEPTEMBER 1999

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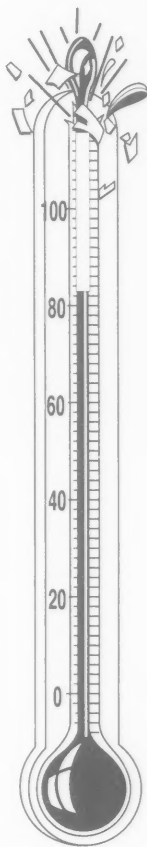
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**Norton Performance Plastics Corp.**, P.O. Box 3660, Akron, OH 44309-3660; 216.798.9240

**Organon Teknika Corp.**, 100 Akzo Ave., Durham, NC 27712; 919.620.2000

**Oxoid, Inc.**, 217 Colonnade Road, Nepean, Ontario, Canada K2E 7K3; 800.567.8378

**PE Applied Biosystems**, 850 Lincoln Centre Dr., Bldg. 400, Foster City, CA 94404; 650.638.5413

**Penn State University**, University Creamery, 12 Borland Laboratory, University Park, PA 16802; 814.865.7535

**PRISM Integrated Sanitation Management**, 8300 Executive Center Dr., Miami, FL 33166-4680; 305.592.6312

**Process Tek**, 1991 Big Bend Dr., Des Plaines, IL 60016; 847.296.9312

**Qualicon, A DuPont Subsidiary**, P.O. Box 80357, Wilmington, DE 19880-0357; 302.695.2262

**R-Tech**, P.O. Box 64101, St. Paul, MN 55164-0101; 800.328.9687

**Raven Biological Labs**, 8607 Park Dr., Omaha, NE 68127; 402.593.0781

**REMEL, Inc.**, 12076 Santa Fe Dr., Lenexa, KS 66215-3594; 800.255.6730

**Rhodia, Inc.**, P.O. Box 592, Madison, WI 53701; 800.356.9393

**Rochester Midland Corp.**, 333 Hollenbeck St., Rochester, NY 14621; 716.336.2360

**Ross Laboratories**, 3300 Stelzer Road, Columbus, OH 43219; 614.624.3785

**Seiberling Associates, Inc.**, 94 North High St., Suite 350, Dublin, OH 43017-1100; 614.764.2817

**Silliker Laboratories Group, Inc.**, 900 Maple Road, Homewood, IL 60430; 708.957.7878

**Universal Sanitizers & Supplies, Inc.**, P.O. Box 50305, Knoxville, TN 37950; 423.584.1936

**Warren Analytical Laboratory**, 650 'O' St., P.O. Box G, Greeley, CO 80632-0305; 800.945.6669

**Weber Scientific**, 2732 Kuser Road, Hamilton, NJ 08691-9430; 609.584.7677

**West Agro, Inc.**, 11100 North Congress Ave., Kansas City, MO 64153; 816.891.1528

**Zep Manufacturing Co.**, 1310 Seaboard Industrial Blvd., Atlanta, GA 30318; 404.352.1680

# QUOTATIONS

## FROM JACK



By JACK GUZEWICH  
IAMFES President

“Change is something we deal with every day of our lives”

By the time you read this column, the Annual Meeting will be over and along with it the business meeting vote on the proposed new constitution, including the name change for our Association. Assuming the Members in attendance at the business meeting voted to approve the changes, ballots will be in the mail to you for the Membership vote on the changes. Soon you will be making your decision about the changes.

Change is something we deal with every day of our lives. Think of the changes you have experienced from your childhood through your school and college days to marriage and a family. That's a lot of change that we see as a natural evolution over time. Then there is the change we experience in our careers. Think of the evolution of the information age from typewriters and regular mail to computers, photocopiers, fax and E-mail. And how about the changes in the food industry over the years such as transportation allowing fresh produce to be available 12 months of the year in northern climates and the explosion of new products that enter the market each year. Members of this organization have no trouble thinking of the many changes that have occurred in food safety in recent years with emerging pathogens and movement from command and control regulations to HACCP to address those challenges.

Some of us see these changes as threats, others as opportunities. Some of these changes seem to

occur as evolutionary processes while others seem much more like revolutions. No matter how you view change there is one thing for sure, it will continue to occur.

IAMFES has changed over the years. We have grown from an organization with a focus on milk safety to one that is concerned with microbial safety of all food products. We have developed a close working relationship with the International Life Sciences Institute (ILSI) and hosted several of their excellent symposia at our Annual Meeting as well as published proceedings of those symposia in our *Journal of Food Protection*. The scope and volume of articles in our Journals have grown, as has the size of our Annual Meeting. In other words we are not the same organization today that we were 20 or 40 years ago and there is every reason to believe that we will be a very different organization in another 20 years. So we need to step back and look at ourselves, define who we are today and where we see our organization going. I think the most telling view of who we are comes from reading the responses to the Member survey we conducted last fall. (The survey has been summarized in past *DFES* columns and a summary can be obtained by contacting the Des Moines office.) Most of our Members identify with our organization and our mission, but not with our name. This confusion is holding us back among our Members and with many prospective Members who don't see

who we are today in what we call ourselves.

Some people feel that a name change means cutting us off from our history or from who we used to be. I can understand that feeling as I share some of it and have given this concern a great deal of thought. I am very proud to call myself a sanitarian. I have been one for almost 30 years. I am very proud of the history of this organization and the contribution this organization has made to the field of milk safety in particular. I am concerned that many of our Members are unaware of our history and therefore can not appreciate how truly

historic a contribution our Association made to milk safety in the first half of this century. Specifically I am referring to the push for milk pasteurization, which most of our Members no doubt take for granted today. It is for these reasons that I am issuing a call for Members to come forward who are willing to develop a written history of our organization. The turn of the century is a good time to undertake such a project. This can be done by reviewing our records and past publications stored in our office in Des Moines as well as those that may exist in university or private collections, not to

mention the vast store of history in the minds of our long-standing Members. I would hope that this history can be shared with our Members as a series of articles we would publish in *DFES* in coming months. Perhaps we can have a paper or two about our history presented at next year's Annual Meeting. Please contact David Tharp or myself if you would like to work on such a project in any capacity.

So now it is time to wrap up with a request that you support our name change as recognition of the organization we have been in the past, for who we are today, and for who we hope to be in the future.

## EVERYONE CAN FIGHT BAC!™

As a food safety professional you know that most food-related illnesses can be prevented if the food is handled properly. The problem is how to communicate that to consumers and employees!

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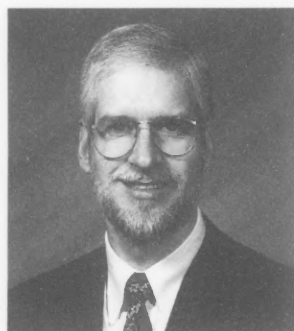
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The Partnership for Food Safety Education,  
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**We have the power  
to FIGHT BAC!™**

# COMMENTARY

## FROM THE EXECUTIVE DIRECTOR



By DAVID W. THARP  
IAMFES Executive Director

“Again, I join with Jack to ask for your assistance in providing historical information about the Association”

As our new President Jack Guzewich states in his column, “by the time you read this column, the IAMFES 86th Annual Meeting will be over ...” In Jack’s first paragraph, he discusses the Constitution and Bylaws vote that was taken at the Meeting. He had to assume that the vote passes because his column was written prior to the beginning of August.

Well, I have one advantage that Jack did not have and that is that I could wait until the Meeting was concluded to complete my column! I can tell you that the verbal vote taken overwhelmingly accepted the proposed Constitution and Bylaws, thereby accepting the new Association name: “International Association for Food Protection.” Now, we also want you to realize that this is not the end of the process. Even if you were unable to attend the Annual Business Meeting, you now have an opportunity to voice your support of the new name.

After the positive vote, ballots were mailed to all IAMFES Members in good standing. Your ballot, with information filled out correctly, must be received in the IAMFES office not later than September 30, 1999 in order to be a valid vote. Please follow the instructions on the Ballot Envelope to ensure your vote will be counted. The vote results will be announced officially in the November issue of *Dairy, Food and Environmental Sanitation*. Results will also be announced at the IAMFES Web site ([www.iamfes.org](http://www.iamfes.org)) by October 15th.

Another topic that Jack discusses in his column is the history of IAMFES, how we began, where we have been, contributions the Association and Members have made to a safer food supply, and the many contributions to dairy product quality and safety. He has an excellent idea to accumulate a history of IAMFES from Members’ memories and written articles in our early journals. We join with Jack to invite our long-time Members to write about your experiences early in your careers. I’m certain that if you take the time to do so, other Members will find this information very interesting!

Both young Members and long-time Members can benefit from your knowledge and expertise. Our newer Members can gain a sense of “how it was” before they became interested in food safety. They will recognize the improvement of conditions and our environment that have taken place in the last 20, 30 or 40 years! Some of our longtime Members will have their memories jogged from reading your thoughts. Please take time to write your part of IAMFES history.

If you need assistance from our office to gather articles or information that appeared in archived IAMFES journals, please contact me at the Des Moines office. We will be happy to assist you in your research as we have most all of the Association journals back to 1927! We also have an “Index of the Twenty-Five Annual Reports of the International Association of Dairy and Milk



Inspectors 1912-1936." On a sad note, we are missing the Annual Reports from 1912 through 1926. Can you help us out? Do you know where we can obtain these publications?

I want to share just a couple of items from some of these old journals with you to hopefully stimulate your interest. First, in the 1927 issue of the Annual Report, the earliest that we have available, Dr. W. A. Shoults from Winnipeg, Manitoba, Canada states in his Presidential Address that nine Members formed the Association in October of 1911 and now (after 16 years) it has grown to about 180 Members. It is too late to run this report in this issue of *DFES*, but watch the October issue to read the whole report.

In October of 1937, a very special journal was available in Louisville, Kentucky when the Association held its Annual Meeting. Volume 1, Number 1 of the *Journal of Milk Technology* began distribution. The announcement on page 1 read:

This, the first issue of the *Journal of Milk Technology*, is published especially for the Twenty-sixth Annual Meeting of the International Association of Milk Sanitarians at Louisville,

Kentucky, October 11-13, 1937. The journal is the official publication of the Association.

Beginning in January 1938, the journal will be inaugurated as a bi-monthly publication and will be issued in lieu of the Year Book heretofore published by the Association.

The Report of the Special Committee on Association Publication and the editorial the *Journal of Milk Technology* contained in this issue explain the creation of the journal and its scope. It is anticipated that the *Journal of Milk Technology* will prove to be a valuable medium to all persons and organizations concerned with any of the various phases of the milk and milk products industry and its man ramifications, whether from the standpoint of its official, industrial, regulatory, quality control, technical or nutritional aspects. The journal will likewise be of interest to the general public and milk consumers.

The name of the journal was changed to *Journal of Milk and Food Technology* in 1947 and has been know as the current *Journal of Food Protection* since 1977. We will also print the Report of the Special Committee on Association

Publication in October's *DFES*. I think you'll find it interesting. These early Members identified a need, organized a plan, and met their goal so that others may benefit. Do you think they would have ever envisioned what an effect that the *Journal of Food Protection* has on our food supply today?

Another interesting piece of information was found in the September 1938 issue of *Journal of Milk Technology*. The announcement giving details of the host city for the 1938 Annual Meeting. Cleveland was the site and the Hotel Allerton was the location. Rates at the Allerton were \$1.75 with running water, \$2.00 with running water and a lavatory and \$2.50 for a room with a private bath! Suites, with a living room, bedroom and bath were available for \$7.00. My how times have changed!

Again, I join with Jack to ask for your assistance in providing historical information about the Association. I also ask that you return your ballot in a timely manner so that you can help shape the future of the Association. Thank you for your support of this great (historical) organization!

## REMINDER

**IAMFES  
OFFICIAL BALLOT**  
To vote for restatement and amendment to  
The IAMFES Constitution

A "yes" vote indicates acceptance of the restatement and amendment of the IAMFES Constitution thereby changing the Association name to the International Association for Food Protection. A "no" vote rejects the restatement and amendment of the IAMFES Constitution. Indicate your vote by placing an "X" in the box beside your desired vote.

Yes  No

(NOTE: Your ballot must be mailed in the "IAMFES Ballot Envelope" and must be received by the IAMFES office no later than September 30, 1999.)

Remember to return your  
ballot to the IAMFES Office by  
September 30, 1999 and vote "YES."

# **Evaluation of Electronic Information Sources to Identify Food Safety Issues for Risk Management and Communication: The Creation and Assessment of the Food Safety Network (FSnet)**

Douglas A. Powell,<sup>1\*</sup> David M. Alves,<sup>2</sup> John Lynch,<sup>3</sup> Anna Lammerding,<sup>4</sup> and Mansel W. Griffiths<sup>1</sup>

## **SUMMARY**

A prototype electronic bulletin board for food safety risk managers, the Food Safety Network (FSnet), was established in Guelph, Ontario, Canada, and evaluated over a three-month period to determine if electronic information services could enhance the capability of the 10 study participants to respond to food-safety issues in a timely manner, thereby augmenting existing risk assessment, management, and communication activities. Information in the form of news stories or summaries from around the world was uploaded to the FSnet bulletin board on a daily basis. A total of 447 individual stories were uploaded to FSnet, of which 60 percent were deemed of interest by study

participants; of those stories deemed interesting, 91 per cent were first discovered through FSnet. Qualitatively, through personal interviews using a standardized set of questions, nine of the 10 study participants reported that FSnet added to their level of competence at work, if not directly then indirectly. The results suggest that FSnet was meeting its intended goal as an electronic communications tool to assist in risk analysis activities, to rapidly identify issues for risk management and communication activities, to enhance awareness of public concerns in scientific and regulatory circles, and to exchange timely and current information for direction of research and for diagnostic or investigative activities.

## INTRODUCTION

Traditionally, information is conveyed upward in an organization much more rapidly than it is communicated horizontally to those who may have a need to know, primarily because of the lack of appropriate mechanisms for horizontal exchange (2). Yet scientists and others within an organization are increasingly being asked to speak on food safety issues in the public domain. As bureaucracies flatten the information chain of command, front-line staff are making more decisions and have a greater need for timely information on the public discussion of an evolving risk scenario.

Although public opinion surveys offer insight into public perceptions of microbial food safety (1, 4), such research tools are static and fixed at a particular point in time. Further, media coverage often leads public opinion (5, 10), establishing political and scientific priorities and framing the public discussion of a risk issue (7, 9).

Researchers have recently capitalized on developments in electronic communication to enhance public health surveillance systems and to report notifiable diseases and clusters of disease outbreaks (3, 6, 12, 13). Yet such systems, crucial to effective public health surveillance, are nevertheless limited in providing insight into the broad public discussion of a risk issue.

To provide practical tools to risk managers, a multi-agency project to assess the effectiveness of on-line information services was established in Guelph, Ontario, Canada. The result was the Food Safety Network (FSnet), a prototype electronic bulletin board for risk managers. The research objective was to determine if electronic information services can enhance the capability of Guelph-based government agencies and others to respond to food-safety issues in a timely manner, thereby augmenting existing risk assessment, management, and communication activities.

## METHOD

Within the Guelph area are several agencies, representing all levels of government that have responsibility for human health, animal health, or food testing. Food safety issues encompass part or all of the activities of these groups. The opportunity existed to establish and evaluate a computer-based telecommunications network that would rapidly alert scientists and managers about events that warranted issue management or risk communication activities, and allow timely exchange of current information for direction of research and for diagnostic or investigative activities.

A three-month trial involving 10 risk managers from the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA), the Health of Animals Laboratory of Agriculture and Agri-Food Canada (now part of Health Canada), the Ontario Region office of Agriculture and Agri-Food Canada, Health Canada, the Wellington County Health Unit, and the University of Guelph began on Jan. 30, 1995. Initially, a prototype electronic bulletin board system was established that allowed participants in FSnet to dial into a dedicated computer housing the FSnet information. The bulletin board was designed with various levels of security, and access was assigned selectively to allow only specific users to interact on a confidential basis when necessary. The system was designed with ease of use as the primary criterion, and a standardized set of user guidelines was distributed to the pilot group of managers. A dial-in computer bulletin board was chosen because several of the participating agencies did not have Internet access when the system was designed in the fall of 1994.

Information in the form of news stories or summaries was uploaded daily to the FSnet bulletin board. The information in the individual stories was selected from several sources. American and international news wire services, as well as science- and technology-related press releases, were searched daily through

the United States-based electronic information provider, CompuServe, using food-safety related keywords. Articles related to food safety in the broadest sense were retrieved and summarized for inclusion in the daily FSnet postings. Relevant Internet-based mailing lists and newsgroups were searched daily, as were the hard copy editions of the New York Times, the Toronto Globe and Mail, and the Kitchener-Waterloo Record. The daily North American edition of the New York Times was searched because, as noted by Nelkin (7), the Times is critically important for setting agendas in the media world. The Toronto Globe and Mail functions as the agenda-setting outlet in Canadian media, whereas the Kitchener-Waterloo Record is representative of a mid-sized, local newspaper with both urban and rural news coverage. The Science and Health section of the Associated Press news wire was also searched manually on a daily basis. Relevant articles were summarized for inclusion in FSnet stories. Manual searches of these media outlets were conducted to compliment electronic searches, because electronic indexes and the use of keywords, which have been found to be inconsistent and unreliable, can lead to erroneous results (8, 14).

Comprehensive Canadian print media coverage, from both general circulation and specialty trade publications, was obtained through a three-month contract with Southam Infomart, a Toronto-based electronic information provider, which also allowed direct distribution to up to 10 users without copyright infringement. The 10 participants in the study were individually briefed about the system, appropriate hardware and software alterations were recommended, and the participants were asked to complete daily questionnaires documenting how the FSnet news summaries were used. The trial period ran from January 30, 1995, to April 28, 1995, encompassing 65 working days. A single individual (the content provider) determined what stories were appropriate for inclusion in the daily posting.

**TABLE 1. Total number of stories uploaded to FSnet and percentage of interest to the FSnet content provider, and number downloaded by study participants and percentage of interest to study participants**

Total number of stories uploaded	447	
Of interest to FSnet content provider	349	78%
Number of stories from Infomart	162	
Of interest to FSnet content provider	64	40%
Total number of stories downloaded	824	(out of possible 447 $\times 10 = 4,470$ )
Of interest to FSnet study participants	490	60%

## RESULTS

A total of 447 individual stories collected from the sources already discussed were uploaded to FSnet, for an average of just under seven food safety-related stories per working day. An individual item of interest, consisted of one story, not the several forms in which it may have been reprinted in various media outlets.

Of the 447 stories uploaded to FSnet, the content provider deemed that 367, 78 per cent, were of interest, in terms of food safety and agricultural biotechnology (Table 1). Of the stories derived from Infomart, 40 per cent were deemed of interest. The 10 participants downloaded a total of 824 stories (out of a potential  $447 \times 10 = 4,470$  stories), which indicated low or highly variable participation rates by the partners in the study. Nevertheless, of the stories that were of interest – meaning that the story may have had relevance to an individual's employment criteria – 91 per cent were first encountered through FSnet.

The relatively low and erratic participation rate (in terms of completed questionnaires) was a problem that could have potentially skewed the results. However, of the 10 participants, one completed the questionnaires almost daily. Her

results were similar to those of the FSnet content provider in terms of stories deemed to be of interest (269 out of 367 stories downloaded by this user, or 73 per cent), and quite close to the overall rate for origin of stories of interest at 94.1 per cent. Other participants downloaded a mean of 50 stories over the study period.

Qualitatively, through personal interviews using a standardized set of questions, nine of the 10 study participants reported that FSnet added to their level of competence at work, if not directly then indirectly. Most were impressed by the timeliness and breadth of the information provided. Five of the original 10 participants began to serve as news distribution filters within their organizations, using electronic technologies to widely disseminate the daily news. Only one participant felt that the majority of news articles were of limited applicability and that press reports were often vague or incorrect.

## DISCUSSION

FSnet was conceived as an electronic communications tool to assist in risk analysis activities, to rapidly identify issues for risk management and communication activities, to enhance awareness of public con-

cerns in scientific and regulatory circles, and to exchange current information for direction of research, diagnostic, or investigative activities. FSnet was intended to provide current, generalized, public risk perception information about rapidly changing issues, selected from journalistic and scientific sources around the world and condensed into short items or stories that make up the daily FSnet posting.

After the initial study period was completed, the participants met and unanimously decided that FSnet was sufficiently valuable to continue. However, several changes based on results of the three-month trial were implemented. The contract with the electronic information provider was not renewed and the bulletin board system was discontinued. By May, 1995, those participating agencies that previously did not have Internet access were now on-line, and FSnet was distributed solely on the Internet. Superficially, the change may appear subtle – dialing in versus checking Internet-based electronic mail – but it is dramatic in practice. Dialing into a computer-based bulletin board requires an individual user to actively seek out information. Checking one's electronic mail has become a routine activity with the growth in access to the Internet, and it is much easier, according to the study participants, to receive regular updates as part of regular electronic mail than to alter their routine and make an outside call to a bulletin board.

Additionally, the FSnet content provider began to exercise more editorial control, choosing only those stories directly related to food safety, a move that was welcomed by FSnet recipients; a larger percentage of the stories had relevance, and recipients of FSnet seemed to be more responsive to FSnet issues, based on responses to the content provider

Interviews with FSnet recipients revealed several employment-specific uses of this electronic com-



munications tool. Scientists have used leads in FSnet to obtain specific bacterial or viral cultures for laboratory analysis. Government and university personnel involved in agricultural extension or outreach work have used the information to motivate clients with current information, while others felt generally better prepared when engaged in discussions, whether with consumers or with other professionals. One said, "Personally, I feel much more knowledgeable (and confident) about what is going on." FSnet was routinely used by an animal health surveillance network to obtain current information and gauge the effectiveness of risk communication messages.

Academics receiving FSnet are using the up-to-date coverage as case studies in undergraduate classes. They report that students are much more motivated when studying material that is as current as possible. Industry is using the information to become more aware of public concerns with their products or processes. One large company has used Lotus Notes, a software product designed to support computer-aided collaborative work, to establish an internal repository of FSnet summaries that can be browsed by the firm's entire research and development staff. This company thought the postings were so relevant that their scientific staff should be reading the information.

Perhaps the most beneficial impact of FSnet was the one that was most difficult to quantify: Once FSnet became Internet-based, it became very easy, at the push of a button, to redistribute material to others within an organization. Those researchers within government and academia who have relatively little contact with the public seemed the most appreciative of the daily news updates, often because it placed their laboratory-based work in a larger social context and provided greater insight into public discussion of food risks.

A recurring theme in public controversies about risk is the notion that the public needs to be better educated about science (11). Even public opinion polls about scientific

literacy send a tacit message that public understanding of science will resolve technological controversies. Yet risk communication theory argues that trust is more important than science in the public arena and that, although science is important, so are regulatory actions and notions of accountability. In other words, scientists need a better understanding of the public. FSnet is one tool to improve such understanding in that it provides scientists and regulators with current, generalized, public risk perception information regarding rapidly changing food safety risks.

FSnet is currently distributed to approximately 2,500 individuals in over 40 countries, and many of these individuals act as information amplifiers, redistributing information to others. FSnet postings are distributed, free with ongoing funding support from government and industry. Typically, two mailings summarizing issues of relevance are issued each working day, and one or two on the weekend. In a crisis situation in which information changes rapidly, such as a disease outbreak or a crisis of public confidence related to new findings (as was seen with bovine spongiform encephalopathy in the U.K.) as many as four or five mailings may be issued in a single day, with information being constantly updated.

#### ABOUT THE AUTHORS

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To receive FSnet, send an electronic mail message to: listserv@listserv.uoguelph.ca. Leave subject line blank type. Subscribe fsnet-L firstname lastname i.e., subscribe fsnet-L Doug Powell.

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# Consumer Perceptions and Sensory Characteristics in Acceptance of Nonfat Milk

Kimberly I. Meek, Susan E. Duncan,\* and Denise Brochetti

## SUMMARY

Consumer perceptions greatly influence milk selection. Consumer acceptance of lower fat dairy foods is often affected by perceptions of nutrient content as well as by price and sensory properties. Nonfat milk has significantly different sensory characteristics from those of whole milk. Removing fat from fluid milk causes a loss of the rich, creamy flavor and mouthfeel of whole milk. However, improved visual and textural characteristics may improve perception of flavor. Nonfat milk, nonfat milk with an insoluble fiber additive, and reduced fat milk were evaluated for consumer acceptability in blind and visual presentation styles. Color was measured for each product. Hedonic scores for the three types of milk did not differ significantly, with average ratings equivalent to "like slightly" to "like moderately." Presentation format did not affect acceptability of milk. Color values for nonfat milk with added insoluble fiber were different from those for nonfat and reduced-fat milk.

## INTRODUCTION

The consumption of dairy foods, especially by adult women, has declined during the past few decades because of the perception that dairy foods are high in fat (5). Because lower-fat options are now available in the market, consumption of high-fat dairy foods has declined as the consumption of lower-fat dairy foods has increased (8). In the United States, whole milk and

lowfat milk sales have declined by 3.2% and 2.9%, respectively, whereas nonfat milk sales have increased by 11.9% (13). Research indicates that major reasons for decreased whole and lowfat milk consumption are concerns about the fat content of whole milk and the false belief that lower fat milk contains fewer nutrients (21, 25). Horwath et al. (6) reported that women between ages 19 to 23 years

and 72 to 95 years decreased milk consumption as a result of health concerns over fat and obesity, changes in lifestyle, and dislike for milk. Many thought that increased milk consumption would have either no effect or an adverse effect on health. Additionally, 13% of the women in that study had been advised by a health care provider, usually a physician, to eliminate milk or dairy products.

Shepherd (26), in determining perceptual dimensions associated with skim and semi-skimmed milks, identified two dimensions affecting milk selection: nutrition attributes and sensory and functional attributes. The sensory characteristics of milk are important in consumer preferences and selection of milk products (20). It is often assumed that fat level plays a primary role in selection of nonfat, lowfat and whole milk. Pangborn et al. (15) found that consumers usually prefer milk with a higher fat percentage than they normally consume. Tuorila (28) reported that sensory properties associated with whole milk have the highest consumer appeal. Visual descriptors, such as milk whiteness, are important in differentiating among milks (15, 20). Visual influences, such as milk whiteness, are important in perception of fat content (17, 18). Processes used to enhance nonfat and lowfat milk whiteness have included using rennet enzyme (24) and food-

**TABLE 1. Mean hedonic scores<sup>a</sup> for milk presented in blind and visual presentation<sup>b</sup> formats**

Milk Type	Blind Presentation (n=49)	Visual Presentation (n=45)
Nonfat milk	6.9	6.4
Nonfat milk w/ additive <sup>c</sup>	6.4	5.8
Reduced fat milk	6.7	6.5

P > .05

<sup>a</sup>1=dislike extremely; 3=dislike moderately; 5=neither like nor dislike; 7=like moderately; 9=like extremely

<sup>b</sup>blind: presented in opaque cups with opaque lids and straws; visual: presented in translucent cups without lids

<sup>c</sup>Skim Delux Fat Free Milk Formula™, Mendenhall Laboratories, Paris, TN

grade titanium dioxide (19), increasing the milk protein concentration (22), and fermentation (23). Such methods have demonstrated enhanced whiteness and/or viscosity of nonfat milk but often not to levels equivalent to reduced-fat (2% fat) milk. In addition, these methods have not provided the flavor characteristics important for satisfaction.

An ideal flavor of milk has been described as being characterized by "the pleasant mouthfeel (due to the physical constitution of milk: an emulsion of fat globules in aqueous colloidal protein phase)" and by "the slight salty sweet taste of milk salts and lactose" (3, 20), thus fat contributes significantly to the mouthfeel and overall flavor of lowfat and whole milks.

Sensory perception of fat content is primarily influenced by oral textural food characteristics. Although, the addition of fat-associated flavors has little impact on perceived fat content (10), they significantly influence satisfaction (11). Fats influence the flavor of dairy products by providing naturally occurring flavor compounds, contributing to the development of process-induced flavors through interactions of fats with other food components, and modifying the perception of other existing or added flavor compounds

through altering the intensity as well as the timing and rates of flavor onset and diminishment (11).

Removing fat from fluid milk products causes a loss of the rich, creamy flavor and mouthfeel of whole milk (3). Visual appearance of milk is also affected when fat is removed from milk. The white, opaque appearance of whole milk is attributed to scattering of light by fat globules and casein (7). Carotene, the fat-soluble precursor of vitamin A, is responsible for the "creamy" color of milk. Loss of carotene from milk when fat is removed contributes to the less white color of nonfat milk (16); riboflavin contributes to the greenish tint of nonfat milk, and the slightly blue appearance is caused by the scatter of short-wavelength visible light by casein micelles (7). Phillips et al. (17) reported that appearance greatly affected perception of the fat level in milk, although perception of flavor did not change among milk samples as fat level increased. Mela (9) reported that increased viscosity caused by addition of modified starch to fluid dairy products resulted in a perception of increased fat content.

The dairy industry is trying to improve the sensory attributes, including mouthfeel, aroma and flavor, of lower fat milks (4). One avenue

for improving mouthfeel and appearance of nonfat and lowfat milks is to add an ingredient that increases viscosity and has a whitening effect (18). Such an ingredient is an insoluble fiber-based product that reportedly increases the viscosity of nonfat milk to produce a mouthfeel of reduced-fat milk and, through contributing  $\beta$ -carotene, adds a creamy coloration (2). The ingredient may also be used to increase the calcium content of nonfat and lowfat milks to 500 mg Ca/8 oz serving.

The objective of this project was to determine acceptability of nonfat milk, nonfat milk with the insoluble fiber additive, and reduced fat milk when presented in blind and visual testing formats.

## METHODS

Nonfat milk, nonfat milk with an insoluble fiber additive (Skim Delux Fat Free Milk Formula™ Mendenhall Laboratories, Paris, TN), and reduced-fat milk (2% milkfat) were obtained from a Virginia dairy processor (Westover Dairy, Lynchburg, VA). All products were packaged in plastic gallon containers and had the same code date. Students, staff, and faculty frequenting the public commons in the veterinary medicine complex at Virginia Tech were recruited by the intercept method as consumer participants. Consumers rated the three milk types on a nine point hedonic scale with "dislike extremely" (value = 1) and "like extremely" (value = 9) as the opposing anchors. In the blind presentation experiment, fifty ml of each product was served cold (approximately 40°C) in a white, opaque, 8-ounce (237 ml) cup with a white, opaque lid. Each product was coded with a three-digit number. The three products were presented in a randomly ordered sequence to each consumer. Consumers sipped samples from opaque straws and marked the hedonic term that best described their attitude toward the products. A total of 49 consumers completed the evaluation of blind samples and responded to a questionnaire requesting demographic information and milk selec-

TABLE 2. Mean<sup>a</sup> CIE L\* a\* b\* color values<sup>b</sup>

Milk Type	L*	a*	b*
Nonfat milk	72.02 ± 0.12	-5.54 ± 0.01	2.04 ± 0.05
Nonfat milk w/ additive	74.10 ± 0.16	-4.69 ± 0.03	3.84 ± 0.05
Reduced fat milk	77.66 ± 0.08	-2.96 ± 0.01	6.00 ± 0.04

<sup>a</sup> n=3; mean score ± standard deviation

<sup>b</sup> L\* indicates lightness; -a\* indicates chromaticity in the green direction; +b\* indicates chromaticity in the yellow direction

tion preferences. A second experiment replicated the first but used a visual sample presentation. A 25-ml sample of each product was presented in a translucent 118-ml cup with a clear lid so that panelists' ratings were based on appearance as well as texture and flavor. Statistical analysis for significant differences ( $P < .05$ ) between blind and visually presented samples was performed by use of a two-way analysis of variance (27).

A Minolta Chroma Meter (model CR-200, Osaka, Japan) was used to determine CIE L\*a\*b\* color values of milk samples. Three readings were taken from different angles of each sample in a 1-inch diameter test tube. Mean color values then were determined for each milk type to characterize visual appearances (14).

## RESULTS AND DISCUSSION

Hedonic scores (Table 1) for the three types of milk were not significantly different ( $P > .05$ ), with average ratings equivalent to "like slightly" to "like moderately," regardless of presentation method. Presentation method did not significantly affect milk acceptability, although mean hedonic scores were lower for milk samples presented visually than for milk samples presented blindly. In both presentation methods, nonfat milk with added fiber received lower ratings than other types of milk, with average hedonic scores of 5.8 and 6.4. Some consumers described a bitter flavor and gritty texture in the nonfat milk with added fiber.

Visual observation of color differences did not influence acceptability of these milk products, but the instrumental color measurements for nonfat milk with added fiber were different from those for the nonfat milk and the reduced-fat milk (Table 2). Values for all color components of nonfat milk with added fiber were closer to those of nonfat milk than those of reduced-fat milk. Values of the reduced-fat milk indicated less green and more yellow color components.

Consumers evaluating the milks were predominantly female (78% in the blind and 60% in the visual presentation experiments). Most participants were 20 to 29 years old (61% in blind and 76% in visual presentation), which was expected in view of the college setting. The predominance of females among the respondents is valuable in interpreting the impact of this study. Horwath et al. (6) reported that women 19 to 23 years of age and women 72 to 95 years of age decreased milk consumption as a result of health concerns over fat and obesity, change in lifestyle, and dislike of milk. Showing that women find nonfat milk with added fiber and calcium acceptable indicates that this milk can be a good alternative to lowfat and whole milks in women's diets.

Miles et al. (12) identified the dimensions of "health and nutrition" and "satisfaction and versatility" as two separate factors in milk selection. Attributes associated with the "satisfaction and versatility" dimension of milk consumption include refreshing taste, convenience

("good when in a hurry"; "good beverage when eating away from home"), and several factors associated with satisfaction ("something to gulp when really thirsty"; "perfect for when you feel really content"; "looks so good that you can't wait to drink it"; "day wouldn't be the same without it"; "satisfies when hungry"; "satisfyingly rich"). Whole milk drinkers who choose beverages for satisfaction and versatility, are described as a group with lower incomes, and who are younger, are more likely to be male, live in larger households, and are more likely to have children.

The dimension of "health and nutrition" is primarily associated with phrases such as "low in fat," "physical fitness," "look and feel healthier," and "balanced diet" (12). Nonfat milk drinkers, focused on health and nutrition, have higher incomes, are older, are more likely to be female, are less likely to have children, and live in smaller households. Research by KRC Research and Roper Starch Worldwide (1) identified the following seven key attitudes and misconceptions that influenced women to avoid drinking milk: (1) milk is a high fat food that causes obesity and heart disease; (2) lower fat milk does not have as many nutrients as whole milk; (3) only kids drink milk; (4) milk is a boring beverage; (5) milk does not complement many foods; (6) milk tastes bad; and (7) milk is not a convenient beverage.

Nonfat milk is perceived as less satisfying and less versatile (i.e., less convenient) than lowfat milk, which

in turn is less satisfying than whole milk (12). Nonfat milk drinkers, many of whom are women, recognize that the product is less satisfying and versatile than whole milk, although nonfat milk consumers as a group perceive nonfat milk as more satisfying and versatile than do the whole milk consumers (12). Nonfat milk drinkers are driven by the health and nutrition dimension (12); they recognize whole milk to be higher in satisfaction and versatility but are willing to forfeit such related pleasures for the benefits of nutrition.

Whole milk drinkers primarily base their choice of beverage (whole, lowfat, nonfat milk) on satisfaction and versatility attributes and, while recognizing that whole milk may be slightly lower on the "health and nutrition" dimension, they identify nonfat milk and lowfat milk as very low on the "satisfaction and versatility" dimension.

Nonfat milk was the beverage of choice for 31% of those participating in the blind presentation and 53% of those participating in the visual presentation experiment. Reduced-fat milk was the beverage of choice for 24% and 22% of the participants in the blind and visual presentation experiments, respectively. In both experiments, 65 to 73% of the respondents indicated that they consumed milk on a daily basis. Many who typically consumed reduced-fat and nonfat milks explained that those choices were "healthier" and "lighter tasting" than whole milk. Drinkers of whole milk explained their selection was due to "rich flavor" and "better taste than lowfat." Overall, respondents who chose the lowfat milks did so for health reasons.

## CONCLUSIONS

Sensory characteristics of nonfat milk may be enhanced through a variety of ingredient or processing technologies. The product should be shown to possess improved sensory and nutritional characteristics if the technology is employed. The improvement should be verified by consumer testing with the targeted consumer group. Mean hedonic scores did not differ for three types of milk (nonfat, nonfat with added

insoluble fiber, and reduced fat), whether the presentation format was blind or visual. Thus, the observed differences in instrumental color measurements were not correlated with differences in acceptability of these milk products.

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Reprinted from National Food Safety Education Month™, September 1999

# Cook It SAFELY

It's a matter of degrees

**C**ook It Safely is the theme of the fifth annual National Food Safety Education Month™ in September 1999. Launched in 1995 by the International Food Safety Council, a restaurant and food industry coalition committed to food safety education, National Food Safety Education Month has become an important focal point for everyone involved in food safety. President Clinton's National Food Safety Initiative recognizes and encourages observance of this annual event.

**Industry education and training is the foundation of National Food Safety Education Month.** Restaurants, foodservice operations and supermarkets are encouraged to conduct training and awareness programs throughout September to promote safe food handling and preparation by employees.

As part of your commitment to your members/customers, we encourage your organization to help facilitate training. As you know, even a single outbreak of foodborne illness can tarnish an establishment's reputation — as well as the industry's — and in severe cases, drive establishments and companies out of business. Ideas and materials to help

you facilitate training are available through the Council's Web site at [www.foodsafetycouncil.org](http://www.foodsafetycouncil.org).

**Public awareness is also a key goal of National Food Safety Education Month.**

According to recent research, the public is more concerned about food safety than ever before. Adding to their concern is heightened media coverage that focuses on outbreaks of foodborne illness. There has never been a more important time for the food industry to demonstrate its food safety expertise and commitment to the public. A Guide from the International Food Safety Council provides ideas and materials for promoting your organization's food safety commitment to the public, and for encouraging your members/customers to do the same.

Restaurants, foodservice operations, supermarkets, hospitality associations, colleges and universities, state and local health departments and USDA extension agents across the country participate in National Food Safety Education

Month in a variety of ways each year. *With your involvement — and the participation of your employees and customers — this year's observance will be the best ever!*

For more information, contact National Restaurant Association Educational Foundation at phone: 800.809.6032; E-mail: [NFSEM@foodtrain.org](mailto:NFSEM@foodtrain.org) or Web site: [www.edfound.org](http://www.edfound.org).





# *Call for Nominations* 2000 IAMFES Secretary

**N**ominations are now being accepted by the Nominating Committee for the office of IAMFES Secretary. A representative from the industry sector will be elected in the spring of 2000 to begin serving at the conclusion of the IAMFES 2000 Annual Meeting for the year 2000-2001.

Letters of nomination, including a biographical sketch are to be submitted to the Committee Chairperson **no later than November 1, 1999**. After the close of nominations, the Committee will review the nominees and select two (or more) persons to be presented to the Membership for voting.

The Secretary-Elect is determined by a majority of votes cast through a mail vote taken in the spring of 2000. Official Secretary duties begin at the conclusion of the IAMFES 2000 Annual Meeting. The elected Secretary serves as a Member of the Executive Board of IAMFES for a total of five years succeeding to President,

then serving as Past President. Board meetings are scheduled a minimum of three times a year and other commitments may be necessary.

For more information regarding duties and requirements of the position, please contact David Tharp, Executive Director at 800.369.6337 or 515.276.3344; Fax: 515.276.8655; E-mail: [dtharp@iamfes.org](mailto:dtharp@iamfes.org).

Send a letter of nomination for Secretary of IAMFES, along with a biographical sketch of nominee, to the Nominations Chairperson:

C. Dee Clingman  
DARDEN Restaurants, Inc.  
P.O. Box 593330  
Orlando, Florida 32859-3330  
Phone: 407.245.5330  
Fax: 407.245.5173  
E-mail: [dclingman@darden.com](mailto:dclingman@darden.com)

Nomination deadline is November 1, 1999.

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**Dan Jacques**  
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Grand Rapids, Michigan



# UpDates

## **Alfa Laval Flow Inc. Names Application Engineer**

**N**adejda Szfranski, of Kenosha, WI, has accepted a position with Alfa Laval Flow Inc. as application engineer for the G&H and industrial pump divisions.

Szfranski previously worked for the City of Leningrad, Russia, where she was a project/task manager for the civil engineering department. She has experience designing and preparing specifications and construction plans for water purification plants and pumping stations. Szfranski's responsibilities will include handling technical service inquiries and developing AutoCAD drawings.

## **Senior Staff Promotion at Ecolab Strengthens Strategic Food Safety Focus**

**E**colab Inc., has announced the appointment of Dr. Bruce Cords as vice president environmental, food safety and public health.

Dr. Cords will assume responsibility for providing the strategic and technical direction for Ecolab's integrated brand protection programs for hospitality and food processing customers.

A 19-year veteran at Ecolab, Cords has served in a variety of technical roles, most recently as vice president, research and development, for Ecolab's global food and beverage business. Prior to joining Ecolab, Cords was a member of Ralston Purina Company's central research group.

A graduate of the University of Minnesota, he serves on the federal science & technology committee for the Industrial Research Institute; the advisory council for the Center for the Food Safety and Quality Enhancement, University of Georgia; and the advisory committee for the Center for Dairy Research, University of Wisconsin. He is also a Member of the International Association of Milk, Food and Environmental Sanitarians, the Food Research Institute, the Institute of Food Technologists, and the American Society for Microbiology.

## **Meyer Joins ADPI Staff**

**D**aniel P. Meyer joined the staff of the American Dairy Products Institute where he will provide Member support in the area of technical services. Meyer has 10 years of industry experience with Dean Foods and Associated Milk Producers, Inc. He is a graduate of the University of Illinois, Champaign-Urbana, where he received a B.S. degree in agriculture.

## **USF Filtration & Separations Names New Area Representative for Johnson Screens**

**T**he Pacific Northwest, Western and Plains states will now be served by Thomas Hanna, USF Filtration & Separations' newly appointed district manager for Johnson Screens' water well products, including screens, chemicals and related technologies.

Hanna has more than 15 years of experience as a consulting hydrogeologist with special expertise in design, construction and rehabilitation of water supply wells and mine dewatering systems.

## **EPTC Names Robert Stewart Director of Government Relations/Municipal Waste Systems Sales**

**M**arvin Mears, president and chief executive officer of Environmental Products & Technologies Corporation (OTC Bulletin Board: EPTC) announced that industry veteran Robert A. Stewart has joined the company in the capacity of director of government relations and municipal waste systems sales. Stewart spent several years as a legislative aide in Washington, D.C., where he was active in the administration of a number of environmental programs. Stewart, who previously founded and operated a private residential and commercial cleaning and recycling business, has acted as a consultant to several organic recycling companies.

Stewart began his work in the environmental field in 1973 as a student at Old Dominion University. His senior thesis dealt with composting hog manure and alternative energy sources derived from methane emissions. He assisted in the development of a wastewater treatment facility in Alexandria, VA, and has held several sales and management positions in the industry.

## VTEC O157 Outbreak Associated with a Farm Visitor Centre in North Wales

**T**he investigation of an outbreak of Vero cytotoxin producing *Escherichia coli* (VTEC) O157 infection associated with a farm visitor centre on Ynys Mn (Isle of Anglesey), North Wales has now identified 17 cases who visited the centre between 31 May and 15 June 1999. Six patients (five children and one adult) required hospital admission, but all have now been discharged. Five secondary cases have been identified, all of whom are household contacts of cases. Three cases, two primary and one secondary, developed haemolytic uraemic syndrome. A case control study intended to identify exposures on the farm that were associated with an increased risk of illness is being conducted by the Department of Public Health Medicine of North Wales Health Authority and by the Welsh Communicable Disease Surveillance Centre.

Thirteen out of a total of 46 faecal samples collected from calves, sheep, goats, a pony, and a pig by veterinarians from the Ministry of Agriculture, Fisheries and Food Veterinary Investigation Centre in Aberystwyth were positive for VTEC O157 using latex agglutination. Most of the samples were obtained from the floor, but some were rectal. Eighteen isolates of VTEC O157 from human cases and 10 out of 11 isolates from animal samples examined by the PHLS Laboratory of Enteric Pathogens (LEP) have been characterized as phage type 2, Vero cytotoxin type 2. All isolates tested at LEP show the same antimicrobial resistance pattern and the preliminary results of pulsed field gel electrophoresis show that the human and animal strains are indistinguishable.

Members of the outbreak control team visited the farm on Friday 25 June 1999 in order to check compliance with Health and Safety Executive guidance and



# NEWS

their own advice, which included a recommendation that children under the age of four years should be allowed direct contact with animals only if supervised one-to-one by an adult. The farm was allowed to reopen the next day.

## US, EU Sign Veterinary Equivalency Agreement to Facilitate Trade

**A**griculture Secretary Dan Glickman announced that the United States has signed a new agreement with the European Union, paving the way for mutual recognition of animal health systems and easier resolution of related future disputes. "This important agreement lays the foundation for increased trade opportunities between the US and the European Union" said Glickman. "It is heartening that, despite the current difficulties in our trade relationship, the US and the EU have worked together to reach agreement on these complex agricultural trade issues."

The agreement identifies specific areas where the two trading partners recognize that varied requirements of different nations can achieve an equivalent level of protection for public and animal health. In practical terms,

this means that producers in one country wishing to export to another can meet the standards of the importing country in alternative ways, in addition to meeting their own domestic requirements. Thus, the agreement will help reduce compliance costs for producers, easing one of the factors that may unnecessarily depress exports.

The equivalency agreement allows veterinary inspection requirements to differ from country to country, and it ensures the United States the right to establish its own level of public health protection for imported and domestic products.

The agreement also establishes a process for regular consultations and exchange of information with the goal of eventually achieving full equivalence of inspection systems for all live animals and animal products between the United States and the EU.

The agreement, reached after six years of negotiation, covers approximately \$1.5 billion in US animal and animal product exports to the EU, and an equal value of EU exports to the United States. In 1998, the United States exported to the EU \$377 million worth of edible fish and shellfish products, live animals valued at \$175 million, pet food valued at \$175 million, hides and skins worth \$161 million, red meats valued at \$111 million, as well as dairy and egg products valued at \$54 million.

## FSIS Smooths the Way for Very Small Plant HACCP Implementation

**A**fter successful implementation of the Hazard Analysis Critical Control Point (HACCP) Systems in large and small meat and poultry plants, the Food Safety and Inspection Service (FSIS) is moving to smooth the way for the remaining very small plants. Once the very small plants implement the preventive food safety system next January, all the nation's meat and poultry supply will be produced under HACCP.

"We are already working with very small plants to ensure a successful transition to HACCP," said FSIS associate administrator Margaret Glavin. "We are applying what we learned from the large and small plant HACCP implementation to assist very small plants in making the transition with minimal disruption."

Under HACCP, plants identify critical control points during their processes where hazards such as microbial contamination can occur, establish controls to prevent or reduce those hazards, and maintain records documenting that the controls are working as intended. Slaughter plants must test for generic *E. coli* to determine the efficacy of their controls and all slaughter plants and plants producing raw ground product must meet a standard for the prevalence of *Salmonella* on products.

The prevention-oriented HACCP is already making America's meat and poultry safer—the prevalence of *Salmonella* has been reduced by 25 to 50 percent in various classes of raw product in large plants and the CDC reports that the incidence of *Salmonella*- and *Campylobacter*-caused illnesses has declined.

About 300 of the nation's largest plants, those with 500 or more employees, came under HACCP in January 1998; 2,300 small plants, with between ten and 499 employees, implemented HACCP in January 1999. Small plant implementation has gone smoothly in part due to FSIS educational and outreach efforts with plant owners and management staff. Very small plants, with fewer than ten employees or less than \$2.5 million in annual sales, will implement HACCP in January 2000. Approximately 3,400 very small federally inspected plants and 2,300 state-inspected plants are expected to implement HACCP.

FSIS continues to take steps to ensure a smooth transition for the very small plants. The first of

several letters to very small plants was sent in March and lists the types of assistance and resources available, including generic HACCP models and videos. Each letter has included "points to ponder" with issues specific to the very small plants.

Each state, the District of Columbia, and US territories have a contact and coordinator to provide plant owners with assistance. Plant owners were also sent a list of suggested dates for completing the key milestones leading to a HACCP plan and a video about HACCP.

Additionally, five land grant universities, including one historically black university, are developing HACCP plans and will open meat and poultry facilities as "model plants" with staff available to answer questions. The Technical Service Center in Omaha, NE, also continues to operate its toll free hotline (800.233.3935) to answer queries from very small plant owners or managers. To help very small plants meet the requirement that someone on staff must have HACCP training, a self-study package, including instructional materials and videos, will be distributed by FSIS to all very small plants this summer. The study guide provides step-by-step written instructions on the development of a HACCP plan and provides a means to have up to two draft copies of the plan submitted to the contractor for review and comments. (HACCP plans are not reviewed for approval.) The self-study guide will also be provided to all very small state-inspected plants.

Rather than holding workshops or conferences, FSIS has determined that a one-on-one approach will work best with the very small plants. Field supervisors will hand deliver self-instruction guides, have talking points to help the plant owners work along the timeline, and assist in their progress toward successful implementation of HACCP.

Should additional help be necessary, the field supervisors can also direct the plant owners to appropriate resources. Large and small plants have been asked to serve as mentors to the very small plants, continuing a program that successfully helped many small plants. In addition, many independent mentoring relationships have formed within industry to assist very small plants with successful implementation of HACCP.

## GMA Urges President's Council to Make Science-Based Prevention Key to Enhancing Food Safety

**F**ederal efforts to effectively identify and manage food safety risks must be centered on up-to-date, science-based prevention measures, rather than outdated inspection procedures, according to the Grocery Manufacturers of America (GMA). GMA participated in a day-long meeting held by the President's Council on Food Safety, which is crafting a strategic plan for US food safety operations.

"The risk-based Hazard Analysis Critical Control Point (HACCP) system must be the model for farm-to-table inspection and enforcement efforts," said Dr. Stacey Zewel, GMA Vice President, Scientific and Regulatory Policy. "It is absolutely essential to have in place preventive procedures and policies that the federal government will use if we are going to effectively manage food safety risks, rather than outdated inspection and detection methods."

Zewel added "the Foodborne Outbreak Response Coordination Group established by the President's Food Safety Initiative shows little evidence of being fruitful. At times, anyone involved in an

outbreak investigation feels compelled to speak publically on preliminary information. There must be better control over this process. The food industry wants to play a greater role in federal efforts to improve the effectiveness of outbreak investigations and responses." GMA is also urging federal officials to more effectively and strategically communicate safe food handling and preparation procedures to consumers. "Health professionals and elementary school programs in particular need to be armed with the right information and resources to help prevent occurrences of foodborne illness," Zawel said. GMA has established several interdisciplinary working groups with its member companies to address issues under consideration by the President's Council on Food Safety. The association will submit formal comments to the Council in September.

## Plan Unveiled for Joint Institute for Food Safety Research

**T**he President's Council on Food Safety sent President Clinton a detailed blueprint for establishing a Joint Institute for Food Safety Research to coordinate federal food safety research, ensuring that valuable resources are directed to the most needed and most promising projects. The President announced his intention to create the Institute last year.

According to the blueprint submitted, Agriculture Secretary Dan Glickman and Health and Human Services Secretary Donna E. Shalala will jointly lead the Institute, that will work closely with others in federal, state and local government, as well as the private sector and academia. An executive director and staff are

expected to be in place later this year.

"Our cutting-edge food safety research efforts are already among the finest in the world," said Secretary Glickman. "This Institute will help ensure that our research remains well coordinated, prioritized, and carefully planned to help reduce foodborne illness for American families."

"This coordinated effort will help us keep ahead of potential food safety problems and better protect the American food supply," Secretary Shalala said.

The Institute will coordinate research planning and prioritization; mobilize resources to prevent or minimize current and emerging food safety problems; optimize research investments and infrastructure; use current research programs in innovative ways; centralize communication on food safety research; and increase accountability for federal research efforts.

Although the American food supply is the safest in the world, the Clinton Administration has made reducing foodborne illness a national priority. The President's budget requests an additional \$72 million for food safety efforts in FY 2000. In 1995, the Administration announced new, science-based regulations to modernize oversight of the nation's seafood, meat and poultry. Last year, the President announced new warning labels on packaged fresh fruit and vegetable juices that have not been processed to prevent, reduce or eliminate illness-causing microbes. Earlier this month, the United States Department of Agriculture (USDA) and the Food and Drug Administration (FDA) announced efforts to improve egg safety by requiring safe handling labels and a refrigeration requirement.

The blueprint and other food safety information can be accessed on the web at [www.foodsafety.gov](http://www.foodsafety.gov).

## KSU Microbiologist Uses Microwave, Acid Treatments to Kill Pathogens, Maintain Color in Meat

**M**eat processing plants can try washing, steaming, or any number of other ways to sanitize a carcass, yet the meat consumers purchase in the supermarket can still have that sickening and potentially deadly *E. coli* O157:H7 bacteria.

A Kansas State University food microbiologist says most of these methods to reduce *E. coli* occur on the front end of the processing procedure. Once the carcass is sliced into smaller portions, the meat can then be recontaminated, allowing microorganisms to grow and spread. Daniel Y. C. Fung is studying an approach that includes sanitation of the meat at the end of the processing procedure. According to Fung, dipping the meat into an 80°C solution of lactic acid for a few seconds has been shown to kill 90 percent of microorganisms. After the meat is dipped into the solution it is immediately vacuum packaged and given short pulses of microwave treatments. Fung says "data indicate these short pulses can kill another 10 percent of microorganisms on the meat's surface".

"The whole idea behind the microwave is after you vacuum package the meat and microwave it, it will remain uncontaminated until the meat goes to the retail store or the consumer," Fung said. Fung said that while the acid bath may kill a lot of bacteria, if it is dipped or cooked in the microwave too long it will change the color of the meat. This discoloration from its natural red color may not be appealing to the consumer. Fung is experimenting to find the maximum time the meat can remain in the microwave and the



maximum water temperature to retain its natural color. "We're trying to find the best combination of where the color will not change or it will change a little bit but will still be acceptable to the consumer," Fung said, "but at the same time kill 90 to 99 percent of the microorganisms." In previous studies, Fung has used smaller portions of meat. The current study, funded by the National Cattleman's Beef Association, will examine the process using larger portions of meat.

### Consumer Advised of Risks Associated with Raw Sprouts

**B**ecause of reports of increasing numbers of illnesses associated with consumption of raw sprouts, the Food and Drug Administration (FDA) is advising all persons to be aware of the risks associated with eating raw sprouts (e.g., alfalfa, clover, radish). Outbreaks have included persons of both genders and all age categories. Those persons who wish to reduce the risk of foodborne illness from sprouts are advised not to eat raw sprouts.

This advice is particularly important for children, the elderly, and persons with weakened immune systems, all of whom are at high risk of developing serious illness due to foodborne disease. People in high risk categories should not eat raw sprouts. This advisory is updated from a previous health advisory issued August 31, 1998, and is based on additional information from clover and alfalfa sprout-associated salmonellosis

outbreaks from January through May 1999. Two outbreaks were associated with clover sprouts: one occurred in California in May and involved approximately 30 cases; a second outbreak in Colorado from March through May involved approximately 70 cases. In addition, from January through March an outbreak of salmonellosis affecting approximately 85 people occurred in Oregon, Washington, and California and was associated with the consumption of alfalfa sprouts. Since 1995, raw sprouts have emerged as a recognized source of foodborne illness in the United States. These illnesses have involved the pathogenic bacteria *Salmonella* and *E. coli* O157. Alfalfa and clover sprouts have been involved most often, but all raw sprouts may pose a risk.

The sprout industry has been working in cooperation with government, academia, and other industry segments to enhance the safety of its product. These efforts have focused primarily on seed treatment strategies, good manufacturing practices, and sanitation.

"Despite all these efforts to make raw sprouts safer, we continue to receive reports of illnesses associated with raw sprouts. Consumers need to understand that, at this time, the best way to control this risk is not to eat raw sprouts," said Jane E. Henney, MD, FDA Commissioner. Although infections with *Salmonella* and *E. coli* O157 can cause serious illness, the illness is generally self-limiting in most healthy adults.

However, an *E. coli* O157 infection can lead to hemolytic uremic syndrome with resultant kidney failure or death in children, and equally serious complications in the elderly. *Salmonella* infections can cause serious illness in children, the elderly and the immune compromised. Healthy persons infected with these bacteria experience diarrhea, nausea, abdominal cramping and fever for several days.

FDA offers the following advice to all consumers concerning sprouts: Cook sprouts. This significantly reduces the risk of illness.

Check sandwiches and salads purchased at restaurants and delicatessens. These entrees often contain raw sprouts. Consumers who wish to reduce their risk of foodborne illness should specifically request that raw sprouts not be added to their food.

Sprouts grown in the home also present a risk if eaten raw. Many outbreaks have been attributed to contaminated seed. If pathogenic bacteria are present in or on seed, they can grow to high levels during sprouting even under clean conditions.

FDA will closely monitor the safety of sprouts and will take further actions, including the establishment of preventive controls, as necessary to protect consumers. Consumers who have eaten raw sprouts and are experiencing diarrhea or other symptoms of foodborne infections are advised to consult their health care providers.





DCT Instruments/Sensotec, Inc.

## New High Accuracy Digital Pressure Test Gauge from DCT Instruments/Sensotec, Inc.

The New Model AK digital pressure test gauge from DCT Instruments/Sensotec, Inc. attains 0.05% full scale accuracy for pressure ranges from 15 psi to 10,000 psi. The enhanced-resolution, 4 1/2-digit display eliminates parallax and interpolation errors and makes this gauge an excellent transfer standard for calibrating pressure measuring equipment including other gauges and transducers.

The rugged AK Series features High/Low pressure point capture and an update pressure reading speed which is field-adjustable from three to ten times per second. These units are manufactured from

stainless steel and use reliable sensor technology which has no moving parts, requires little recalibration and has excellent overpressure tolerance. The AK is available with a NEMA 4 option which extends the operating temperature from 0° to 180°F.

These versatile units also have field-selectable engineering units of measure, including psi, bar, mbar, Kpa, mPa, ft.H<sub>2</sub>O, in.H<sub>2</sub>O, in.Hg, and mm Hg (torr), with gage, absolute, vacuum or compound reference available. The Model AK is available battery-, AC-, or DC-powered. Optional accessories include carrying case, AC adaptor, panel mounting ring, pressure adaptors and NIST certification.

DCT Instruments/Sensotec, Inc., Columbus, OH

Reader Service No. 297

## The Dow Chemical Company Introduces Super Gelling METHOCEL A150 Methyl Cellulose for Food

The Dow Chemical is introducing a new line of super gelling METHOCEL for the food formulation industry. "METHOCEL A150" methylcellulose, is the first in a new line of food stabilizers designed primarily for formed food products like veggie burgers and restructured seafood. METHOCEL A150 delivers a firmer,

moister, and more pleasing texture when used in vegetable protein-based food products such as meat-free hamburgers or wieners.

METHOCEL A150 provides superior binding qualities, moisture retention, and texture improving properties when compared with similar products. Food formulators who incorporate METHOCEL A150 into their food will realize better products, increased yields, and more satisfied customers. The high performance thermal gelation properties of METHOCEL A150 stabilize formed food products, prevent formed foods from drying during cooking, retain their form, and contribute to enhanced consumer satisfaction.

METHOCEL A150 enables a firmer texture to be achieved during pre-cooking, frying and during the final re-heat for serving. The binding properties and gel strength provide desired ingredient cohesion and retention of the designed product form. "METHOCEL A150 has the highest gel strength of any product in its class," said Don Coffey Ph.D., general manager for Dow's food business. "Formed food products, like veggie patties, onion rings, cheese sticks, potato products, and seafood products will have better, moister and firmer textures with METHOCEL A150. Food formulators can count on more, happier customers." METHOCEL A150 will stabilize food products in a way that previously only egg

*The publishers do not warrant, either expressly or by implication, the factual accuracy of the products or descriptions herein, nor do they so warrant any views or opinions offered by the manufacturer of said articles and products.*

white could achieve, but, without any of the attendant problems that egg whites bring.

For veggie burger manufacturers METHOCEL A150 will solve a couple of problems. Some strict vegetarians, known as vegans, will not consume any animal product. For them, a veggie burger with egg white might as well be pure beef. They will not eat it.

Further, egg white can potentially carry *Salmonella* and other bacterial contaminants. "We have achieved something with this new, super gelling product that can replace egg white as a binder," Coffey went on. "METHOCEL A150 is made from natural cellulose. There are no animal products in it at all. Further, there are no bacterial concerns associated with METHOCEL like there are with egg white," Coffey concluded.

The Dow Chemical Co.,  
Midland, MI

Reader Service No. 298

## Food Plant Rapid Microbial Tests

Crescent Chemical Company introduces a set of accurate, rapid, easy-to-use, low-cost microbial tests for all stages of food plant processing.

The Total Microbe Hunter, Coliform Hunter, and *E. coli* Hunter all offer quantitative or qualitative results based on a simple three-step procedure: "Snap" the test vial, incubate, and read the results visually or using the new Incubator/Auto Analyzer 2000. The tests use accepted industry reagents (TTC, MUG & ONPG). The Hunters have a 97% to 99% correlation to standard plating techniques, and are able to provide results in 1/2 to 12 hours. They are suitable for use in the product facility as well as QA

lab, and have a four-year shelf life. Recommended uses include: analysis of liquid foods to solid foods, pasteurized and non-pasteurized foods, incoming to finished product, sanitized equipment and surface swabbing, CIP and sanitation program confirmation.

The new Incubator/Auto Analyzer 2000 automatically controls incubation temperature within 2°C, detects the end of the test, and calculates the microbial count. The unit can run six tests simultaneously on battery for six+ hours before it needs to be recharged and can therefore be taken anywhere. Test data and status are displayed on an easy-to-read two line LCD. The model currently available for order is used for the Total Microbe Hunter. Models for the Coliform Hunter, and *E. coli* Hunter are under development.

Crescent Chemical Co., Inc.,  
Hauppauge, NY

Reader Service No. 299

## 3M Introduces a New Petrifilm Rapid *S. aureus* Count Plate

3M announces the introduction of a new Petrifilm plate for rapid identification of *Staphylococcus aureus* bacteria in food and beverage products. With the 3M Petrifilm Rapid *S. aureus* Count (RSA) Plate, food processors may obtain earlier indication of product quality and sanitation effectiveness. Results are available in as little as 26 hours, compared to the 69 hours required for conventional testing.

Rapid access to *S. aureus* information enables food processors to more effectively manage their operations. Quicker access to key microbial information

allows for faster decisions on when to release, rework or reject raw, in-process or finished food products, or when to shut down and clean processing lines.

"With timely microbial information, food processing plants have more control over their processes and more confidence about the quality of their food products," said Kevin Habas, market development supervisor, 3M Microbiology Products.

"Testing for *S. aureus* is important in the food processing industry to indicate substandard handling or sanitation issues," added Habas. "Thirty percent of the general population is chronically *S. aureus*-positive and may shed the organism during food handling. Processes involving human manipulation of food products are particularly vulnerable to contamination." Testing for *S. aureus* provides HACCP verification of effective environmental sanitation. In addition the Petrifilm Rapid *S. aureus* Count Plate test provides a food microbial risk assessment. Higher levels of *S. aureus* (greater than 10<sup>6</sup> CFU) pose a potential health hazard.

The new 3M Petrifilm Rapid *S. aureus* Count Plate provides food and beverage processors results; equivalent to the combined three-plate Baird-Parker agar and tube coagulase tests in a single test procedure. It consists of a sample-ready Petrifilm plate that has been coated with modified Baird-Parker nutrients. The plate is accompanied by a small blue disk that has been coated with a microbial growth indicator and a thermonuclease-reactive agent. This disk is placed within the plate's well during the final steps of the test procedure.

The Petrifilm product also provides confirmation of all suspect isolates in a single procedure. With conventional testing methods, confirmation of presumptive *S. aureus* results usually

involves the subjective selection of typical and representative colony for further testing, often allowing atypical and/or other problematic *S. aureus* colonies to pass undetected.

The Petrifilm Rapid *S. aureus* Count Plate is the latest offering in 3M's sample-ready Petrifilm format, which reduces total cost per test. Aerobic, coliform *E. coli*, *Enterobacteriaceae*, and yeast and mold tests are also available in the Petrifilm product line.

3M Company, St. Paul, MN

Reader Service No. 300

## First Web-Addressable Time and Temperature Recorder from Dallas Semiconductor

Dallas Semiconductor has announced the ThermoChron iButton, the first single-chip time and temperature logging device that is submersible, dirt- and impact-resistant, and Internet-ready upon delivery. In a 16mm stainless steel iButton form factor, the self-powered ThermoChron surpasses other time and temperature loggers for economy, durability and compactness.

Applications for the ThermoChron iButton include in-container monitoring of temperature-sensitive goods such as frozen foods, fresh produce, chemicals, medical reagents and medical specimens like blood. The iButton form factor makes the device very easy to attach to existing transportation items, such as containers, pallets, and semitrailers, and rugged enough to survive rough handling and harsh environments. The ThermoChron can function either as a stand-alone instrument as it roams with its object or it can be networked to interact with audio/visual indicators, displays, hand-held or notebook computers, and Internet Web pages so data can be viewed anywhere.

The ThermoChron iButton integrates a thermometer, real time clock, and memory for storing readings. These readings are available in two formats: (1) In time vs. temperature mode, the iButton records the temperature and date-stamps when it occurred. (2) Histogram mode shows how many times a temperature was recorded within ranges of 2° increments. The histogram measures frequency of thermal events rather than specific times of occurrence.

Hal Kurkowski, group manager, said, "A critical design goal was to pinpoint when and for how long the monitored material was out of spec, as opposed to just noting an out-of-spec condition. For example, when the mission is for a medical specimen, how long the specimen was exposed to sub-optimal temperatures is critical. In addition, a graph of time versus temperature gives the user the data to know who had possession when the overexposure occurred thereby giving the feedback necessary to improve quality."

The direct-to-digital thermometer operates from -40°C to +85°C with ± 1°C accuracy. The real time clock/calendar counts time from seconds to years with leap year compensation and Y2K compliance, with accuracy of ± 1 minute per month. The life expectancy of the ThermoChron iButton is more than 10 years or greater than one million samples, whichever occurs first. In addition to the data storage for thermal recording, there are 512 bytes free in each iButton for service provider-defined files, such as shipping manifests. Digital packetized two-way communication with the iButton takes place by transmitting and receiving a I-Wire™ signal through the steel case at up to 115.2K bits per second.

Dallas Semiconductor, Dallas, TX

Reader Service No. 301

## IDEXX Introduces the Parallax™ System

IDEXX Laboratories, Inc. announces the launch of the Parallax™ System, a new antibiotic residue testing system for milk. The Parallax residue testing system offers unparalleled precision delivered by automated technology, giving results in just four minutes with only two steps. This system is the only rapid residue testing system that can detect all six of the beta lactam antibiotic residues of concern at the US-FDA Tolerance/Safe levels in one test.

In addition, the Parallax System has a dramatically improved dose response profile, allowing detection as close to the FDA Tolerance/Safe levels as possible. This will allow milk processors to better protect the milk supply without having to reject milk that is safe for human consumption. The system will also be able to determine which drug or drug family is in the milk, assisting in traceback of positive samples.

Currently, IDEXX offers the beta lactam and a sulfanomides residue screening assay on the Parallax system. In addition, IDEXX will be offering various combination assays in the future, making residue screening even more convenient and effective in protecting the milk supply.

The Parallax system is currently in the AOAC®-RI approval process and it is anticipated that it will receive NCIMS and FDA approval by the September 1999 time frame.

IDEXX Laboratories, Inc., Westbrook, ME

Reader Service No. 302

# IAMFES Awards Nominations

The International Association of Milk, Food and Environmental Sanitarians welcomes your nominations for our Association Awards. Nominate your colleagues for one of the Awards listed below. Only IAMFES Members are eligible to be nominated. You do not have to be an IAMFES Member to nominate a deserving professional. To request nomination criteria, contact:

IAMFES  
6200 Aurora Avenue, Suite 200W  
Des Moines, Iowa 50322-2863  
By telephone: 800.369.6337; 515.276.3344;  
Fax: 515.276.8655  
Web site: [www.iamfes.org](http://www.iamfes.org)  
E-mail: [iamfes@iamfes.org](mailto:iamfes@iamfes.org).

**Nominations deadline is February 18, 2000.** You may make multiple nominations. All nominations must be received at the IAMFES office by February 18, 2000.

- ◆ Persons nominated for individual awards must be current IAMFES Members. Black Pearl Award nominees must be a company employing current IAMFES Members. NFPA Food Safety Award nominees do not have to be IAMFES Members.
- ◆ Previous award winners are not eligible for the same award.
- ◆ Executive Board Members and Awards Committee Members are not eligible for nomination.
- ◆ Presentation of awards will be during the Awards Banquet at the IAMFES Annual Meeting in Atlanta, Georgia on August 9, 2000.

Nominations will be accepted for the following Awards:

**Black Pearl Award** – Award Showcasing the Black Pearl

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

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

**Honorary Life Membership Award** – Plaque and Lifetime Membership in IAMFES

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

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

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

*Sponsored by DiverseyLever/U.S. Food Group.*

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

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

*Sponsored by NASCO International, Inc.*

**Educator Award** – Plaque and \$1,000 Honorarium

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

*Sponsored by Nelson-Jameson, Inc.*

**Sanitarian Award** – Plaque and \$1,000 Honorarium

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

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

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

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

*Sponsored by National Food Processors Association.*

# Call for Abstracts

IAMFES  
87th Annual Meeting — August 6-9, 2000  
Atlanta, Georgia

## Instructions for Preparing Abstracts

### *Procedure*

- ◆ Abstracts should be typed in the space provided or on a separate sheet of paper. Abstracts must be double-spaced using a 12 point font size, and a maximum of 250 words.
- ◆ The first letter in each word in the title and proper nouns should be capitalized.
- ◆ List the names of authors and institution(s). Capitalize first letters and initials.
- ◆ Give the full name, title, mailing address, E-mail address, and the office telephone number of the author who will present the paper.
- ◆ Check the box to indicate if the paper is to be presented by a student entered in the Developing Scientist Awards Competition and have the form signed by your major professor or department head. (For more information on the Developing Scientist Awards Competitions, see the following pages.)
- ◆ Submit your abstract to the IAMFES office. Abstracts must be received no later than January 10, 2000. Return the completed abstract form through one of the following methods:
  1. Mail one printed copy and an electronic version on a 3½ inch disk (saved as a word document) of the abstract to:  
IAMFES  
Call for Abstracts  
6200 Aurora Avenue, Suite 200W  
Des Moines, IA 50322-2863;
  2. E-mail to [abstracts@iamfes.org](mailto:abstracts@iamfes.org); or
  3. Internet submission will be available in November 1999.

Acknowledgment of receipt of abstract will be sent via mail or E-mail. Authors will be notified of acceptance or rejection by March 1, 2000.

**\*NOTE: Your abstract must be received by the IAMFES office no later than January 10, 2000. Photocopies of the abstract form may be used.**



# Abstract General Information

## Content of the Abstract

The abstract should briefly describe the purpose of the research and objectives; methodology; essential results; and conclusions or implications.

## Presentation Format

Papers may be presented by oral or poster format at the discretion of the IAMFES Program Committee. Oral presentations will be scheduled with a maximum of 15 minutes, including a two to four minute discussion. Projectors for 35-mm slides will be available. Overhead projectors are not to be used. Other equipment may be used at speaker's expense. Prior authorization must be obtained.

## Subject Matter for Papers

Papers should report the results of applied research on: food, dairy and environmental sanitation; foodborne pathogens; food and dairy microbiology; food and dairy engineering; food and dairy chemistry; food additives and residues; food and dairy technology; food service and food administration; quality assurance and control; mastitis; environmental health; waste management and water quality. Papers may also report subject matter of an educational and/or nontechnical nature.

## Criteria for Acceptance of Abstracts

1. Abstract must accurately and briefly describe:
  - (a) the problem studied and objectives;
  - (b) methodology;
  - (c) essential results;
  - (d) conclusions or implications.
2. Abstract must report the results of original research pertinent to the subject matter described in "Subject Matter for Papers" section.

3. Research must be based on accepted scientific practices.
4. Research should not have been previously presented nor intended for presentation at another scientific meeting; paper should not appear in print prior to the IAMFES Annual Meeting.
5. Results should be summarized. Do not use tables or graphs.

## Typical Reasons for Rejection of Abstracts

1. Abstract was not prepared according to "Instructions for Preparing Abstracts." (page 639)
2. Abstract does not contain essential elements described in "Criteria for Acceptance of Abstracts."
3. Abstract reports inappropriate or unacceptable subject matter, is not based on accepted scientific practices, or the quality of the research or scientific approach is inadequate.
4. Work reported appears to be incomplete.
5. The abstract was poorly written or prepared including spelling and grammatical errors.
6. Results have been presented/published previously.
7. The abstract was received after the deadline for submission.
8. Abstract contains information that is in violation of the IAMFES Policy on Commercialism.

## Additional Abstract Forms

Photocopies of the abstract form may be used.

## Membership in IAMFES

Membership in IAMFES is not a requirement for presenting a paper at the IAMFES Annual Meeting.

# IAMFES Abstract Form

**DEADLINE: Must be Received by January 10, 2000**

Title of Paper \_\_\_\_\_

Authors \_\_\_\_\_

Full Name and Title of Presenter \_\_\_\_\_

Institution and Address of Presenter \_\_\_\_\_

Phone Number: \_\_\_\_\_

Fax Number: \_\_\_\_\_

E-mail: \_\_\_\_\_

NOTE: Selected presentations may be recorded (audio or visual). The final decision on presentation format will be made by the Program Committee.

**Format preferred:**    **Oral**    **Poster**    **No Preference**

**Developing Scientist Awards Competitions**  **Yes**

Major Professor/Department Head approval (signature and date) \_\_\_\_\_

**TYPE abstract, DOUBLE-SPACED, in the space provided or on a separate sheet of paper using a 12 point font size. No more than 250 words.**

# Call for Entrants in the Developing Scientist Awards Competitions

Supported by the IAMFES Foundation

IAMFES is pleased to announce the continuation of its program to encourage and recognize the work of students and recent graduates in the field of food safety research. Qualified individuals may enter either the Developing Scientist Oral Competition or the Developing Scientist Poster Competition.

## Purpose:

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

## DEVELOPING SCIENTIST ORAL AWARDS COMPETITION:

The Developing Scientist Oral Awards Competition is open only to graduate students enrolled in M.S. or Ph.D. programs or recent M.S. or Ph.D. graduates in programs at accredited universities or colleges where research deals with environmental, food or dairy sanitation, protection or safety. Competition entrants cannot have graduated more than one year prior to the deadline for submitting abstracts.

Prior to the Annual Meeting, up to ten finalists will be selected for competition. Awards will be presented at the IAMFES Annual Meeting Awards Banquet to the top three presenters (first, second and third places). Presentations are limited to fifteen minutes which includes two to four minutes for discussion.

**Awards:** First Place, \$500 and an engraved plaque; Second Place, \$300 and a framed certificate; Third Place, \$100 and a framed certificate. Award winners will also receive a complimentary, one-year IAMFES membership including both *Dairy, Food and Environmental Sanitation* and *Journal of Food Protection*.

## DEVELOPING SCIENTIST POSTER AWARDS COMPETITION:

The Developing Scientist Poster Awards Competition is open to enrolled undergraduate and graduate students or recent graduates from undergraduate or

graduate programs at accredited universities or colleges where research deals with environmental, food or dairy sanitation, protection or safety. Competition entrants cannot have graduated more than one year prior to the deadline for submitting abstracts.

Prior to the Annual Meeting, up to ten finalists will be selected for competition and awards will be presented at the IAMFES Annual Meeting Awards Banquet to the top three presenters (first, second and third places). Specific requirements for presentations will be provided at a later date. The presenter must be present for the specified time (approximately two hours) during the assigned session.

**Awards:** First Place, \$500 and an engraved plaque; Second Place, \$300 and a framed certificate; Third Place, \$100 and a framed certificate. Award winners will also receive a complimentary, one-year IAMFES membership including both *Dairy, Food and Environmental Sanitation* and *Journal of Food Protection*.

## INSTRUCTIONS FOR DEVELOPING SCIENTIST AWARDS ORAL AND POSTER COMPETITION ENTRANTS:

1. Abstracts must be received by the IAMFES office no later than January 10, 2000.
2. In addition to adhering to the general procedures for abstract preparation and submission required of all individuals submitting abstracts, competition entrants must submit one copy of their abstract. Competition entrants must also mark the appropriate box on the abstract form to indicate their intention to participate in the Developing Scientist Awards Competition and to designate whether it is "oral" or "poster."
3. Both the competition entrant and his or her presentation must be recommended and approved for the Competition by his or her major professor or department head, who must sign the abstract form.
4. The work must represent original research done by the competition entrant and must be presented by the competition entrant.
5. Competition entrants may enter only one paper in either the Oral or the Poster Competition.

#### **ADDITIONAL INFORMATION:**

1. All competition entrants are required to pay the registration fee (i.e., student member rate, Member rate, or nonmember rate) for the IAMFES Annual Meeting. Nonmembers may join IAMFES and receive the Member rate.
2. Acceptance of papers by IAMFES for presentation at the Annual Meeting is independent of acceptance as a Competition finalist. Competition entrants who are chosen as finalists will be notified of their status by the competition chairperson by June 1, 2000.
3. All competition entrants with accepted abstracts will receive a complimentary, one-year IAMFES membership which includes their choice of *Dairy, Food and Environmental Sanitation* or *Journal of Food Protection*.
4. All competition finalists will receive a complimentary Awards Banquet ticket and are expected to be present at the banquet where the award winners will be announced and recognized.

#### **JUDGING THE DEVELOPING SCIENTIST AWARDS COMPETITION:**

Abstracts and presentations will be evaluated by an independent panel of judges. Selection of up to ten finalists for the Developing Scientist Oral Awards Competition and up to ten finalists for the Developing Scientist Poster Awards Competition will be based on

evaluations of the abstracts and the scientific quality of the work (see judging criteria below). All competition entrants will be advised of the judges' decisions by June 1, 2000.

Only competition finalists will be judged at the Annual Meeting and will be eligible for the awards. All other competition entrants with abstracts accepted by the IAMFES Program Committee will be expected to present their papers or posters as part of the regular Annual Meeting. The presentations will not be judged and they will not be eligible for the awards.

#### **JUDGING CRITERIA FOR THE DEVELOPING SCIENTIST AWARDS COMPETITION:**

##### **ABSTRACT:**

Clarity; comprehensiveness; conciseness.

##### **SCIENTIFIC QUALITY:**

Adequacy of experimental design; extent to which objectives were met; difficulty and thoroughness of research; validity of conclusions based upon data; technical merit; contribution to science.

##### **PRESENTATION:**

Organization (clarity of introduction, objectives, methods, results and conclusions); quality of visuals; quality and poise of presentation and in answering questions.

**\* NOTE: Your abstract must be received by the IAMFES office no later than January 10, 2000. Photocopies of the abstract form may be used.**

# IAMFES Policy on Commercialism

## 1. INTRODUCTION

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

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

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

## 2. TECHNICAL CONTENT OF SUBMISSIONS AND PRESENTATIONS

### 2.1 Original Work

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

### 2.2 Substantiating Data

Submissions and presentations should present technical conclusions derived from technical data. If products or services are described, all reported capabilities, features or benefits, and performance parameters must be substantiated by data or by an acceptable explanation as to why the data are unavailable (e.g.,

incomplete, not collected, etc.) and, if it will become available, when. The explanation for unavailable data will be considered by the Program Committee chairperson and/or technical reviewers selected by the Program Committee chairperson in order to ascertain if the presentation is acceptable without the data. Serious consideration should be given to withholding submissions and presentations until the data are available as only those conclusions that might be reasonably drawn from the data may be presented. Claims of benefit and/or technical conclusions not supported by the presented data are prohibited.

### 2.3 Trade Names

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

### 2.4 "Industry Practice" Statements

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

### 2.5 Ranking

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

### 2.6 Proprietary Information (See also 2.2.)

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



## **2.7 Capabilities**

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

## **3. GRAPHICS**

### **3.1 Purpose**

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

### **3.2 Source**

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

### **3.3 Company Identification**

Names or logos of agencies or companies supplying the goods or services must not appear on the graphics, except on the first slide of the presentation. Slides showing products may not include predominant nameplates. Graphics with commercial names or logos added as background borders or corners are specifically forbidden.

### **3.4 Copies**

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

## **4. INTERPRETATION AND ENFORCEMENT**

### **4.1 Distribution**

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

### **4.2 Assessment Process**

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

### **4.3 Author Awareness**

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

### **4.4 Monitoring**

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

### **4.5 Enforcement**

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

### **4.6 Penalties**

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

# IAMFES Audiovisual Library

## DAIRY

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- D1170 3-A Symbol Council**—(8 minute videotape). A video which was developed to make people in the dairy and food industries aware of the 3-A program and its objectives.
- D1180 10 Points to Dairy Quality**—(10 minute videotape). Provides in-depth explanation of a critical control point in the residue prevention protocol. Illustrated with on-farm, packing plant, and milk-receiving plant scenes as well as interviews of producers, practicing veterinarians, regulatory officials and others. (Dairy Quality Assurance-1992) (Rev. 1998)
- D1010 The Bulk Milk Hauler: Protocol & Procedures**—(8 minute videotape). Teaches bulk milk haulers how they contribute to quality milk production. Special emphasis is given to the hauler's role in proper milk sampling, sample care procedures, and understanding test results. (Iowa State University Extension-1990). (Rev. 1998)
- D1020 Causes of Milkfat Test Variations & Depressions**—(30 minute-140 slides-tape-script). This set illustrates the many factors involved in causing milkfat test variations or depressions in your herd, including feeding, management, stage of lactation, age of samples, handling of samples, and testing procedures. The script was reviewed by field staff, nutritionists, laboratory personnel and county extension staff. It is directed to farmers, youth and allied industry. (Penn State-1982)
- D1030 Cold Hard Facts**—This video is recommended for training personnel associated with processing, transporting, warehousing, wholesaling and retailing frozen foods. It contains pertinent information related to good management practices necessary to ensure high quality frozen foods. (National Frozen Food Association-1993) (Rev. 1998)
- D1040 Ether Extraction Method for Determination of Raw Milk**—(26 minute videotape). Describes the ether extraction procedure to measure milkfat in dairy products. Included is an explanation of the chemical reagents used in each step of the process. (CA-1988) (Rev. 1998)
- D1050 The Farm Bulk Milk Hauler**—(30 minute-135 slides-tape-script). This set covers the complete procedure for sampling and collecting milk from farms. Each step is shown as it starts with the hauler entering the farm lane and ends when he leaves the milk house. Emphasis is on universal sampling and automated testing. Funds to develop this set were provided by The Federal Order #36 Milk Market Administrator. (Penn State-1982) (Rev. 1998)
- D1060 Frozen Dairy Products**—(27 minute videotape). Developed by the California Department of Food and Agriculture. Although it mentions the importance of frozen desserts, safety and checking ingredients; emphasis is on what to look for in a plant inspection. Everything from receiving, through processing and cleaning and sanitizing is outlined, concluded with a quality control program. Directed to plant workers and supervisors, it shows you what should be done. (CA-1987) (Rev. 1997)
- D1070 The Gerber Butterfat Test**—(7 minute videotape). Describes the Gerber milkfat test procedure for dairy products and compares it to the Babcock test procedure. (CA-1990) (Rev. 1998)
- D1080 High-Temperature, Short-Time Pasteurizer**—(59 minute videotape). Provided by the Dairy Division of Borden, Inc. It was developed to train pasteurizer operators and is well done. There are seven sections with the first covering the twelve components of a pasteurizer and the purpose and operation of each. The tape provides the opportunity for discussion after each section or continuous running of the videotape. Flow diagrams, processing and cleaning are covered. (Borden, Inc.-1986) (Rev. 1997)
- D1100 Mastitis Prevention and Control**—(2-45 minute videotapes). This video is ideal for one-on-one or small group presentations. Section titles include: Mastitis Pathogens, Host Defense, Monitoring Mastitis, Mastitis Therapy, Recommended Milking Procedures, Postmilking Teat Dip Protocols, Milk Quality, Milking Systems. (Nasco-1993)

**D1110 Milk Plant Sanitation: Chemical Solution**—(13 minute videotape). This explains the proper procedure required of laboratory or plant personnel when performing chemical titration in a dairy plant. Five major titrations are reviewed... alkaline wash, presence of chlorine and iodophor, and caustic wash and an acid wash in a HTST system. Emphasis is also placed on record keeping and employee safety. (1989)

**D1120 Milk Processing Plant Inspection Procedures**—(15 minute videotape). Developed by the California Department of Food and Agriculture. It covers pre- and post- inspection meeting with management, but emphasis is on inspection of all manual and cleaned in place equipment in the receiving, processing and filling rooms. CIP systems are checked along with recording charts and employee locker and restrooms. Recommended for showing to plant workers and supervisors. (CA-1986)

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

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

**D1150 Processing Fluid Milk**—(30 minute-140 slides-script-tape). It was developed to train processing plant personnel on preventing food poisoning and spoilage bacteria in fluid dairy products. Emphasis is on processing procedures to meet federal regulations and standards. Processing procedures, pasteurization times and temperatures, purposes of equipment, composition standards, and cleaning and sanitizing are covered. Primary emphasis is on facilities such as drains and floors, and

filling equipment to prevent post-pasteurization contamination with spoilage or food poisoning bacteria. It was reviewed by many industry plant operators and regulatory agents and is directed to plant workers and management. (Penn State-1987) (Rev. 1998)

## ENVIRONMENTAL

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

**E3020 Acceptable Risks?**—(16 minute videotape). Accidents, deliberate misinformation, and the rapid proliferation of nuclear power plants have created increased fears of improper nuclear waste disposal, accidents during the transportation of waste, and the release of radioactive effluents from plants. The program shows the occurrence of statistically anomalous leukemia clusters; governmental testing of marine organisms and how they absorb radiation; charts the kinds and amounts of natural and man-made radiation to which man is subject; and suggests there is no easy solution to balancing our fears to nuclear power and our need for it. (Films for the Humanities & Sciences, Inc.-1993) (Rev. 1998)

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

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

- E3055 Effective Handwashing—Preventing Cross-Contamination in the Food Service Industry**—(3 1/2 minute videotape). It is critical that all food service workers wash their hands often and correctly. This video discusses the double wash method and the single wash method and when to use each method. (Zep Manufacturing Company-1993)
- E3060 EPA Test Methods for Freshwater Effluent Toxicity Tests (Using Ceriodaphnia)**—(22 minute videotape). Demonstrates the Ceriodaphnia 7-Day Survival and Reproduction Toxicity Test and how it is used to monitor and evaluate effluents for their toxicity to biota and their impact on receiving waters and the establishment of NPDES permit limitations for toxicity. The tape covers the general procedures for the test including how it is set up, started, monitored, renewed and terminated. (1989) (Rev. 1998)
- E3070 EPA Test Methods for Freshwater Effluent Toxicity Tests (Using Fathead Minnow Larva)**—(15 minute videotape). A training tape that teaches environmental professionals about the Fathead Minnow Larval Survival and Growth Toxicity Test. The method described is found in an EPA document entitled, "Short Term Methods for Estimating the Chronic Toxicity of Effluents & Receiving Waters to Freshwater Organisms." The tape demonstrates how fathead minnow toxicity tests can be used to monitor and evaluate effluents for their toxicity to biota and their impact on receiving waters and the establishment of NPDES permit limitations for toxicity. (1989) (Rev. 1998)
- E3080 Fit to Drink**—(20 minute videotape). This program traces the water cycle, beginning with the collection of rain-water in rivers and lakes, in great detail through a water treatment plant, to some of the places where water is used, and finally back into the atmosphere. Treatment of the water begins with the use of chlorine to destroy organisms; the water is then filtered through various sedimentation tanks to remove solid matter. Other treatments employ ozone, which oxidizes contaminants and makes them easier to remove; hydrated lime, which reduces the acidity of the water; sulfur dioxide, which removes any excess chlorine; and flocculation, a process in which aluminum sulfate causes small particles to clump together and precipitate out. Throughout various stages of purification, the water is continuously tested for smell, taste, titration, and by fish. The treatment plant also monitors less common contaminants with the use of up-to-date techniques like flame spectrometers and gas liquefaction. (Films for the Humanities & Sciences, Inc.-1987)
- E3110 Garbage: The Movie**—(25 minute videotape). A fascinating look at the solid waste problem and its impact on the environment. Viewers are introduced to landfills, incinerators, recycling plants and composting operations as solid waste management solutions. Problems associated with modern landfills are identified and low-impact alternatives such as recycling, reuse, and source reduction are examined. (Churchill Films) (Rev. 1998)
- E3120 Global Warming: Hot Times Ahead**—(23 minute videotape). An informative videotape program that explores the global warming phenomenon and some of the devastating changes it may cause. This program identifies greenhouse gases and how they are produced by human activities. Considered are: energy use in transportation, industry and home; effects of deforestation, planting of trees and recycling as means of slowing the build-up of greenhouse gases. (Churchill Films-1995)
- E3130 Kentucky Public Swimming Pool & Bathing Facilities**—(38 minute videotape). Developed by the Lincoln Trail District Health Department in Kentucky and includes all of their state regulations which may be different from other states, provinces and countries. This tape can be used to train those responsible for operating pools and waterfront bath facilities. All aspects are included of which we are aware, including checking water conditions and filtration methods. (1987). (Rev. 1998)
- E3135 Plastics Recycling Today: A Growing Resource**—(11:35 minute videotape). Recycling is a growing segment of our nation's solid waste management program. This video shows how plastics are handled from curbside pickup through the recycling process to end-use by consumers. This video provides a basic understanding of recycling programs and how communities, companies and others can benefit from recycling. (The Society of the Plastics Industry, Inc.-1988)

**E3140 Putting Aside Pesticides**—(26 minute videotape). This program probes the long-term effects of pesticides and explores alternative pest-control efforts; biological pesticides, genetically-engineered microbes that kill objectionable insects, the use of natural insect predators, and the cross-breeding and genetic engineering of new plant strains that produce their own anti-pest toxins. (Films for the Humanities & Sciences, Inc.)

**E3150 Radon**—(26 minute videotape). This program looks at the possible health implications of radon pollution, methods homeowners can use to detect radon gas in their homes, and what can be done to minimize hazards once they are found.

**E3160 RCRA-Hazardous Waste**—(19 minute videotape). This videotape explains the dangers associated with hazardous chemical handling and discusses the major hazardous waste handling requirements presented in the Resource Conservation and Recovery Act. (Industrial Training, Inc.)

**The New Superfund. What It is & How It Works**—A six-hour national video conference sponsored by the EPA. Target audiences include the general public, private industry, emergency responders and public interest groups. The series features six videotapes that review and highlight the following issues:

**E3170 Tape 1—Changes in the Remedial Process: Clean-up Standards and State Involvement Requirements**—(62 minute videotape). A general overview of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and the challenge of its implementation. The remedy process—long-term and permanent cleanup—is illustrated step-by-step, with emphasis on the new mandatory clean-up schedules, preliminary site assessment petition procedures and the hazard ranking system/National Priority List revisions. The major role of state and local government involvement and responsibility is stressed.

**E3180 Tape 2—Changes in the Removal Process: Removal and Additional Program Requirements**—(48 minute videotape).

The removal process is a short-term action and usually an immediate response to accidents, fires and illegal dumped hazardous substances. This program explains the changes that expand removal authority and require procedures consistent with the goals of remedial action.

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

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

**E3220 Tape 5—Underground Storage Tank Trust Fund & Response Program**—(21 minute videotape). Another addition to SARA is the Leaking Underground Storage Tank (LUST) Trust Fund. One half of the US population depends on ground water for drinking—and EPA estimates that as many as 200,000 underground storage tanks are corroding and leaking into our ground water. This program discusses how the LUST Trust Fund will be used



by EPA and the states in responding quickly to contain and clean-up LUST releases. Also covered is state enforcement and action requirements, and owner/operator responsibility.

- E3230 Tape 6—Research & Development/Closing Remarks**—(33 minute videotape). An important new mandate of the new Superfund is the technical provisions for research and development to create more permanent methods in handling and disposing of hazardous wastes and managing hazardous substances. This segment discusses the SITE (Superfund Innovative Technology Evaluation) program, the University Hazardous Substance Research Centers, hazardous substance health research and the DOD research, development and demonstration management of DOD wastes.
- E3240 Sink A Germ**—(10 minute videotape). A presentation on the rationale and techniques for effective handwashing in health care institutions. Uses strong imagery to educate hospital personnel that handwashing is the single most important means of preventing the spread of infection. (The Brevis Corp.-1986). (Rev. 1998)
- E3245 Wash Your Hands**—(5 minute videotape). Handwashing is the single most important means of preventing the spread of infection. This video presents why handwashing is important and the correct way to wash your hands. (LWB Company-1995)
- E3250 Waste Not: Reducing Hazardous Waste**—(35 minute videotape). This tape looks at the progress and promise of efforts to reduce the generation of hazardous waste at the source. In a series of company profiles, it shows activities and programs within industry to minimize hazardous waste in the production process. Waste Not also looks at the obstacles to waste reduction, both within and outside of industry, and considers how society might further encourage the adoption of pollution prevention, rather than pollution control, as the primary approach to the problems posed by hazardous waste. (Umbrella films)
- FOOD**
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- F2260 100 Degrees of Doom... The Time & Temperature Capers**—(14 minute videotape). Video portraying a private eye tracking down the cause of a *Salmonella* poisoning. Temperature control is emphasized as a key factor in preventing foodborne illness. (Educational Communications, Inc.-1987) (Rev. 1998)
- F2440 Cleaning & Sanitizing in Vegetables Processing Plants: Do It Well, Do It Safely!**—(16 minute videotape) This training video shows how to safely and effectively clean and sanitize in a vegetable processing plant. It teaches how it is the same for processing plant as it is for washing dishes at home. (University of Wisconsin Extension-1996) (Available in Spanish)
- F2010 Close Encounters of the Bird Kind**—(18 minute videotape). A humorous but in-depth look at *Salmonella* bacteria, their sources, and their role in foodborne disease. A modern poultry processing plant is visited, and the primary processing steps and equipment are examined. Potential sources of *Salmonella* contamination are identified at the different stages of production along with the control techniques that are employed to insure safe poultry products. (Topek Products, Inc.) (Rev. 1998)
- F2030 "Egg Games" Foodservice Egg Handling and Safety**—(18 minute videotape). Develop an effective egg handling and safety program that is right for your operation. Ideal for manager training and foodservice educational programs, this video provides step-by-step information in an entertaining, visually-exciting format. (American Egg Board-1999)
- F2020 Egg Handling & Safety**—(11 minute videotape). Provides basic guidelines for handling fresh eggs which could be useful in training regulatory and industry personnel. (American Egg Board-1997)
- F2040 Food Irradiation**—(30 minute videotape). Introduces viewers to food irradiation as a new preservation technique. Illustrates how food irradiation can be used to prevent spoilage by microorganisms, destruction by insects, overripening, and to reduce the need for chemical food additives. The food irradiation

tion process is explained and benefits of the process are highlighted. (Turnelle Productions, Inc.) (Rev. 1998)

**F2050 Food Safe—Food Smart—HACCP & Its Application to the Food Industry—**(2-16 minute videotapes). (1)—Introduces the seven principles of HACCP and their application to the food industry. Viewers will learn about the HACCP system and how it is used in the food industry to provide a safe food supply. (2)—Provides guidance on how to design and implement a HACCP system. It is intended for individuals with the responsibility of setting up a HACCP system. (Alberta Agriculture, Food and Rural Development) (Rev. 1998)

**F2060 Food Safe—Series I—**(4-10 minute videotapes). (1) "Receiving & Storing Food Safely," details for food-service workers the procedures for performing sight inspections for the general conditions of food, including a discussion of food labeling and government approval stamps. (2) "Food-service Facilities and Equipment," outlines the requirements for the proper cleaning and sanitizing of equipment used in food preparation areas. Describes the type of materials, design, and proper maintenance of this equipment. (3) "Microbiology for Food-service Workers," provides a basic understanding of the microorganisms which cause food spoilage and foodborne illness. This program describes bacteria, viruses, protozoa, and parasites and the conditions which support their growth. (4) "Food-service Housekeeping and Pest Control," emphasizes cleanliness as the basis for all pest control. Viewers learn the habits and life cycles of flies, cockroaches, rats, and mice. (Perennial Education-1991) (Rev. 1998)

**F2070 Food Safe—Series II—**(4-10 minute videotapes). Presents case histories of foodborne disease involving (1) *Staphylococcus aureus*, (sauces) (2) *Salmonella*, (eggs) (3) *Campylobacter*, and (4) *Clostridium botulinum*. Each tape demonstrates errors in preparation, holding or serving food; describes the consequences of those actions; reviews the procedures to reveal the cause of the illness; and illustrates the correct practices in a step-by-step demonstration. These are excellent tapes to use in conjunction with hazard analysis critical control point training programs. (Perennial Education-1991) (Rev. 1998)

**F2080 Food Safe—Series III—**(4-10 minute videotapes). More case histories of foodborne disease. This set includes (1) Hepatitis "A", (2) *Staphylococcus aureus* (meats), (3) *Bacillus cereus*, and (4) *Salmonella* (meat). Viewers will learn typical errors in the preparation, holding and serving of food. Also included are examples of correct procedures which will reduce the risk of food contamination. (Perennial Education-1991) (Rev. 1998)

**F2090 Food Safety: An Educational Video for Institutional Food-Service Workers—**(10 minute videotape). Provides a general discussion on food safety principles with special emphasis on pathogen reductions in an institutional setting from child care centers to nursing homes. (U.S. Department of Health & Human Services-1997)

**F2120 Food Safety: For Goodness Sake, Keep Food Safe—**(15 minute videotape). Teaches foodhandlers the fundamentals of safe food handling. The tape features the key elements of cleanliness and sanitation, including: good personal hygiene, maintaining proper food product temperature, preventing time abuse, and potential sources of food contamination. (Iowa State University Extension-1990) (Rev. 1998)

**F2110 Food Safety is No Mystery—**(34 minute videotape). This is an excellent training visual for food-service workers. It shows the proper ways to prepare, handle, serve and store food in actual restaurant, school and hospital situations. A policeman sick from food poisoning, a health department sanitarian, and a food-service worker with all the bad habits are featured. The latest recommendations on personal hygiene, temperatures, cross-contamination, and storage of foods are included. (USDA-1987). Also available in Spanish. — (Rev. 1998)

**F2130 Food Safety: You Make the Difference—**(28 minute videotape). Through five food workers from differing backgrounds, this engaging and inspirational documentary style video illustrates the four basic food safety concepts: handwashing, preventing cross-contamination, moving foods quickly through the danger zone, and hot/cold holding (Seattle-King County Health Department-1995)

**F2140 GMP Basics — Employee Hygiene Practices—**(20 minute videotape). Through real-life examples and dramatization, this

video demonstrates good manufacturing practices that relate to employee hygiene, particularly hand washing. This video includes a unique test section to help assess participants' understanding of common GMP violations. (Silliker Laboratories-1997)

- F2143 GMP Basics: Guidelines for Maintenance Personnel**—(21 minute videotape). Developed specifically for maintenance personnel working in a food processing environment, this video depicts a plant-wide training initiative following a product recall announcement. Maintenance personnel will learn how GMPs relate to their daily activities and how important their roles are in the production of safe food products. (Silliker Laboratories-1999)
- F2148 GMP-GSP Employee**—(38 minute videotape). This video was developed to teach food plant employees the importance of "Good Manufacturing Practices" and "Good Sanitation Practices." Law dictates that food must be clean and safe to eat. This video emphasizes the significance of each employee's role in protecting food against contamination. Tips on personal cleanliness and hygiene are also presented. (L.J. Bianco & Associates)
- F2150 GMP: Personal Hygiene & Practices in Food Manufacturing**—(14 minute videotape). This video focuses on the personal hygiene of food-manufacturing workers, and explores how poor hygiene habits can be responsible for the contamination of food in the manufacturing process. This is an instructional tool for new food-manufacturing line employees and supervisors. It was produced with "real" people in actual plant situations, with only one line of text included in the videotape. (Penn State-1993)—(Available in Spanish and Vietnamese)
- F2147 GMP Basics: Process Control Practices**—(16 minute videotape). In actual food processing environments, an on-camera host takes employees through a typical food plant as they learn the importance of monitoring and controlling key points in the manufacturing process. Beginning with receiving and storing, through production, and ending with packaging and distribution, control measures are introduced, demonstrated, and reviewed. Employees will see how their everyday activities in the plant have an impact on product safety. (Silliker Laboratories-1999)
- F2160 GMP: Sources & Control of Contamination during Processing**—(20 minute videotape). This program, designed as an instructional tool for new employees and for refresher training for current or reassigned workers, focuses on the sources and control of contamination in the food-manufacturing process. It was produced in actual food plant situations. A concise description of microbial contamination and growth and cross-contamination, a demonstration of food storage, and a review of aerosol contaminants are also included. (Penn State-1995)
- F2135 Get with a Safe Food Attitude**—(40 minute videotape). Consisting of nine short segments which can be viewed individually or as a group, this video presents safe food handling for moms-to-be. Any illness a pregnant woman contracts can affect her unborn child whose immune system is too immature to fight back. The video follows four pregnant women as they learn about food safety and preventing foodborne illness. (US Department of Agriculture-1999)
- F2165 HACCP and Its Application to the Food Industry**—(2-17 minute videotapes). Looking to develop a comprehensive food-safety and quality control program for your organization? Part one introduces the concept of the HACCP system and the seven principles behind it. Part two takes the viewer through each of the 12 stages in setting up such a system. (Alberta Agriculture-1993) (Rev. 1999)
- F2180 HACCP: Safe Food Handling Techniques**—(22 minute videotape). The video highlights the primary causes of food poisoning and emphasizes the importance of self-inspection. An explanation of potentially hazardous foods, cross-contamination, and temperature control is provided. The main focus is a detailed description of how to implement a Hazard Analysis Critical Control Point (HACCP) program in a foodservice operation. A leader's guide is provided as an adjunct to the tape. (The Canadian Restaurant & Foodservices Association-1990) (Rev. 1998)
- F2170 The Heart of HACCP**—(22 minute videotape). A training video designed to give plant personnel a clear understanding of the seven HACCP principles and practical guidance on how to apply these principles to their own work environment. This video emphasizes

the principles of primary concern to plant personnel such as critical limits, monitoring systems, and corrective actions that are vital to the success of a HACCP plan. (Silliker Laboratories Group-1994)

- F2175 Inspecting For Food Safety - Kentucky's Food Code**—(100 minute videotape). Kentucky's Food Code is patterned after the Federal Food Code. The concepts, definitions, procedures, and regulatory standards included in the code are based on the most current information about how to prevent foodborne diseases. This video is designed to prepare food safety inspectors to effectively use the new food code in the performance of their duties. (Department of Public Health Commonwealth of Kentucky-1997) (Rev. 1999)
- F2190 Is What You Order What You Get? Seafood Integrity**—(18 minute videotape). Teaches seafood department employees about seafood safety and how they can help insure the integrity of seafood sold by retail food markets. Key points of interest are cross-contamination control, methods and criteria for receiving seafood and determining product quality, and knowing how to identify fish and seafood when unapproved substitutions have been made. (The Food Marketing Institute) (Rev. 1998)
- F2210 Northern Delight—From Canada to the World**—(13 minute videotape). A promotional video that explores the wide variety of foods and beverages produced by the Canadian food industry. General in nature, this tape presents an overview of Canada's food industry and its contribution to the world's food supply. (Ternelle Production, Ltd.) (Rev. 1998)
- F2240 On the Front Line**—(18 minute videotape). A training video pertaining to sanitation fundamentals for vending service personnel. Standard cleaning and serving procedures for cold food, hot beverage and cup drink vending machines are presented. The video emphasizes specific cleaning and serving practices which are important to food and beverage vending operations. (National Automatic Merchandising Association-1993) (Rev. 1998)
- F2250 On the Line**—(30 minute videotape). This was developed by the Food Processors Institute for training food processing plant employees. It creates an awareness of quality control and regulations. Emphasis is on personal hygiene, equipment cleanliness and good housekeeping in a food plant. It is recommended for showing to both new and experienced workers. (Available in Spanish) The Food Processors Institute. 1993. (Rev. 1998)
- F2270 Pest Control in Seafood Processing Plants**—(26 minute videotape). Videotape which covers procedures to control flies, roaches, mice, rats and other common pests associated with food processing operations. The tape will familiarize plant personnel with the basic characteristics of these pests and the potential hazards associated with their presence in food operations. (Rev. 1998)
- F2280 Principles of Warehouse Sanitation**—(33 minute videotape). This videotape gives a clear, concise and complete illustration of the principles set down in the Food, Drug and Cosmetic Act and in the Good Manufacturing Practices, as well as supporting legislation by individual states. (American Institute of Baking-1993)
- F2290 Product Safety & Shelf Life**—(40 minute videotape). Developed by Borden Inc., this videotape was done in three sections with opportunity for review. Emphasis is on providing consumers with good products. One section covers off-flavors, another product problems caused by plant conditions, and a third the need to keep products cold and fresh. Procedures to assure this are outlined, as shown in a plant. Well done and directed to plant workers and supervisors. (Borden-1987) - (Rev. 1997)
- F2220 Proper Handling of Peracetic Acid**—(15 minute videotape). Introduces peracetic acid as a chemical sanitizer and features the various precautions needed to use the product safely in the food industry.
- F2230 Purely Coincidental**—(20 minute videotape). A parody that shows how foodborne illness can adversely affect the lives of families that are involved. The movie compares improper handling of dog food in a manufacturing plant that causes the death of a family pet with improper handling of human food in a manufacturing plant that causes a child to become ill. Both cases illustrate how handling errors in food production can produce devastating outcomes. (The Quaker Oats Company-1993.) (Rev. 1998)

- F2310 Safe Food: You Can Make a Difference**—(25 minute videotape). A training video for food-service workers which covers the fundamentals of food safety. An explanation of proper food temperature, food storage, cross-contamination control, cleaning and sanitizing, and handwashing as methods of foodborne illness control is provided. The video provides an orientation to food safety for professional foodhandlers. (Tacoma-Pierce County Health Department-1990). (Rev. 1998)
- F2320 Safe Handwashing**—(15 minute videotape). Twenty-five percent of all foodborne illnesses are traced to improper handwashing. The problem is not just that handwashing is not done, the problem is that it's not done properly. This training video demonstrates the "double wash" technique developed by Dr. O. Peter Snyder of the Hospitality Institute for Technology and Management. Dr. Snyder demonstrates the procedure while reinforcing the microbiological reasons for keeping hands clean. (Hospitality Institute for Technology and Management-1991) (Rev. 1998)
- F2330 Sanitation for Seafood Processing Personnel**—(20 minute videotape). A training video suited for professional foodhandlers working in any type of food manufacturing plant. The film highlights Good Manufacturing Practices and their role in assuring food safety. The professional foodhandler is introduced to a variety of sanitation topics including: (1) food-handlers as a source of food contamination, (2) personal hygiene as a means of preventing food contamination, (3) approved food storage techniques including safe storage temperatures, (4) sources of cross-contamination, (5) contamination of food by insects and rodents, (6) garbage handling and pest control, and (7) design and location of equipment and physical facilities to facilitate cleaning. (Rev. 1998)
- F2340 Sanitizing for Safety**—(17 minute videotape). Provides an introduction to basic food safety for professional foodhandlers. A training pamphlet and quiz accompany the tape. Although produced by a chemical supplier, the tape contains minimal commercialism and may be a valuable tool for training new employees in the food industry. (Clorox-1990) (Rev. 1998)
- F2350 SERVSAFE® Serving Safe Food**—(4-20 minute videotapes). This video series illustrates and reinforces important food safety practices in an informative and entertaining manner. The material is presented in an easy to understand format, making it simpler for employees to learn and remember this essential information. Each video includes a leader's guide that provides all the information managers need to direct a productive training session. (Educational Foundation of the National Restaurant Association-1993) (Rev. 1998)
- F2360 SERVSAFE® Serving Safe Food Second Edition**—(6-10 minute videotapes). The program still covers all the major areas of food safety training, but there is an added emphasis on training employees to follow HACCP procedures. The second edition program includes an Employee Guide, Leader's Guide and six instructional videos. (Educational Foundation of the National Restaurant Association-1993)
- F2430 Smart Sanitation: Principles & Practices for Effectively Cleaning Your Food Plant**—(20 minute videotape) A practical training tool for new sanitation employees or as a refresher for veterans. Employees will understand the food safety impact of their day-to-day cleaning and sanitation activities and recognize the importance of their role in your company's food safety program. (Silliker Laboratories Group-1996)
- F2370 Supermarket Sanitation Program—"Cleaning & Sanitizing"**—(13 minute videotape). Contains a full range of cleaning and sanitizing information with minimal emphasis on product. Designed as a basic training program for supermarket managers and employees. (1989) (Rev. 1998)
- F2380 Supermarket Sanitation Program—"Food Safety"**—(11 minute videotape). Contains a full range of basic sanitation information with minimal emphasis on product. Filmed in a supermarket, the video is designed as a basic program for manager training and a program to be used by managers to train employees. (1989) (Rev. 1998)



**F2390 Take Aim at Sanitation**—(8 minute videotape). This video features tips on food safety and proper disposal of single service items. Also presented is an emphasis on food contact surfaces as well as the manufacture, storage and proper handling of these items. (Foodservice and Packaging Institute, Inc.-1995). (Available in Spanish)

**F2410 Wide World of Food-Service Brushes**—(18 minute videotape). Discusses the importance of cleaning and sanitizing as a means to prevent and control foodborne illness. Special emphasis is given to proper cleaning and sanitizing procedures and the importance of having properly designed and constructed equipment (brushes) for food preparation and equipment cleaning operations. (1989) (Rev. 1998)

**F2420 Your Health in Our Hands—Our Health in Yours**—(8 minute videotape). For professional foodhandlers, the tape covers the do's and don'ts of foodhandling as they relate to personal hygiene, temperature control, safe storage and proper sanitation. (Jupiter Video Production-1993). (Rev. 1998)

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### OTHER

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**M4010 Diet, Nutrition & Cancer**—(20 minute videotape). Investigates the relationship between a person's diet and the risk of developing cancer. The film describes the cancer development process and identifies various types of food believed to promote and/or inhibit cancer. The film also provides recommended dietary guidelines to prevent or greatly reduce the risk of certain types of cancer.

**M4020 Eating Defensively: Food Safety Advice for Persons with Aids**—(15 minute videotape). While HIV infection and AIDS are not acquired by eating foods or drinking liquids, persons infected with the AIDS virus need to be concerned about what they eat. Foods can transmit bacteria and viruses capable of causing life-threatening illness to persons infected with AIDS. This video provides information for persons with AIDS on what foods to avoid and how to better handle and prepare foods. (FDA/CDC-1989)

**M4030 Ice: The Forgotten Food**—(14 minute videotape). This training video describes how ice is made and where the critical control points are in its manufacture, both in ice plants and in on-premises locations (convenience stores, etc.); it documents the potential for illness from contaminated ice and calls on government to enforce good manufacturing practices, especially in on-premises operations where sanitation deficiencies are common. (Packaged Ice Association-1993)

**M4040 Legal Aspects of the Tampering Case**—(25 minute videotape). This was presented by Mr. James T. O'Reilly, University of Cincinnati School of Law at the fall 1986 Central States Association of Food and Drug Officials Conference. He emphasizes three factors from his police and legal experience—know your case, nail your case on the perpetrator, and spread the word. He outlines specifics under each factor. This should be of the greatest interest to regulatory sanitarians, in federal, state and local agencies. (1987)

**M4050 Personal Hygiene & Sanitation for Food Processing Employees**—(15 minute videotape). Illustrates and describes the importance of good personal hygiene and sanitary practices for people working in a food processing plant. (Iowa State-1993)

**M4060 Psychiatric Aspects of Product Tampering**—(25 minute videotape). This was presented by Emanuel Tanay, M.D. from Detroit, at the fall 1986 conference of CSAFDA. He reviewed a few cases and then indicated that abnormal behavior is like a contagious disease. Media stories lead to up to 1,000 similar alleged cases, nearly all of which are false. Tamper-proof packaging and recalls are essential. Tampering and poisoning are characterized by variable motivation, fraud and greed. Law enforcement agencies have the final responsibilities. Tamper proof containers are not the ultimate answer. (1987)

**M4070 Tampering: The Issue Examined**—(37 minute videotape). Developed by Culbro Machine Systems, this videotape is well done. It is directed to food processors and not regulatory sanitarians or consumers. A number of industry and regulatory agency management explain why food and drug containers should be made tamper evident. (Culbro-1987)

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

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- D1110 Milk Plant Sanitation: Chemical Solution
- D1120 Milk Processing Plant Inspection Procedures
- D1130 Pasteurizer - Design and Regulation
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**ENVIRONMENTAL**

- E3010 The ABCs of Clean - A Handwashing & Cleanline's Program for Early Childhood Programs
- E3020 Acceptable Risks?
- E3030 Air Pollution: Indoor
- E3040 Asbestos Awareness
- E3055 Effective Handwashing-Preventing Cross-Contamination in the Food Service Industry
- E3060 EPA Test Methods for Freshwater Effluent Toxicity Tests (Using Ceriodaphnia)
- E3070 EPA Test Methods for Freshwater Effluent Toxicity Tests (Using Fathead Minnow Larva)
- E3080 Fit to Drink
- E3110 Garbage: The Movie
- E3120 Global Warming: Hot Times Ahead
- E3130 Kentucky Public Swimming Pool & Bathing Facilities
- E3135 Plastic Recycling Today: A Growing Resource
- E3140 Putting Aside Pesticides
- E3150 Radon
- E3160 RCRA - Hazardous Waste
- E3170 The New Superfund: What It is & How It Works-(1) Changes in the Remedial Process: Clean-up Standards & State Involvement Requirements

- E3180 The New Superfund: What It is & How It Works-(2) Changes in the Removal Process: Removal & Additional Program Requirements
- E3190 The New Superfund: What It is & How It Works - (3) Enforcement and Federal Facilities
- E3210 The New Superfund: What It is & How It Works - (4) Emergency Preparedness & Community Right-to-Know
- E3220 The New Superfund: What It is & How It Works - (5) Underground Storage Tank Trust Fund & Response Program
- E3230 The New Superfund: What It is & How It Works - (6) Research & Development/Closing Remarks
- E3240 Sink a Germ
- E3245 Wash Your Hands
- E3250 Waste Not: Reducing Hazardous Waste

**FOOD**

- F2260 100 Degrees of Doom...The Time & Temperature Caper
- F2440 Cleaning & Sanitizing in Vegetable Processing Plants: Do It Well, Do It Safely!
- F2010 Close Encounters of the Bird Kind
- F2030 "Eggs Games" Foodservice Egg Handling and Safety
- F2020 Egg Handling & Safety
- F2040 Food Irradiation
- F2050 Food Safe - Food Smart - HACCP & Its Application to the Food Industry (Part 1&2)
- F2060 Food Safe - Series I (4 Videos)
- F2070 Food Safe - Series II (4 Videos)
- F2080 Food Safe - Series III (4 Videos)
- F2090 Food Safety: An Educational Video for Institutional Food-Service Workers
- F2120 Food Safety: For Goodness Sake, Keep Food Safe
- F2110 Food Safety is No Mystery
- F2130 Food Safety: You Make the Difference
- F2135 Get with a Safe Food Attitude
- F2140 GMP Basics: Employee Hygiene Practices
- F2143 GMP Basics: Guidelines for Maintenance Personnel
- F2148 GMP - GSP Employee
- F2150 GMP: Personal Hygiene and Practices in Food Manufacturing
- F2147 GMP Basics: Process Control Practices
- F2160 GMP: Sources & Control of Contamination during Processing

- F2165 HACCP and Its Application to the Food Industry
- F2180 HACCP: Safe Food Handling Techniques
- F2170 The Heart of HACCP
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- F2190 Is What You Order What You Get? Seafood Integrity
- F2210 Northern Delight - From Canada to the World
- F2240 On the Front Line
- F2250 On the Line
- F2270 Pest Control in Seafood Processing Plants
- F2280 Principles of Warehouse Sanitation
- F2290 Product Safety & Shelf Life
- F2220 Proper Handling of Peracetic Acid
- F2230E Purely Coincidental - English
- F2310 Safe Food: You Can Make a Difference
- F2320 Safe Handwashing
- F2330 Sanitation for Seafood Processing Personnel
- F2340 Sanitizing for Safety
- F2350 SERVSAFE® Serving Safe Food (4 Videos)
- F2360 SERVSAFE® Serving Safe Food Second Edition (6 Videos)
- F2430 Smart Sanitation: Principles & Practices for Effectively Cleaning Your Food Plant
- F2370 Supermarket Sanitation Program - "Cleaning & Sanitizing"
- F2380 Supermarket Sanitation Program - "Food Safety"
- F2390 Take Aim at Sanitation
- F2410 Wide World of Food-Service Brushes
- F2420 Your Health in Our Hands - Our Health in Yours

**OTHER**

- M4010 Diet, Nutrition & Cancer
- M4020 Eating Defensively: Food Safety Advice for Persons with AIDS
- M4030 Ice: The Forgotten Food
- M4040 Legal Aspects of the Tampering Case
- M4050 Personal Hygiene & Sanitation for Food Processing Employees
- M4060 Psychiatric Aspects of Product Tampering
- M4070 Tampering: The Issue Examined

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**Lessons from Molecular Biology.** Molecular biological techniques have facilitated both epidemiological investigation of foodborne viral disease outbreaks as well as detection of previously non-detectable viruses. For instance, it is now possible to detect many of the SRSV's using the reverse transcription-polymerase chain reaction (RT-PCR) nucleic acid amplification technique. We now know that the SRSV's comprise a very large group having considerable sequence and antigenic diversity and belonging to the *Caliciviridae* family. Using DNA sequencing methods, scientists have been able to delineate the phylogenetic relatedness of HAV strains and SRSV strains, which has facilitated the tracking of enteric viruses in space and time.

**Lessons from Molecular Epidemiology.** By combining the disciplines of epidemiology and molecular biology, a number of new and important facts about foodborne viruses has arisen. The 1997 SRSV sandwich outbreak (4) used molecular DNA sequence analysis to support the epidemiological evidence that there was a common food source for virus transmission. Using RT-PCR detection methods, these investigators were also able to conclude that Norwalk-like viruses can be shed in the feces for up to 10 days after illness or by asymptomatic food handlers. The 1997 HAV outbreak associated with strawberries (3) used similar methods to identify and link apparently sporadic cases of hepatitis A in this common source, multiple event outbreak. These investigators also used DNA sequence analysis to exclude other sources of hepatitis A in the community.

**Unknowns.** While it is clear that the ability to study foodborne viruses has improved, there remains an ever-increasing list of unknowns. For instance, immunity to the SRSV group is poorly understood; since this group of viruses causes self-limiting (albeit miserable) disease, it is most certainly under-reported and there is no information about the extent to which sporadic cases are in fact associated with foodborne routes of transmission. We have little to no information about dose-response relationships or the risk of disease when food is handled properly by an infected food handler. The degree of secondary transmission is also poorly understood.

**Control.** Although proposed control strategies have ranged from depuration and improved microbiological indicators (shellfish) to HACCP and edu-

cational initiatives (food handlers and produce), all of these will require significant resources and none of them is ideal. Vaccination against HAV is a practical measure to control this disease, but the antigenic diversity and complex immunity against the SRSV's does not bode well for developing readily available vaccination strategies for this group of viruses in the near future. It remains that the successful control of human enteric viruses in foods relies on the separation of food production/processing from human fecal pollution, including the assurance of good personal hygiene of all food handlers. Despite emerging foodborne virus detection methods, the age-old Food Microbiology question, i.e., how to prevent fecal contamination, will remain with us into the 21st century.

#### ABOUT THE AUTHOR

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# Coming Events

## OCTOBER

• **4-8, Aseptic Better Process Control Certification School and Aseptic Symposium**, North Carolina State University, Raleigh, NC. For further information, contact Ms. Lisa Gordon at 919.515.2956; Fax: 919.515.7124; E-mail: lisa\_gordon@ncsu.edu.

• **6-7, Associated Illinois Milk, Food & Environmental Sanitarians Annual Meeting** at Pere Marquette Hotel in Peoria, IL. For additional information, contact Lee Dressel at 618.656.6680.

• **6-7, Iowa Association of Milk, Food and Environmental Sanitarians, Inc. Affiliate Meeting**. For further information, contact Monica Streicher at 319.933.4521.

• **13-14, FOODTECH 99**, Birmingham, England. Topics will include: *Listeria*—its impact on meat; Latest thinking on *Campylobacter*; *Campylobacter*—the challenge of isolation; Getting the most out of shelf life; HACCP in the meat chain; and Foodborne viruses. For additional information, contact Positive Action Conferences, P.O. Box 4, Drifffield, East Yorkshire YO25 9DJ, England, or Phone: 44 (0) 1377 256316; Fax: 44 (0) 1377 254663; E-mail: conf@positiveaction.co.uk.

• **18-19, HACCP V: Effective Auditing of Your HACCP Plan**, Guelph, Ontario, Canada. If you are responsible for the HACCP program in your food processing workplace, you need to attend this seminar so you will be equipped to audit your prerequisite programs and HACCP plan effectively. For more information, contact Guelph Food Technology Centre, 88 McGilvray St.,

Guelph, Ontario N1G 2W1 or Phone 519.821.1246; Fax: 519.836.1281.

• **20, Metropolitan Association of Dairy, Food and Environmental Specialists Affiliate Meeting**, Edison, New Jersey. For further information, contact Fred Weber at 609.584.7677.

• **28-31, Worldwide Food Expo '99**, McCormick Place, Chicago, IL. Register today and see new products, make new contacts, and get the information you need to operate faster. For additional information, contact Worldwide Food Expo '99, 2751 Prosperity Ave., Suite 100, Fairfax, VA 22031 or Phone 703.645.9302; Fax: 703.876.2637; Website: www.worldwidefood.com.

## NOVEMBER

• **1-3, Pasteurizer Operators Workshop**, endorsed by International Dairy Foods Association at the Nittany Lion and Borland Laboratory, University Park, PA. The program includes hands-on activities, discussions and lectures on regulations, cleaning and sanitation, pasteurization, milk flavor, and other operational procedures in milk plants. For more information, Phone: 814.865.8301; Fax: 814.865.7050; Web site: www.cas.psu.edu.

• **8-9, The International Fresh-cut Produce Association (IFPA) Hosts 7th Annual Technical Seminar**, Holiday Inn Old Town Select in Alexandria, VA. This event will focus on "Global Food Safety Issues," and their impact on the fresh-cut produce sector. For more information, contact Justina Brewer at 703.299.6282.

• **10-12, FAMFES Annual Retreat**, held at the Florida Leadership

Training Center, Haines City, FL. For further information, contact Bill Thornhill at 914.298.7748.

• **18, Advanced Auditing of your Food Service Supplier**, Guelph, Ontario, Canada. This is a one-day session to fine-tune your auditing skills. You will take away practical information and skills to become a better auditor. For more information, contact Marlene Inglis, Guelph Food Technology Centre, 88 McGilvray St., Guelph, Ontario N1G 2W1 or Phone 519.821.1246; Fax: 519.836.1281; E-mail: gftc@uoguelph.ca.

• **21-23, International Conference on Processed Food for 21st Century**, Jadavpur University, Calcutta India. For additional information, please contact Dr. Pratap Chakraborty, Head of the Department and Convener, Jadavpur University, Dept. Food Technol. Biochem. Eng., Calcutta 700032; Fax: 91 33 472 5822 or 473 4266; E-mail: jufb@cal2.vsnl.net.in.

• **29-30, HACCP I: Documenting Your HACCP Prerequisite Program**, Guelph, Ontario, Canada. For more information, contact Marlene Inglis, Guelph Food Technology Centre, 88 McGilvray St., Guelph, Ontario N1G 2W1 or Phone 519.821.1246; Fax: 519.836.1281; E-mail: gftc@uoguelph.ca.

## DECEMBER

• **1-3, Microbiological Control and Validation**, Boca Raton, FL. This course will present information on microbiological control in manufacturing, laboratory auditing and sterilization that is applicable to the medical device, biotechnology



and pharmaceutical industries. It will also cover ISO, EP, BP, USP, AAMI and FDA documents and guidelines. For additional information, contact The Center for Professional Advancement, P.O. Box 1052, East Brunswick, NJ 08816-1052; Phone: 732.613.4500; Fax: 732.238.9113.

**JANUARY**

• **3-6, Milk Pasteurization and Control School, Madison, WI.** This 4-day short course provides in-depth training for those dairy industry personnel involved with thermal processing of milk and milk products. For more information, contact Bob Bradley at 608.263.2007.

**MARCH**

• **15, Dairy HACCP Workshop Madison, WI.** This one-day workshop will cover design and implementation of HACCP plans in dairy plants. For additional information, contact Marianne Smukowski at 608.265.6346.



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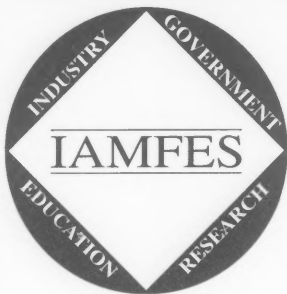
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# THOUGHTS on Today's Food Safety...

## Foodborne Viruses: Emerging Agents or Emerging Techniques?

Lee-Ann Jaykus, Ph.D.  
North Carolina State University  
Raleigh, North Carolina

With so much attention focused on emerging pathogens, one might wonder where the foodborne viruses fit into this picture. While it might appear that these are relatively "new" agents of foodborne disease, the reality is that, as evolutionarily simple forms of "life," the enteric viruses have probably been causing disease since the dawn of mankind. However, with improvements in epidemiology, molecular biology, and the new discipline of molecular epidemiology, scientists are now able to detect and characterize this previously non-detectable group of pathogens. In short, it is not the viruses but our ability to study them that is emerging.

**The viruses.** Viruses differ significantly from many bacterial agents of disease. As obligate intracellular parasites, viruses are not alive per se but require a live, susceptible host cell in order to establish infection. Consequently, when they contaminate foods, they cannot multiply but are extremely persistent, remaining in contaminated foods for long periods of time with no apparent reduction in numbers. Furthermore, viruses are usually capable of causing infection at very low infectious doses so even a small degree of contamination poses a threat to public health.

Foodborne viruses fall into the classification of human enteric viruses. These only infect human beings and with a few notable exceptions, disease is limited to the gastrointestinal tract. They are transmitted by the fecal-oral route via contamination with HUMAN fecal matter. Consequently, there are three major routes for foodborne contamination with human enteric viruses. In the first, bivalve mollusks (oysters, clams, mussels, and cockles) become contaminated when feeding in sewage-polluted marine waters. The second major route occurs due to sewage pollution of drinking and irrigation waters, putting fresh produce at particular risk. The third route of

contamination is poor personal hygiene of infected food handlers. This almost always comes from poor hand-washing practices of food handlers, causing fecal material to be deposited on hands or under nails which then contact the food product. This type of contamination is a major concern for foods that do not receive a terminal heat process before consumption, the so-called ready-to-eat foods.

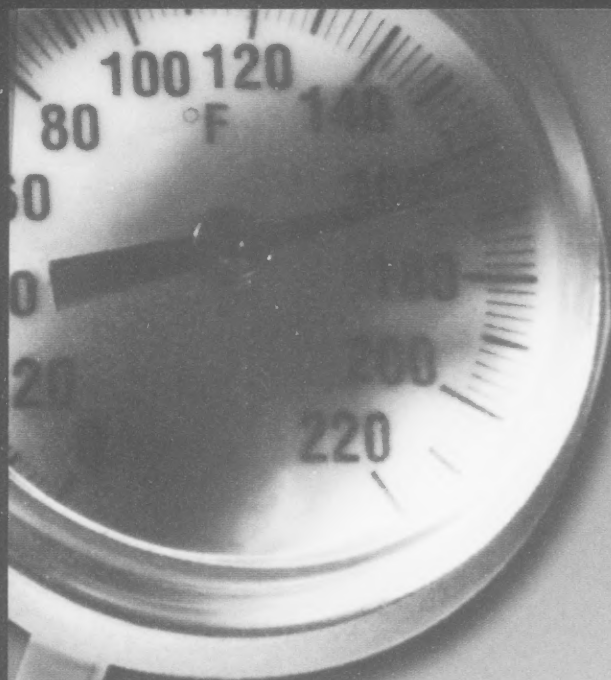
The most important foodborne viruses are hepatitis A virus (HAV) and the small round structured viruses (SRSV's, also known as Norwalk-like viruses). Hepatitis A is perhaps the most serious foodborne viral disease, however infection results in life-long immunity and a very effective and economic vaccine is available which should reduce the public health significance of this virus in the long term. The SRSV's are the most common cause of acute non-bacterial gastroenteritis. The good news is that the disease caused by this virus group is usually short-lived and recovery is complete; the bad news is that there are many strains, immunity is poorly understood and/or temporary, and individuals remain susceptible throughout life.

Increased epidemiological surveillance, development of molecular detection methods, and comprehensive investigation of two recent outbreaks has improved our understanding of foodborne viruses. For instance, a 1997 outbreak of viral gastroenteritis caused by the consumption of sandwiches contaminated by infected food handlers was comprehensively investigated using these tools (4). More recently, a highly publicized multistate outbreak of hepatitis A associated with the consumption of frozen strawberries illustrated the value of molecular epidemiological techniques in the investigation of foodborne viral disease (3). Taken together, these reports reveal future trends in the investigation of transmission and outbreaks of foodborne viral disease.

**Lessons from Epidemiology.** Outbreaks of foodborne viral disease are both common and under-reported, and recent epidemiological surveillance data indicates that viruses, particularly the SRSV's, may in fact be much more significant causes of foodborne disease than previously thought (2, 5). While shellfish remain important regional vehicles for viral foodborne disease outbreaks, transmission via human handling is widespread, being the most commonly cited contributing factor for outbreaks of hepatitis A (96%) and Norwalk virus (78%) gastroenteritis (1).

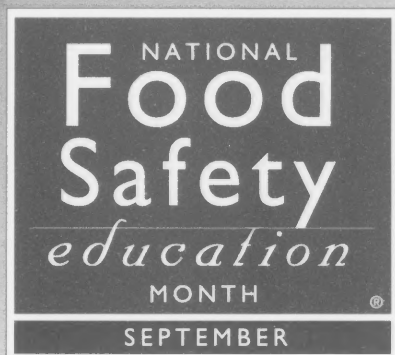
Continued on page 658





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