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DAIRY, FOOD AND ENVIRONMENTAL

# Sanitation

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

OCTOBER 2001

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### EDITORS NOTE:

In the August 2001 issue of *DFES* on page 714 a photo of *BD Diagnostic Systems* – BD Hycheck™ was placed incorrectly. Please see page 846 in this issue for a correct copy of the photo. We apologize for this inconvenience.

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# Postcards from Iowa



By JAMES DICKSON  
President

**“What I want to ask each of you to do is to find a little time to help one student along the way”**

Students! From the point of view of a faculty member, they are both the greatest joy and greatest burden of the job. “When will we get our tests back?” “Have you looked at my data yet?” “I need to meet with you NOW!” And from the other side, “What are they doing in the lab, since they are not producing any data?” “How did they manage to set the vacuum packager on

FIRE?!” “Will this one EVER graduate?” And yet just because you are not in academia, it doesn’t mean that you don’t have students. Almost every day, whether you are in industry or government you are teaching your “students” in the same ways that I teach mine. In my experience, some of my most memorable teachers were not those employed at a university.

I’m thinking about students now, as our classes have been back in session for about six weeks, and especially about our Student Professional Development Group. We all should be proud of our Student PDG, because they have done so much in the brief two years they have been in existence. Not only that, they have a clear sense of where they would like to go with the PDG in the future. I am proud of them not only for what they are, but for what they will become. In ten years these students will be the Executive Board of IAFP and the chairpersons of the PDGs. They will be the one’s putting together the annual meeting program, and handling all of the details of IAFP’s 100th anniversary meeting in 2010. If that seems like a lot to expect of our students, remember that we were all students ourselves, not that many years ago.

So what is the point? The point is that we have an obligation to all of our students, both traditional and non-traditional, to help them become the best that they can be. We owe them the same things that we expected ourselves: help, guidance, and a little knowledge along the way. We have an obligation to pass on what we have learned, because

they will become “us” in a few years. I’ve heard comments about how it is best to learn some things the hard way. Honestly, when you learned that way, what did you actually learn? I vividly remember a “learning the hard way” experience with my grandfather. While I won’t get in to the details, let’s just say that it involved the ignition system of an automobile, and how much voltage actually goes to a spark plug to make it fire. Yes, I did learn a lesson that has stayed with me for many, many years, but mostly I remember that (a) I didn’t enjoy learning things that way and (b) I wish my grandfather had found another way of teaching that particular lesson. I would bet that all of us has a “sparkplug” lesson in our past, and that you remember yours just as vividly as I remember mine.

What I want to ask each of you to do is to find a little time to help one student along the way. Whether that student is a traditional classroom student, or simply the new employee trying to “learn the ropes” of the company, help them out. And along the way, tell them about IAFP. Tell them why you belong, and what you have gotten out of the Association over the years. Keep in mind that what you are doing is strengthening food safety, however you define that term. You are also strengthening IAFP, and assuring that it will remain THE food safety professional organization. And keep in mind the saying from *The King and I*, that “by your students you will be taught.”

Same time, next month.

# THE BLACK PEARL AWARD

RECOGNITION FOR CORPORATE EXCELLENCE IN FOOD SAFETY AND QUALITY



## Black Pearl Recipients

**2001 Walt Disney World Company**  
Lake Buena Vista, Florida

**2000 Zep Manufacturing Company**  
Atlanta, Georgia

**1999 Caravelle Foods**  
Brampton, Ontario, Canada

**1998 Kraft Foods, Inc.**  
Northfield, Illinois

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

**1996 Silliker Laboratories Group, Inc.**  
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**1995 Albertson's, Inc.**  
Boise, Idaho

**1994 HEB Company**  
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The **Black Pearl Award** is given annually to a company for its efforts in advancing food safety and quality through consumer programs, employee relations, educational activities, adherence to standards and support of the goals and objectives of the International Association for Food Protection. We invite you to nominate your company for this prestigious recognition. Contact the Association office for nomination information.

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# COMMENTARY

## From the Executive Director



By DAVID W. THARP, CAE  
Executive Director

**“This month, I want to take the opportunity to discuss some selected survey results and comments from IAFP 2001”**

This is the first opportunity to report on IAFP 2001 since the meeting was held in early August. We are pleased to report that we set a new record number of attendees at 1,385! This was a 5% increase over the prior year – just think, it wasn't too long ago that we were trying so hard to break 1,000. It is great to be

experiencing this type of growth in our Annual Meeting. Next month in the November issue of *Dairy, Food and Environmental Sanitation*, we will present the summary of IAFP 2001. This month, I want to take the opportunity to discuss some selected survey results and comments from IAFP 2001.

First, let me thank everyone who responded to the E-mail survey sent to attendees after completion of our 88th Annual Meeting. We sent more than 1,000 surveys and received a 34% response rate! To compare, in recent years we included a paper survey with our program materials. Typically, we received between 30 to 50 responses! Quite an improvement in response rate when using E-mail – again, thanks for taking time to complete the survey and sending us your thoughts.

We will provide results of the survey in November's *DFES*, but to repeat, this month I want to discuss selected survey comments. Many of the responses were complimentary of the presentation content, the meeting organization, the Ivan Parkin Lecture (Opening Session), and the exhibit hall. We enjoy hearing these comments, but a few of the comments contained constructive input for consideration. Those are the ones that I want to spend time with now.

**New Member and First-time Attendee Reception.** We received a few comments about this event. One respondent asked if anyone attended this reception on Saturday afternoon (since most attendees arrive on Sunday).

Another asked if the reception couldn't be held on another day, maybe Tuesday. To answer the first question, yes we had an excellent attendance at the reception – more than 100 people! In response to the second comment, the reason the reception is held on Saturday is to introduce new Members and first-time attendees to long-time Members and to invite them (first-time attendees) to attend Committee meetings on Sunday. This, of course, would not be possible if we held the reception on a day later, during the Meeting. It is worth noting our Committee and PDG meetings are open to anyone who is interested. PDGs accept Member and nonmembers to their membership and anyone may attend our Committee meetings so plan to arrive early next year in San Diego to participate in the Committee meetings!

**Banquet vs. no banquet vs. Tuesday banquet.** There were multiple comments received about the Wednesday evening Awards Banquet. Some say it is too long, some say it is a great event as it is; some say do away with dinner, some say move it to Tuesday; some say don't include it in registration fees, and some cannot attend unless it is included in the registration fee. This appears to be an age-old problem without a solution that will satisfy everyone, so let's see if we can rationalize a response.

The Award Banquet's purpose is to gather attendees to honor all Award recipients. We do this in a formal setting, which is an appropriate way to recognize the recipient's work and their dedica-



tion to the profession. This year, we had 350 attendees at the Banquet, which has been steadily increasing over the last 5 years. I suppose this could be done without a banquet (dinner), but how many people do you expect would be in the audience if we attempted to present awards at 7:30 p.m. or 8:00 p.m. on either Tuesday or Wednesday evening?

I believe the Banquet ticket was included in the registration fee beginning about 10 years ago. This was done to allow attendees who wanted to attend the Banquet to be able to attend without further burdening their budgets. We know in advance that not everyone will attend the Banquet on Wednesday night (not everyone would attend even if we held the Banquet on Tuesday!), so if we were to remove the banquet ticket from our registration fee, the conference registration fee would not be reduced by the full banquet ticket price (\$45). You might expect only a \$10 or \$15 reduction in registration fee by removing the Banquet. Then attendees wanting to attend the Banquet would have to pay more than \$50 to cover the cost of the Banquet. I certainly think attendance would suffer under this scenario.

When we consider moving the Banquet to Tuesday, a complication is presented with the Developing Scientists Competition. Students are still in competition on Wednesday morning and the judging panel meets at noon Wednesday. We surely want to be able to recognize the student winners in a public setting!

I'm sure the Executive Board will discuss this input during an upcoming Board meeting, but as stated earlier, I don't believe there is a solution that fits everyone's needs.

**Tuesday afternoon schedule.** There were multiple comments urging additional sessions on Tuesday afternoon. The Program Committee has already addressed this suggestion and recommended replacing the general session with three or so "mini-symposia" (two-hour sessions) to be presented on Tuesday afternoon prior to the Business Meeting.

**Cost of registration.** A few responses questioned the cost of registration. As I explained at the Business Meeting, IAFP is not a "rich" Association. Our budget is VERY tight. We work diligently to put every Member's dollar to work for you, the IAFP Members. This goes for Annual Meeting registration dollars too! If a

comparison is performed on meetings presenting similar, food science and food safety information over three days of intense sessions, I don't believe you can find another meeting offering what we do for the same or lower prices. For the in-depth program we offer, our registration fee is an absolute bargain!

Another comment was received regarding persons approaching retirement. It is on the registration form, but we should point out that retirees are able to register at a much-reduced rate. To qualify, the Member must be a retired Member (fully retired, not receiving compensation for work in areas related to IAFP's interests).

I hope that this short review of survey comments shows that we have taken your input seriously. We will consider each and every comment individually. The number of responses received was very impressive, along with the thoughts and time that respondents put into their comments.

It is through Members' input that change occurs. Change is a part of the natural evolutionary process that keeps things new. Without change, we are doing the same things the same ways that we did them yesterday. Thanks again for sharing your thoughts!



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# Oregon Food Preparers' Awareness and Use of the USDA Safe Handling Instructions Label on Meats and Poultry

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## SUMMARY

Eighteen months after introduction of the Safe Handling Instructions label on raw meat and poultry, 100 food preparers (85% female) were interviewed by phone to assess knowledge of label information and reported practices related to recommendations. Eighty-three percent reported having seen the label; 26% usually read it when cooking meat and poultry. More women reported having seen than read the label. Recall of four major label statements and icons was limited. Practices that prevent cross-contamination were most frequently recalled (by 60% of those who had read the label). Thirty percent reported changing practices because of label instructions; the majority of the changes related to efforts to prevent cross-contamination. In general, reported food handling practices reflected label recommendations to keep raw food refrigerated or frozen (99%), to avoid cross-contamination (84% washed hands with soap after handling raw meat or poultry), to cook thoroughly (71% served hamburger well done), and to refrigerate (61% refrigerated leftover meat or combination dishes immediately after the meal). Most of those who had read the label considered it to be very clear and understandable. Forty-five percent identified food labels as a preferred way of getting food safety information. Continued review of consumer use of care labels is urged.

A peer-reviewed article.

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Figure 1. Safe handling instructions label



## INTRODUCTION

In 1998, the Council for Agricultural Science and Technology recommended use of food labeling to reduce the risk of foodborne illness (4). A part of this new recommendation was to evaluate its effectiveness. The U.S. Department of Agriculture, in response to foodborne illness outbreaks had earlier developed the Safe Handling Instructions for labels of raw and partially cooked meat and poultry. The effectiveness of several formats was evaluated prior to its introduction (19), but evaluation of its use by consumers was warranted.

The Safe Handling Instructions labeling was developed in response to a 1993 Pacific Northwest *Escherichia coli* O157:H7 outbreak traced to undercooked hamburgers served by several restaurants in one fast food chain (3). Other cases were linked to ground beef prepared at home. Following the outbreaks, both government and consumers were committed to attacking the food safety problems at each level from production to preparation. A safe handling instructions label was recommended at the con-

sumer level. As a result, an informative label developed by the U.S. Department of Agriculture has been required on each retail package of raw ground beef and poultry (since May 27, 1994) and all other raw and partially cooked meats and poultry (since July 6, 1994) (Fig. 1) (20). Prior to that time, there had been an optional label or package enclosure giving preparation precautions for raw poultry.

A June 1995 survey showed that retail compliance with mandatory use of the Safe Handling Instructions label on raw meat and poultry products was high: 92.2% of the stores had such directions on every package of every item covered (21). On individual items, compliance ranged from 94.6% on beef to 98.0% on turkey.

Earlier research had indicated that care labels on packages and in recipes resulted in safer practices by Oregon consumers (25). To study the effect of 18 months of consumer exposure to safe handling instruction labels, we conducted a survey to assess Oregon consumers' knowledge of the label information and their reported practices related to the recommendations.

## PROCEDURES

Our food safety telephone survey investigated consumer knowledge and application of the Safe Handling Instructions label on raw and partially cooked meats and poultry. Questions were based on label issues, a consumer focus group discussion, and recent survey questionnaires that could be used for comparison of data. The complete questionnaire is available from us.

The random-digit dialing method was used to select telephone numbers statewide. Oregon counties were represented proportionally to their share of the state's population (Survey Sampling Inc., Fairfield, CT). Business numbers were excluded.

Telephone interviews were conducted during December 1995 and January 1996 on Monday through Thursday evenings and on Saturday mornings. The one interviewer made a minimum of four attempts (including three evenings and one Saturday) if there was either no answer or an answering machine contact. Call-backs were arranged, if necessary. Of the sample of 300 phone numbers, 33% were completed calls (N=100), 23% refusals, 15% disconnected numbers, 10% industry or government numbers, and 2% not eligible because of language or no one doing home food preparation; and 17% did not answer the calls. Fifty-nine percent of those contacted agreed to participate.

The person who usually prepared food for the household was interviewed. All respondents prepared meat and/or poultry at home. Demographic data for respondents are shown in Table 1.

Pearson's Chi-square tests (Gauss System, Aptech Systems, Inc., Maple Valley, WA) were performed on tabulated data to determine relationships among demographic variables, knowledge, and food handling practices.

**TABLE 1. Characteristics of Oregon telephone survey respondents concerning safe handling instructions label on meat and poultry (n=100)**

| Characteristics                       | Survey respondents (%) | Oregon census <sup>a</sup> (%) |
|---------------------------------------|------------------------|--------------------------------|
| Sex                                   |                        |                                |
| Male                                  | 15                     | 48                             |
| Female                                | 85                     | 52                             |
| Education - last year completed       |                        |                                |
| 0-11 years                            | 7                      | 19                             |
| 12 years or GED                       | 31                     | 29                             |
| 1 to 3 years college                  | 33                     | 32                             |
| College graduate                      | 17                     | 14                             |
| Postgrad study or professional degree | 11                     | 7                              |
| Na answer                             | 1                      |                                |
| Age                                   |                        |                                |
| 18-39 years                           | 41                     | 48                             |
| 40-65 years                           | 51                     | 34                             |
| Over 65 years                         | 8                      | 18                             |
| Oregon residence                      |                        |                                |
| 0-3 years                             | 5                      | --                             |
| 4 or more years                       | 94                     | --                             |
| No answer                             | 1                      | --                             |

<sup>a</sup>1990 Census of Population and Housing. Center for Population Research and Census, Portland State University, Portland, OR

## RESULTS AND DISCUSSION

### Recognition of USDA safe handling instruction labels by home food preparers

When asked if they had "seen a label on a package of raw or partially cooked meat or poultry that gave handling instructions," 83% reported that they had (Table 2). The label had been read by 89% of those who had seen it. In comparison, 59% of food shoppers surveyed by the Food Marketing Institute (FMI) had seen the labels on meat

packages (7) and 66% in an American Meat Institute survey had seen it (2). In a 1995-1996 multi-state study, 45% of respondents reported having seen the safe food handling label on raw meat and poultry and 77% of these remembered reading it (26). Although there was no mandatory label on raw meat and poultry at the time of the 1992-1993 Food and Drug Administration (FDA) survey, 48% of total respondents (n=1620, unweighted) and 46% of those in the Northwest (n=63) reported that they usually read food preparation and storage

information on food package labels (6).

When our respondents who had read the label were asked further questions about it, recall about the four major label statements (Fig. 1) as well as matching icons was limited. The icons were recalled by fewer than those who recalled the statements (Table 3). Practices that prevent cross-contamination were most frequently recalled. Less than half recalled the "cook thoroughly" direction, which was a major objective of labeling to insure safety. In the nationwide American Meat

**TABLE 2. Oregon home food preparers' reported awareness and use of safe handling instructions label on raw and partially cooked meat and poultry**

| Response   | % reporting |
|--|-------------|
| Have seen label (n=100)                                  | 83          |
| Head read label (n=83)                                   | 89          |
| Read label when ready to cook raw meat or poultry (n=74) |             |
| Usually  | 26          |
| Sometimes  | 3           |
| Hardly ever  | 15          |
| Have in past, don't now                                  | 58          |
| Changed practices because of label instructions (n=74)   |             |
| Yes  | 30          |
| Already knew and followed                                | 39          |
| No   | 31          |

Institute survey (2), the most frequently recalled information was "wash surfaces/utensils/hands after touching raw meat" (40%), followed by "keep poultry and meat refrigerated" (26%), and "cook meat and poultry thoroughly" (22%). A 1998 Arizona study showed that only 6% of low income consumers were able to identify all four food safety reminders on the Safe Handling Instructions label; 58% were unsure what they were (15).

When asked, "Why are safe handling instructions necessary?", 63% of respondents stated that bacteria could cause illness otherwise. Another 32% said "(Labels) help people who don't know how to cook"; most of these also included comments related to safety.

#### **Changes in practices resulting from label information**

When asked, "Have you made any changes in how you prepare meat or poultry because of something you read on the label?", 30% identified a change that they had

made. The majority of these changes were related to greater efforts to prevent cross contamination (59% of the 22 changes). Foods were cooked more thoroughly by 14%. Several of our survey respondents mentioned an increased awareness of the importance of safe practices. The 1995-1996 multistate survey results (27) also suggested that labels might be more effective in discouraging cross-contamination than in promoting safe cooking practices.

In comparison, 43% of respondents of the Food Marketing Institute (7) survey, which included the primary or equal food shoppers in the household and was 73% female, reported changing their practices as a result of safe-handling labels. Of these 255 shoppers, 41% now washed/disinfected counters, utensils, etc. after contact with meat and 19% now washed their hands more frequently. Nineteen percent reported cooking more thoroughly. In a 1995-1996 survey (26), 37% of those who remembered seeing the safe handling label reported a result-

ant change in food preparation practices.

Some Oregon respondents appeared to share a general attitude of "I already know these things and I'm doing a good job," with some adding "I've been cooking a long time." Of those who had not made changes in response to label information, 39% gave an answer classified as, "I already knew...". Of the total respondents, 29% answered one or more questions with statements that conveyed a sense of confidence. However, they were not significantly less likely to have read the label. Researchers have suggested that food safety may be perceived as less of a concern by those who believe they are knowledgeable and confident in being able to serve safe food (13, 17).

#### **CONSUMERS' APPLICATION OF FOOD SAFETY PRINCIPLES**

The food preparer's use of the food safety principles that are included in the Safe Handling Instruc-



**TABLE 3. Oregon home food preparers who had read the USDA safe food handling instructions label and recalled instruction statements and/or icons (n=74)**

| Instruction                              | % of respondents recalling |                    |           |                               |
|--|----------------------------|--------------------|-----------|-------------------------------|
|  | Statement only             | Statement and icon | Icon only | Statement and/or icon (total) |
| Keep refrigerated or frozen              | 28                         | 4                  | 1         | 33                            |
| Keep...separate, wash surfaces and hands | 41                         | 14                 | 5         | 60                            |
| Cook thoroughly                          | 34                         | 7                  | 1         | 42                            |
| Keep leftovers hot or refrigerated       | 12                         | 3                  | 1         | 16                            |

tions label was assessed. In general, their reported practices reflected the recommendations (Table 4).

**Avoiding cross-contamination.**

The potential for cross-contamination from raw meat and poultry products in the home kitchen has been well documented (5). Awareness of the need to avoid cross-contamination was evident from responses and comments during the interview, including 13% citing contamination problems specifically related to *E. coli*. Overall, 24% volunteered that cleaning cutting boards is important. One respondent identified a need for more information on how to prevent cross-contamination: "People at work talk about it"; "Everybody's a little bit paranoid about this and don't want to make themselves sick."

Other studies have reported practices that increase cross-contamination. In households with an identified case of *E. coli* O157:H7 diarrhea (14), 77% of food preparers who reported having read the safe handling label were using practices that were not specifically recommended. These included failing to wash hands or work surfaces after handling raw ground beef. Only 54% of a national sample knew about washing with soap and water when asked about

the care of cutting board and knife between cutting fresh meat and salad vegetables (23). In the national FDA study (1), 66% washed their hands after handling raw meat or poultry; in the Northwest subsample, 65% reported doing so (6). By the 1995-1996 survey (26), 81% reported washing hands with soap afterwards. A 1996-1997 survey of FoodNet sites (18) showed 93% almost always washed their hands after handling raw meat and poultry.

**Cooking thoroughly.** Although only 3% of respondents currently served hamburgers rare, 20% usually served them cooked to medium-done but still pink in the middle. Without the use of a thermometer to determine that an internal temperature of 160°F had been reached, the safety of these would be questioned. Of the 70% who ordered hamburgers cooked well-done in a restaurant, 14% would eat them if they "were still pink in the center when you start to eat it."

Respondents frequently determined the doneness of meat loaf by surface brownness or time in the oven, which may be inadequate measures of a safe endpoint. A meat thermometer was used to determine doneness by only 1%. Meat loaf has been identified as the pec-

cant food in at least one foodborne illness (11).

The percentage of Oregonians who served hamburgers either rare or still pink in the middle in 1995-1996 was similar to that in a 1992-1993 national study, in which 23% reported eating undercooked hamburger (12) and to that in a 1995-1996 study, with 20% (26). Thirty percent of interviewees at FoodNet sites preferred pink hamburger in 1996-1997 (18). In the national FDA study (1), 71% served hamburgers that were medium (brown in the center) or well done.

Oregon respondents who reported eating hamburgers rare acknowledged that they shouldn't do so. Several, however, indicated that their fear of undercooking extended to all meats. As one commented, "I ate pink prime-rib recently, but that was the first in a long time; I didn't want to embarrass my friend who served it." Although consumer education material clarifies that solid pieces of beef may be served medium-rare (16), the information on the label does not make that distinction (Fig. 1).

An early question in the interview was "From what you know, is there anything you can do to reduce the risk of foodborne illness when preparing hamburgers?" Although

**TABLE 4. Oregon home food preparers' reported use of practices that are safe handling recommendations (n=100)**

| Practice  | % of respondents reporting |
|---|----------------------------|
| Refrigerate or freeze raw meat at home after purchase                                     | 99                         |
| Wash hands with soap after handling raw meats or poultry                                  | 84                         |
| Cook thoroughly   |                            |
| Hamburgers served well-done <sup>a</sup>  | 71                         |
| Meat loaf baked to 160° or above, or not pink in center, or juices run clear <sup>c</sup> | 68 <sup>b</sup>            |
| Raw mixture not tasted when making meat loaf  | 96 <sup>b</sup>            |
| Refrigerate left-over meat or combination dishes:   |                            |
| immediately after meal <sup>d</sup>   | 61                         |
| after it cools but within 2 hours   | 33                         |

<sup>a</sup>Medium doneness was end-point reported by 20%, which may be a safe practice if the coldest part reaches 160°F.

<sup>b</sup>N=81 (19 did not make meat loaf).

<sup>c</sup>Other end-points which may or may not result in adequate cooking were time (19%) and surface browning (9%).

<sup>d</sup>Two percent would not save leftover foods.

there could be multiple responses by each person, the most frequent was to cook to well-done (82%). Judging from other responses, this may have been assumed by others, as well.

Ways to prevent cross-contamination were suggested by 63%. Proper washing of hands (41%), utensils or plates (5%), and boards (12%) were specifically mentioned. In 1999 when consumers in the Food Marketing Institute survey were asked "What are the most important things you do in your kitchen to be sure the food you prepare is safe from germs?", 67% responded with answers grouped under "wash hands/surfaces," 21% with "cook properly," 14% with "refrigerate promptly," and 6% with "keep foods separate" (8).

**Refrigerating.** Refrigeration of raw meat was identified by 22% of respondents as a way to reduce risk, but this may not have been considered a preparation step by others.

Only 61% reported refrigerating leftovers immediately after the meal; those who cooled food first have a risk of forgetting to refrigerate. In an earlier Oregon study (25), half of the respondents cooled food to room temperature before refrigerating it.

**Ineffective practices.** Throughout the interview, respondents identified practices that should not be relied upon to reduce the risk of foodborne illness. These included limiting refrigerated storage of raw meats and poultry in the refrigerator or using "fresh" products (20% specifically for preparing hamburgers), buying or using products before the date on the package (14%), buying poultry grown in-state only, not refreezing thawed meat, and marinating raw fish.

A comparable percentage of consumers in our study (12%) and in the national FMI interviews (10%) (7) reported thorough washing of meat/poultry as a safety measure. This practice is ineffective in re-

ducing pathogens and may create contaminated surfaces (24). Others failed to wash hands well after contact with raw meat/poultry. Continued emphasis on prevention of cross-contamination and adequate cooking is therefore needed.

#### DEMOGRAPHIC FACTORS ASSOCIATED WITH RESPONSES

Significantly fewer men (60%, compared to 87% of females) recalled having seen the safe handling label ( $P = 0.01$ ). Fewer men than women (69% and 82%, respectively) remembered reading the label in the multistate 1995-1996 study (26). Significantly more females (88%) than males (67%) reported washing their hands with soap and water before continuing cooking after they had handled raw meat or poultry ( $P = 0.04$ ). This difference was also found in a 1995-1996 multistate study (26).

Age groups of our respondents differed significantly ( $P = 0.04$ ) in indicating confidence and knowledge without reading the label or making changes; 23% of those 18-39 years of age, 50% of those 40-65 years, and 67% of those who were 65 years or older expressed confidence. (All were at least 18 years of age.) Younger consumers may thus be more receptive to educational efforts.

Those who had completed high school or less were significantly ( $P = 0.04$ ) less likely than those with education beyond high school to volunteer that they had made changes to reduce cross-contamination in preparing meat or poultry because of something they read on the label. In contrast, in a recent multistate study, significantly more (48%) of those who were not high school graduates than those with more education (mean of total, 37%) reported that they had changed their food handling practices because of label information (26).

The relationship between educational attainment and use of safe practices has been studied in regard to several health-related behaviors, including food (12). The researchers found that high-risk food behaviors were reported more frequently by those with at least some education beyond high school.

In the 1992-1993 national study (1), safer food handling practices were reported significantly more often by females (75%, compared to 53% by males for handwashing, for example); respondents 30 years of age or older (71% of those 65+, compared to 58% for those 18 to 29 years); and those who prepared meals frequently rather than occasionally. In a 1995-1996 study by the same unit, men more frequently reported all behaviors associated with foodborne illness (26). In the 1999 Food Marketing Institute study (8), more men (27%) than women (18%) responded that cooking foods properly was one of their most important practices to keep food safe, but men less frequently than women (63% and 69% respectively) washed hands and surfaces. In this survey,

respondents 18-24 years old reported these food safety practices less frequently than older age groups.

The American Meat Institute survey (2) also found that women were more likely than men to have noticed the label (72% and 59%, respectively).

### CONSUMER REACTIONS TO LABELS

A question was asked about the label itself during the last part of the interview. Eighty-one percent of those who had read the label chose "very clear and understandable" as the most appropriate descriptive term. Only 4% selected "not too" or "not at all" clear and understandable. Comments volunteered about the label indicated that it did not stand out from the rest of the package information, the print was too small to read, and that it was too detailed and would take too much time to read. A more attention-getting style was frequently recommended. One person suggested the need for a label in Spanish.

The design of the label itself is important (10). The use of icons and placement of summary statements first in the label are recommended. Participants in focus groups conducted by USDA during label development indicated preferences for icons and short informational messages as well as a statement of why care is necessary (19). Revisions for the final label (Fig. 1) were based largely on these suggestions.

Current requirements specify that the title must be bold and in print larger than the 1/16 inch minimum required for the remainder of the care label (20). Placement may be anywhere on the package, including hang tags. One respondent reported finding the label on the wrapping paper of the meat package.

Hadden (10) has stressed the need to change the format of a label periodically. If it looks new, it would more likely be read. This has been

demonstrated with other labels, especially those on cigarettes.

### PREFERRED AVENUES FOR CONSUMER INFORMATION

There are many channels for getting food safety information to the consumer. When asked how to do this in an open-ended question, use of food labels was the most frequent recommendation (45%), even by those who had not read the label. Care labels on foods were suggested by 82% of Oregon consumers in a 1985 study (25) and were most frequently named as the one best way.

Publicity in the media, especially regarding specific cases or outbreaks, was stressed (TV, 23%; newspapers, 22%; magazines, 8%; radio, 6%). Education in the schools and display posters or leaflets at the retail counter were suggested by 11% and 10%, respectively.

In an earlier study (25), newspapers were suggested by 83%. A subsample of Northwest consumers interviewed as part of a national FDA study (6) identified news stories and news programs and labels as the most used sources, with 32% and 33%, respectively, reporting "used a lot."

Comments that were volunteered during the interviews referred to media coverage of outbreaks such as the 1993 *E. coli* O157:H7 in the west. For example, "(There is) so much in the media with deaths of children that now people are generally aware." Because those who have lived in Oregon since that time would have been exposed to much regional publicity following the major *E. coli* O157:H7 outbreak, respondents were asked how long they had lived in Oregon. Only 5% had lived in Oregon less than four years.

Because of the widespread media coverage following the early 1993 outbreak of *E. coli* O157:H7 illness linked to undercooked hamburgers, the specific impact of the Safe Handling Instructions Label information is difficult to assess. In a 1996 national Associated Press

telephone survey (9), 89% of adults claimed that they "personally help ensure the safety of the food you eat by following the safe-handling instruction labels on raw meat and poultry." This behavior may have been prompted by the media as well as by food labels.

It is therefore important to use a variety of educational avenues (10, 27). During the development of the label, focus groups stressed that labels should be used in combination with the media (19). Labels are most often read by those with concerns about foods (22). Media reports of foodborne illness outbreaks should ideally both motivate and inform. Food safety educators should establish working relationships with media contacts.

Investigators in a recent multi-state study of consumers (26) concluded that educational strategies should be directed to those at higher risk from foodborne illness, those who don't consider themselves to be at risk, those with unsafe food handling practices, and those with inadequate knowledge of food safety. Since many consumers (41%) now recognize that a very or fairly common cause of illness may be food prepared at home (8), such educational efforts are timely. The challenge remains to reduce risks of foodborne illness associated with all points in the food chain, from producer through the consumer.

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This is the first of a two-part series. Part 2 will appear in the November issue of *DFES*.

# The Emergence of Food Microbiology: Its Origin in Dairy Microbiology

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## SUMMARY

Late in the 19th and early in the 20th century, consumption of raw milk was often associated with typhoid fever, diphtheria, scarlet fever, septic sore throat, undulant fever, and tuberculosis. Microbiologists of that time strove to improve the situation. In time they succeeded and in doing so gave rise to the discipline of dairy bacteriology. Dairy microbiologists, through teaching and research, improved both the safety and quality of milk and products made from milk. In time, the expertise of dairy microbiologists was sought to solve problems in other segments of the food industry, and the broader field of food microbiology was born. Dairy microbiologists, through teaching and research, served to characterize and control spoilage of dairy foods, provide the consumer with an array of fermented and unfermented dairy foods, and assure the safety of such foods.

## INTRODUCTION

Historically, humans learned empirically that under certain circumstances their food spoiled or caused illness. They also learned that some changes that occurred during storage improved both the keeping quality and organoleptic properties of foods. Eventually, humans learned that all the aforementioned events were related to the presence, and usually growth of microorganisms. Today the discipline based on that awareness is called food microbiology. Readers interested in a more detailed discussion on experiences our ancestors had with food may want to examine the discussion by Hartman (12). Also, information on development of food microbiology can be found in an article by Foster (4).

Food microbiology, as it is understood today, applies principles of microbiology to understand the behavior, in numerous niches, of various microorganisms associated with an array of foods and beverages. The first foods to receive microbiological attention were milk and milk products, and so the

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discipline of dairy microbiology was born. As time went on, dairy microbiology evolved into the broader field of food microbiology, although work – both instruction and research – in dairy microbiology continues, albeit at a reduced level of intensity than in the first half of the 20th century.

This article provides information on the origin of dairy bacteriology, followed by a discussion of teaching and major advances in that discipline. The movement from dairy microbiology to food microbiology to be described in a second article, also includes comments on the role of dairy/food microbiologists in the lives of their major professional organizations (20).

## DAIRY MICROBIOLOGY

Late in the 19th and early in the 20th century, farmers commonly delivered raw milk in bulk to consumers in cities. The consumer brought a pitcher or other suitable container to the farmer, who used a dipper to remove milk from a tank and fill the container(s) (14). Raw milk was frequently contaminated with pathogens from cows or from persons who handled the milk or from both. Consumption of such milk resulted in repeated outbreaks of typhoid fever, scarlet fever, diphtheria, septic sore throat, undulant fever, and tuberculosis (14). Infant mortality associated with drinking raw milk was high and of great concern (14).

This major public health problem attracted the interest of bacteriologists, who strove to make milk and its products safe for humans of all ages. Thus, of necessity, general (or medical) bacteriologists became dairy bacteriologists. At that time, no one had been trained specifically as a dairy bacteriologist.

At about the same time, colleges of agriculture were being organized in land-grant universities across the country. Many of these colleges of agriculture included a dairy industry department, which had at least one and sometimes two

bacteriologists as faculty members. In some instances, a dairy microbiologist was located in a bacteriology department. These bacteriologists initially had a general background and thus had to grow into being dairy microbiologists. Eventually, their students occupied faculty positions, and the discipline was established.

## Teaching in dairy bacteriology

A course in dairy bacteriology was taught at one university (University of Wisconsin-Madison), and perhaps at others, early in the 20th century. H. L. Russell published the first edition of *Dairy Bacteriology* in 1909, basing it on lectures he gave in a course of the same title (27). Earlier he had published *Outlines of Dairy Bacteriology*, with the eighth edition appearing in 1907. The dates suggest that Russell taught the course for several years, perhaps as many as eight, before the book was published. Also in 1909, Russell and his colleague, E. G. Hastings, published *Experimental Dairy Bacteriology*, a 147-page book for use in teaching a laboratory in dairy microbiology (29).

Russell's book went through 12 editions, with the last one appearing in 1928 and with E. G. Hastings as a co-author for the last two editions. The table of contents of the 12th edition is given in Table 1 (30). The aforementioned laboratory manual described experiments on culture technique, microscope technique, contamination of milk, milk fermentations (mostly spoilage problems), preservation of milk, relation of bacteria to butter, relation of bacteria to cheese, and milk hygiene.

As the book by Russell and Hastings was ending its run, a new work, *Dairy Bacteriology*, by Bernard W. Hammer of Iowa State University, appeared in 1928 (11). Three more editions of this book were published, with the fourth appearing in 1957; F. J. Babel, then of Purdue University, joined

Hammer as co-author of this last edition. In the preface to the first edition, Hammer indicated that the book's content reflected what was included in the beginning dairy bacteriology course (which suggests there also was an advanced course) at Iowa State University. The book discusses bacterial counts of milk; milk fermentations (again, spoilage problems); contamination of milk and cream, reducing contamination of milk, growth of microorganisms in milk and cream; body cells in milk; spread of diseases through milk and its derivatives (the longest chapter, at 81 pages); preservation of milk and cream; milk enzymes; bacteriology of evaporated, sweetened condensed and powdered milk; bacteriology of ice cream, of butter cultures, of fermented milks, of butter, and of cheese; and tests for quality of milk and cream. It is noteworthy that two chapters in this book were devoted to butter; obviously, butter was a more important item of commerce in 1928 than it is now.

In 1957, *Dairy Microbiology* by E. M. Foster, F. E. Nelson, M. L. Speck, R. N. Doetsch, and J. C. Olson, Jr. was published (6). The contents of the book (Table 1) likely reflect the topics of a dairy microbiology course taught by the authors at their respective universities. However, the authors comment in the preface that their book should be useful for workers in the dairy industry.

During the 1950s and 1960s, many universities discontinued offering separate courses in dairy microbiology, although some of the information from such courses was incorporated into more general courses on food microbiology; a few universities, however, even now teach a course on dairy microbiology. The lack of interest in dairy microbiology, at least among academics, resulted in an absence in the United States of new books on the subject until 1998, when *Applied Dairy Microbiology*, edited by E. H. Marth and J. L. Steele, was published (21). Contents of the

**TABLE 1. Table of contents of three books on dairy microbiology published over a 73-year period**

| Dairy Bacteriology (1928) <sup>a</sup>                   | Dairy Microbiology (1957) <sup>b</sup>                           | Applied Dairy Microbiology (2001) <sup>c</sup>                                  |
|--|--|---|
| 1. Structure, growth and distribution of bacterio        | 1. An introduction to doiry microbiology                         | 1. Microbiology of the doiry animol   |
| 2. Methods of studying bacterio                          | 2. The microorganisms of milk and doiry products                 | 2. Raw milk and fluid milk products   |
| 3. Contomintion of milk                                  | 3. Methods of controlling growth of microorganisms               | 3. Concentroted ond dry milks ond wheys   |
| 4. Infection of milk                                     | 4. Destruction of microorganisms by physicol ond chemical agents | 4. Frozen desserts  |
| 5. Fermentation of milk                                  | 5. Microbiological methods of exomining doiry products           | 5. Butter ond reloted products  |
| 6. Preservation of milk                                  | 6. Microbiology of milk on the producing form                    | 6. Starter cultures ond their use   |
| 7. The relotion of bacterio                              | 7. Microbiology of market milk ond reloted products              | 7. Metobolism of starter cultures   |
| 8. The relotion of bacterio to cheese                    | 8. Microbiology of condensed, concentrated ond evaporoted milk   | 8. Genetics of loctic acid bacterio   |
| 9. Bocterio in market milk                               | 9. Microbiology of sweetened condensed ond dry milk products     | 9. Fermented milks ond cream  |
| 10. The methods for the bacteriological onolysis of milk | 10. Microbiology of ice cream ond reloted frozen products        | 10. Probiotics ond prebiotics   |
|  | 11. Microbiology of loctic cultures                              | 11. Cheese products   |
|  | 12. Microbiology of fermented milks                              | 12. Fermented by-products   |
|  | 13. Microbiology of cheese                                       | 13. Public health concerns  |
|  | 14. Microbiology of cream ond butter                             | 14. Cleoning ond sonitizing in milk production ond processing                   |
|  | 15. Doiry plont waste disposol ond utilization of by-products    | 15. Control of microorganisms in doiry processing: doiry product sofety systems |
|  |  | 16. Regulotory control of milk ond milk products                                |
|  |  | 17. Testing milk ond milk products  |
|  |  | 18. Treotment of doiry wostes   |

<sup>a</sup>Russell, H. L., and E. G. Hostings. 1928. *Doiry bocteriology*, 12th edition. George Bonto Publishing Compony, Menosho, WI.

<sup>b</sup>Foster, E. M., F. E. Nelson, M. L. Speck, R. N. Doetsch, and J. C. Olson, Jr. 1957. *Doiry microbiology*. Prentice-Holl, Inc. Englewood Cliffs, NJ.

<sup>c</sup>Morth, E. H., and J. L. Steele (eds.). 2001. *Applied doiry microbiology*, 2nd edition. Morcel Dekker, Inc., New York, NY.

second edition, given in Table 1, reflect current interests in the discipline (22). Although a few topics appeared in all three books, major changes have occurred in coverage of subject matter between the current book and the one published in 1957.

### MAJOR ADVANCES IN DAIRY MICROBIOLOGY

Application of microbiological principles to production and processing of milk and milk products goes back to the late 19th and early 20th century. Since then, numerous advances have been made in improving the milk supply and products derived from that milk. It is possible here to highlight only a few of those advances. Another author might have chosen to emphasize other developments.

**Pasteurization.** At the dawn of the 20th century, raw milk was commonly consumed by infants and children as well as adults. Such milk often came from diseased animals, and was handled under insanitary conditions; sometimes it was further contaminated by ill persons who worked with dairy cows and milk. Thus it is not surprising that milk sometimes contained the pathogens that caused typhoid fever, tuberculosis, undulant fever (brucellosis), scarlet fever, septic sore throat, diphtheria, and perhaps other diseases (14).

In the United States sporadic attempts were made to pasteurize milk as early as 1878, but they went nowhere. By 1893, Nathan Straus had established a facility in New York City to pasteurize milk for infants (14). During 1898, at a hospital in New York, infant mortality was reduced from 42 to 20% just

by using pasteurized milk throughout the year (14).

At about the same time, in 1899, Theobald Smith published results of his laboratory studies showing that the tubercle bacillus suspended in milk was killed by heating at 60°C for 15 minutes (35). Soon after, H. L. Russell and E. G. Hastings reported in 1900 that under commercial conditions, heating at 60°C for 10 to 15 minutes was sufficient to kill the tubercle bacillus (28). To provide adequate safety, they suggested that heating at 60°C be continued for an additional 15 minutes, for a total of 30 minutes.

As interest in milk pasteurization grew, a movement to produce "certified" raw milk was organized (14). Its purpose was to produce raw milk under sanitary conditions and from disease-free animals so that pasteurization would be unnecc-

essary. Although the movement eventually failed, it served to delay widespread adoption of pasteurization. Thus, in 1925 it was estimated that only 30% of the population consumed pasteurized milk, and in 1938, 25% of all reported waterborne and foodborne disease outbreaks were associated with milk (14).

By the mid 1920s, data of Russell and Hastings on heat treatment needed to kill *Mycobacterium tuberculosis* were widely accepted, and pasteurization at 61 to 63°C for 30 minutes was common. In 1928, according to Hammer (11), pasteurization by the holding method was at 60 to 64°C for 20 to 30 minutes and by the high-temperature short-time (flash) method at 71 to 85°C for one-half to one minute. Eventually, these values became 61.7°C (143°F) for 30 minutes and 71.3°C for 15 seconds. On July 19, 1956, in response to the greater heat resistance of *Coxiella burnetii* than of *M. tuberculosis*, the processes were changed to 62.8°C (145°F) for 30 minutes and to 71.5°C (161°F) for 15 seconds (3). In practice, temperatures above 71.5°C are commonly used in the high-temperature short-time method because such temperatures improve the shelf life of milk.

There is some concern that certain pathogens, if present in sufficient numbers in milk, may survive pasteurization at 71.5°C for 15 seconds. These include *Listeria monocytogenes* and *Mycobacterium paratuberculosis*, a pathogen already discussed by Hammer in 1928 (11).

**Animal health.** Of the animal diseases that also affected humans, the first to be brought under control was bovine tuberculosis. In 1892, Robert Koch in Germany prepared tuberculin, which he hoped would be a therapeutic agent for bovine tuberculosis. Although this didn't happen, tuberculin's value in a diagnostic test for infected animals became recognized (13). One of the first uses of tuberculin in the United States occurred in 1894, when it was employed in testing the dairy herd at the University of Wis-

consin-Madison. Twenty-five of 30 cows in the herd tested positive, and the entire herd was destroyed to show farmers what needed to be done to control the disease (13).

Soon after, H. L. Russell implemented a state-wide program in which dairy cattle in various locations in Wisconsin were tested with tuberculin (13). Some of the cows that tested positive were brought to different designated locations where farmers gathered for Russell's demonstration; the cows were slaughtered, body cavities were opened, and Russell showed the tubercular lesions to the assembled crowd (10). Russell's extension work in dairy microbiology eventually paid off; by 1909 the tuberculin test was compulsory for all dairy cattle in Wisconsin, and the state became the first in the nation to be certified as tuberculosis-free (10). Thus the test-and-slaughter program advocated by Russell was shown to be successful, and eventually it was adopted by other states. Years later, a similar program adopted nation-wide successfully eliminated brucellosis (undulant fever in humans) from dairy herds. Improvement in hygienic practices on the farm helped to further reduce the presence of pathogens in raw milk.

In 1928, Hammer (11), discussing Johne's disease in dairy cattle, concluded his remarks as follows: "The increasing importance of Johne's disease and the possibility of tremendous economic losses from it, suggest that every precaution should be taken to prevent its spread." What Hammer said in 1928 remains true today. *Mycobacterium paratuberculosis*, which causes Johne's disease in cattle, is associated by some with Crohn's disease in humans. Further, as mentioned earlier, some believe that under certain circumstances the pathogen may survive the high-temperature short-time pasteurization process.

Mastitis, an infection of the mammary gland, is another ongoing problem, although control is

better now than it was several decades ago. A host of microbes can cause mastitis and thus contaminate milk, including *Staphylococcus aureus*, *Streptococcus agalactiae*, *Escherichia coli*, *Listeria monocytogenes*, *Pseudomonas aeruginosa*, and others (39).

**Bulk handling of milk on the farm.** Before the mid to late 1950s, raw milk went into 10-gallon cans on the farm. The opening of the can, which was narrow at the top, was closed with a plug-type or, preferably, an umbrella-type cover. Milk was cooled by immersing cans and contents in tanks of cool well water. Also, some enclosed units were available that circulated refrigerated water and sprayed it over the exterior of cans of milk placed into the unit. Before the availability of the aforementioned 10-gallon cans, milk had been placed in larger, cylindrical cans, which did not become narrow at the top and which were closed with a plug-type cover. Milk in cans was delivered to the dairy plant either by the farmer or by a milk hauler who used a truck to gather milk from a group of farms. Handling milk this way often resulted in contamination from inadequately cleaned cans and frequently was associated with insufficient cooling of milk.

In the early 1950s, refrigerated tanks to hold milk on the farms were developed. Cold milk in bulk was then pumped from the tanks into insulated tank trucks that delivered the milk to the dairy plant. Microbiologists studied the new process and found it satisfactory (23, 24). Thus a method to handle raw milk was adopted that is now used virtually exclusively. Pipeline milkers and milking parlors were developed to complement use of bulk cooling tanks.

**Cheese.** Producing cheese on the farm was common until 1851, when the factory system for cheese making was started in New York State by Jesse Williams and his son, who pooled their milk with that of their neighbors. In those early days, cheese was ripened at ambient tem-

perature, which fluctuated considerably according to the season of the year. As a consequence, much of the cheese produced was of poor quality. Hence, Russell and associates studied this problem and in 1901 recommended that cheese regularly be ripened at low temperatures (under refrigeration, using ice, when necessary) to eliminate development of abnormal flavors (31). At the time, many in the industry believed that it would be impossible to ripen cheese under the conditions proposed by Russell and associates (13). In spite of this, Russell continued work on this subject (32, 33); in time, his recommendations were adopted and became of great significance to the cheese industry (13).

Since the early work of Russell, there have been numerous advances in the microbiology of cheese, most notable of which are determining changes in the microflora of cheddar (11), Swiss (7, 8), brick (5, 9, 16) and other varieties of cheese during their ripening and how these changes relate to chemical, physical, and organoleptic qualities of the cheeses.

**Lactic starter cultures.** Lactococci commonly used to make fresh and some ripened cheeses, cultured buttermilk, sour cream, and cultured butter were isolated, characterized and identified in Europe in the 1870s. In fact, commercial cultures for use in dairy fermentations were available in Europe by 1890. Heterofermentative lactic streptococci were isolated in 1920 by Hammer, who named them *Streptococcus citrovorus* (*Leuconostoc mesenteroides* subsp. *cremoris*) and *Streptococcus paracitrovorus* (*Leuconostoc mesenteroides* subsp. *dextranicum*) (11).

In the 1920s, both liquid and dried lactic cultures were commercially available, but the dried cultures of that time needed numerous transfers to restore their activity. Dried cultures were prepared by adding starch, lactose, or dried milk to liquid cultures to absorb much of the moisture and then drying at a low temperature, a process that

reduced the number of viable cells by more than 50% (11). In time, this process was replaced by freeze-drying (lyophilization), which greatly improved cell survival.

In 1963, E. M. Foster and his former graduate student, E. D. Lamprech, published a new procedure for producing starter cultures (15). The procedure involved growing the bacteria in a non-milk medium, recovering the cells by centrifugation, and then freezing them with liquid nitrogen. With some modifications, this process is used commercially today to produce frozen starter cultures that can be used as inoculum to produce a larger volume of culture which then is used to make a product, or frozen cultures can be used to directly inoculate vats of milk. Processes developed to neutralize lactic acid produced during growth of bulk cultures serve to reduce acid-injury and thereby enhance activity of the culture, so the amount of culture used to produce a fermented product can be reduced by up to 80% (17).

Of major interest during the last quarter of the 20th century has been the genetics of lactic acid bacteria. Researchers have attempted to design improved strains to resist bacteriophage infections and for use in cheese making and ripening (36).

**Bacteriophages.** Bacteriophage infection as a cause of starter culture failure was first recognized in 1935 (40). By the early 1950s, it was evident that bacteriophage infections that disrupt normal acid production in the manufacture of cheese were quite common (1, 2). Such disruption of acid production leads to loss of milk or to an inferior product, both of which represent major economic problems for the dairy plant. Microbiologists led the way in reducing the problem through improved sanitation in the dairy plant, eliminating generation of aerosols when whey is handled, rotating starter cultures used in the plant, use of a phosphate-treated medium to inhibit bacteriophage when lactic acid bacteria are grown (41) (a common practice in the industry), and, more recently, application of genetics.

**Testing milk and milk products.** By 1905 it was recognized that methods for bacteriological testing of milk and milk products needed to be standardized. It was in that year that S.C. Prescott of the Massachusetts Institute of Technology reported on "The Need for Uniform Methods in the Sanitary Examination of Milk" in the Laboratory Section of the American Public Health Association during its meeting in Boston (26, 38). In his report, Prescott suggested that a committee be established to study methods used for bacteriological testing of milk and then to recommend a uniform procedure for this important task. The committee, appointed with Prescott as chairman, labored until 1909, when a final report was submitted to the American Public Health Association. The report, published in 1910, in effect became the first edition of *Standard Methods for the Examination of Dairy Products* (18), although this title was not adopted until 1939 (14).

Prescott and his committee not only prepared the first edition but also established a procedure that served in the preparation of 11 further editions of the book. This procedure involved (a) appointment of a chairman who was responsible to the American Public Health Association, (b) appointment of a committee selected by the chairman, and (c) consultation between chairman and committee members to develop an edition of *Standard Methods for the Examination of Dairy Products*. With time, the committee had become a series of subcommittees to deal with individual chapters (18).

By 1960, just before the 11th edition appeared, it was evident to J. C. Olson, Jr. (25) that changes were needed in the way the book was developed, and after the 12th edition appeared, its editor, W. G. Walter (37), concurred with Olson. Among other things, Walter proposed that an advisory committee of representatives from industry, government, and academia be appointed to oversee preparation of an edition of the book.



The first such advisory committee, initially called Intersociety Council and later Technical Committee, was appointed in 1968 and consisted of eight members, two ex-officio members, and the chairman, William J. Hausler (18). The group met to plan the 13th edition of the book, each chapter of which was to be prepared by a committee. This procedure, although with different advisory committee members and chairmen, was used to prepare subsequent editions of *Standard Methods* (19). Thus Elmer H. Marth served as chairman for the 14th edition, Gary H. Richardson for the 15th edition, Robert T. Marshall for the 16th edition, and H. Michael Wehr for the 17th edition. Effective with the 15th edition, peer-review of chapters and a rating system for methods were introduced.

More than 90 years have elapsed since the first edition of *Standard Methods* appeared. During that time numerous committees have worked to periodically revise and update the book so that it always described the best available microbiological, chemical, and physical tests for routine examination of milk and milk products. Use of *Standard Methods for the Examination of Dairy Products* is specified in the Pasteurized Milk Ordinance, which has been adopted by each of the states; thus the book has become a document of legal significance. Over the years, *Standard Methods* also has served as a source of information for analysts in laboratories doing microbiological testing of foods other than dairy products.

#### Pasteurized milk ordinance.

The first federal milk ordinance was written in 1924, and in 1926 a uniform standard milk ordinance was adopted for the entire United States (14). The ordinance was concerned with pasteurizing as much of the milk supply as possible, improving the quality of raw milk, encouraging consumption of milk, and eliciting cooperation of the dairy industry with the government. By 1937, the ordinance was entitled the United States Public Health Service Milk Ordinance; later it became the Pasteurized Milk Ordinance, the title it

has today. The Pasteurized Milk Ordinance specifies, among other things, temperature and bacterial limits for raw and pasteurized milk (14).

**Illnesses associated with dairy products.** Earlier in this article, it was mentioned that typhoid fever, scarlet fever, diphtheria, septic sore throat, undulant fever, and tuberculosis were once frequently associated with consumption of raw milk or products made from raw milk. The association of these problems to milk has been essentially eliminated through improvements in animal health and sanitation and, most notably, through nearly universal pasteurization of milk used as a beverage or to make various products.

In spite of this, milk and milk products are not problem-free, and as a result there have been outbreaks of staphylococcal food poisoning, salmonellosis, enteropathogenic and enterohemorrhagic *Escherichia coli* infections, listeriosis, and still others (34). Nevertheless, although an array of organisms can cause dairy product-associated illness, the number of outbreaks (all causes) related to these foods has dropped precipitously since the early 1900s (34).

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## Request for Preproposals for Research Support

ILSI



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INSTITUTE

The ILSI N.A. Technical Committee on Food Microbiology is accepting preproposals for financial support for research on microbial foodborne pathogens in the following areas: dose-response levels and detection methods for *Listeria*

*monocytogenes*, gastrointestinal listeriosis, sample preparation methods for multiple pathogens, and agricultural water safety and quality. The deadline for submission of preproposals is October 26, 2001. Copies of the Request for Preproposals can be obtained from the ILSI N.A. office or electronically from the ILSI website —

<http://northamerica.ilsil.org/file/preproposal.pdf>

FOR MORE INFORMATION, CONTACT:  
Catherine Nnoka, ILSI N.A.,  
One Thomas Circle, NW, Ninth Floor  
Washington, DC, 20005, USA  
Telephone 202-659-0074, Fax 202-659-3859  
E-mail [cnnoka@ilsil.org](mailto:cnnoka@ilsil.org).

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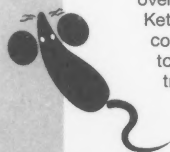


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International Association for  
**Food Protection**®

## ***Call for Nominations 2002 Secretary***

**A** representative from government will be elected in March of 2002 to serve as IAFP Secretary for the year 2002-2003.

Send letters of nomination along with a biographical sketch to the Nominations Chairperson:

Randall Daggs  
State of Wisconsin  
6699 Prairie View Drive  
Sun Prairie, WI 53590-9430  
Phone: 608.266.9376  
Fax: 608.267.3241  
E-mail: daggsra@dhfs.state.wi.us

The Secretary-Elect is determined by a majority of votes cast through a mail vote taken in March of 2002. Official Secretary duties begin at the conclusion of IAFP 2002. The elected Secretary serves as a Member of the Executive Board for a total of five years, succeeding to President, then serving as Past President.

For information regarding requirements of the position, contact David Tharp, Executive Director, at 800.369.6337 or 515.276.3344; Fax: 515.276.8655; E-mail: dtharp@foodprotection.org.

**Nominations close November 2, 2001.**



International Association for  
**Food Protection**®

# ***Award Nominations***

The International Association for Food Protection welcomes your nominations for our Association Awards. Nominate your colleagues for one of the Awards listed below. You do not have to be an IAFP Member to nominate a deserving professional. To request nomination criteria, contact:

International Association for Food Protection  
6200 Aurora Ave., Suite 200W  
Des Moines, Iowa 50322-2863  
Phone: 800.369.6337; 515.276.3344  
Fax: 515.276.8655  
Web site: [www.foodprotection.org](http://www.foodprotection.org)  
E-mail: [info@foodprotection.org](mailto:info@foodprotection.org)

**Nominations deadline is February 18, 2002.** You may make multiple nominations. All nominations must be received at the IAFP office by February 18, 2002.

- ◆ Persons nominated for individual awards must be current IAFP Members. Black Pearl Award nominees must be a company employing current IAFP Members. NFPA Food Safety Award nominees do not have to be IAFP 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 IAFP 2002 - the Association's 89th Annual Meeting in San Diego, California on July 3, 2002.



## 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.*

### **Fellow Award** – Distinguished Plaque

Presented to Member(s) who have contributed to IAFP and its Affiliates with quiet distinction over an extended period of time.

### **Honorary Life Membership Award** – Plaque and Lifetime Membership in IAFP

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

*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, IAFP 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, IAFP 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, IAFP and the profession of the Sanitarian.

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

### **Maurice Weber Laboratorian Award** – Plaque and \$1,000 Honorarium

Presented to an individual for outstanding contributions in the laboratory, recognizing a commitment to the development of innovative and practical analytical approaches in support of food safety.

*Sponsored by Weber Scientific*

### **International Leadership Award** – Plaque, \$1,000 Honorarium and Reimbursement to Attend IAFP 2002

Presented to an individual for dedication to the high ideals and objectives of IAFP and for promotion of the mission of the Association in countries outside of the United States and Canada.

*Sponsored by Kraft Foods*

### **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

**IAFP 2002**

**The Association's 89th Annual Meeting**

**June 30–July 3, 2002**

**San Diego, California**

## General Information

1. Complete the Abstract Submission Form.
2. All presenters must register for the Annual Meeting and assume responsibility for their own transportation, lodging, and registration fees.
3. There is no limit on the number of abstracts registrants may submit. However, the presenter must present their presentations.
4. Accepted abstracts will be published in the Program and Abstract Book. Editorial changes will be made to accepted abstracts at the discretion of the Program Committee.
5. Photocopies of the abstract form may be used.
6. Membership in the Association is not required for presenting a paper at IAFP 2002 - the Association's 89th Annual Meeting.

## Presentation Format

1. Technical – Oral presentations will be scheduled with a maximum of 15 minutes, including a two to four minute discussion. LCD and 35-mm slide projectors will be available. Other equipment may be used at the presenter's expense. Prior authorization from the office must be obtained. Overhead projectors will not be allowed.
2. Poster – Freestanding boards will be provided for presenting posters. Handouts may be used, but audiovisual equipment will not be available. The presenter will be responsible for bringing pins and velcro.

## Instructions for Preparing Abstracts

1. Title – The title should be short but descriptive. The first letter in each word in the title and proper nouns should be capitalized.
2. Authors – List all authors using the following style: first name followed by the sur name.
3. Presenter Name & Title – List the full name and title of the person who will present the paper.
4. Presenter Address – List the name of the department, institution and full postal address (including zip/postal code and country).
5. Phone Number – List the phone number, including area, country, and city codes of the presenter.
6. Fax Number – List the fax number, including area, country, and city codes of the presenter.
7. E-mail – List the E-mail address for the presenter.
8. Format preferred – Check the box to indicate oral or poster format. The Program Committee makes the final decision on the format of the abstract.
9. Developing Scientist Awards Competitions – Check the box to indicate if the paper is to be presented by a student in this competition. A signature and date is required from the major professor or department head. See "Call for Entrants in the Developing Scientist Awards Competitions."
10. Abstract – 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.



## Abstract Submission

Abstracts submitted for IAFP 2002 – the Association's 89th Annual Meeting in San Diego, California, June 30–July 3, 2002 will be evaluated for acceptance by the Program Committee. Information in the abstract data must not have been previously published in a copyrighted journal. Failure to follow instructions and selection criteria may result in rejection.

Submit your abstract to the office. Abstracts must be received no later than January 7, 2002.

Return the completed abstract form through one of the following methods:

1. Regular mail: Abstracts may be sent by post or express courier along with a disk copy (text or MS Word™ format) to the following address:  
Abstract Submission  
International Association for Food Protection  
6200 Aurora Avenue, Suite 200W  
Des Moines, Iowa 50322-2863, USA
2. E-mail: Submit via E-mail as an attached text or MS Word™ document to [abstracts@foodprotection.org](mailto:abstracts@foodprotection.org).
3. Online: Use the online abstract submission form located at [www.foodprotection.org](http://www.foodprotection.org).

## Selection Criteria

1. Abstracts must accurately and briefly describe:
  - (a) the problem studied and/or objectives;
  - (b) methodology;
  - (c) essential results; and
  - (d) conclusions and/or significant implications.
2. Abstracts must report the results of original research pertinent to the subject matter. 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/control; mastitis; environmental health; waste management and water quality. Papers may also report subject matter of an educational and or nontechnical nature.
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. Papers should not appear in print prior to the Annual Meeting.
5. Results should be summarized. Do not use tables or graphs.

## Rejection Reasons

1. Abstract was not prepared according to the "Instruction for Preparing Abstracts."
2. Abstract does not contain essential elements as described in "Selection Criteria."
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 and/or data are not presented. Indication that data will be presented is not acceptable.
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 International Association for Food Protection Policy on Commercialism.

## Projected Deadlines/Notification

Abstract Submission Deadline: January 7, 2002.

Acceptance/Rejection Notification: March 1, 2002.

## Contact Information

Questions regarding abstract submission can be directed to Bev Corron, 515.276.3344 or 800.369.6337; E-mail: [bcorron@foodprotection.org](mailto:bcorron@foodprotection.org).

## Program Chairperson:

Frank Yiannas  
Walt Disney World  
P.O. Box 10000  
Lake Buena Vista, FL 32830  
Phone: 407.397.6622  
Fax: 407.397.6630  
E-mail: [frank.yiannas@disney.com](mailto:frank.yiannas@disney.com)

# Abstract Form

**DEADLINE: Must be Received by January 7, 2002**

(1) Title of Paper \_\_\_\_\_

(2) Authors \_\_\_\_\_

(3) Full Name and Title of Presenter \_\_\_\_\_

(4) Institution and Address of Presenter \_\_\_\_\_

(5) Phone Number: \_\_\_\_\_

(6) Fax Number: \_\_\_\_\_

(7) E-mail: \_\_\_\_\_

(8) Format preferred:     Oral     Poster     No Preference

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

(9) Developing Scientist Awards Competitions  Yes      Graduation date: \_\_\_\_\_

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

(10) 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 International Association for Food Protection Foundation

**T**he International Association for Food Protection 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 oral or poster competition.

## Purpose

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

## Presentation Format

**Oral Competition** – The Developing Scientist Oral Awards Competition is open to graduate students enrolled or recent graduates from M.S. or Ph.D. programs or undergraduate students at accredited universities or colleges. Presentations are limited to 15 minutes, which includes two to four minutes for discussion.

**Poster Competition** – The Developing Scientist Poster Awards Competition is open to students enrolled or recent graduates from undergraduate or graduate programs at accredited universities or colleges. The presenter must be present to answer questions for a specified time (approximately two hours) during the assigned session. Specific requirements for presentations will be provided at a later date.

## General Information

1. Competition entrants cannot have graduated more than a year prior to the deadline for submitting abstracts.
2. Accredited universities or colleges must deal with environmental, food or dairy sanitation, protection or safety research.
3. The work must represent original research completed and presented by the entrant.
4. Entrants may enter only one paper in either the oral or poster competition.
5. All entrants must register for the Annual Meeting and assume responsibility for their own transportation, lodging, and registration fees.
6. Acceptance of your abstract for presentation is independent of acceptance as a competition finalist. Competition entrants who are chosen as finalists will be notified of their status by the chairperson by June 3, 2002.

7. All entrants with accepted abstracts will receive complimentary, one-year Association Membership, which includes their choice of *Dairy, Food and Environmental Sanitation* or *Journal of Food Protection*.
8. In addition to adhering to the instruction in the "Call for Abstracts," competition entrants must check the box to indicate if the paper is to be presented by a student in this competition. A signature and date is required from the major professor or department head.

## Judging Criteria

A panel of judges will evaluate abstracts and presentations. Selection of up to five finalists for each competition will be based on evaluations of the abstracts and the scientific quality of the work. All entrants will be advised of the results by June 3, 2002.

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

Judging criteria will be based on the following:

1. Abstract – clarity, comprehensiveness and conciseness.
2. Scientific Quality – Adequacy of experimental design (methodology, replication, controls), extent to which objectives were met, difficulty and thoroughness of research, validity of conclusions based upon data, technical merit and contribution to science.
3. Presentation – Organization (clarity of introduction, objectives, methods, results and conclusions), quality of visuals, quality and poise of presentation, answering questions, and knowledge of subject.

## Finalists

Awards will be presented at the International Association for Food Protection Annual Meeting Awards Banquet to the top three presenters (first, second and third places) in both the oral and poster competitions. All finalists will receive a complimentary Awards Banquet ticket and are expected to be present at the banquet where the awards winners will be announced and recognized.

## 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 Membership including *Dairy, Food and Environmental Sanitation* and *Journal of Food Protection*.

# Policy on Commercialism

## for Annual Meeting Presentations

### 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 the International Association for Food Protection (hereafter referred to as to Association 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 staff or Executive Board. The Association 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 the Association 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 convenor, and/or 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 convenor, and/or 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 goods or services must not be the focal point of the slide. Names or logos may be shown on each slide so long as they are not distracting from the overall presentation.

### **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 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, 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 the Association 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 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 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 a forum will be reminded of this policy by the Program Committee chairperson, their session convener, or the 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 staff of the action taken.

### **4.5 Enforcement**

While both technical reviewers, session convenors, and/or 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 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, the Association reserves the right to ban the author and the author's agency or company from making presentations in the Association forums for a period of up to two (2) years following the violation or violations.



# New Members

## AUSTRALIA

**Carolyn Johnson**  
Foss Pacific  
Vermont, Victoria

## BELGIUM

**Eva D'Haese**  
Ghent University  
Ghent

## CANADA

**Ian Culley**  
Schneider Foods  
Kitchener, Ontario

**Lynn Leger**  
DuPont Canada Inc.  
Mississauga, Ontario

**Narine Singh**  
Alberta Agriculture  
Edmonton, Alberta

**John Steckley**  
Rich Products of Canada, Limited  
Fort Erie, Ontario

## ISRAEL

**Dan Bar-El**  
The Standards Institution of Israel  
Tel-Aviv

## SOUTH KOREA

**So Hyun Kim**  
Seoul National University  
Suwon, Kyunggi

**Yimin Kim**  
Mokop National University  
Muan-Gun, Chonnam

## UNITED KINGDOM

**Charles A. Cocking**  
Sterilox Technologies Ltd.  
Abingdon, Oxford

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**Bob Galbraith**  
Cargill, Inc.  
Springdale

### Armed Forces

**Carwin M. Richard**  
Northern Europe Vet Detachment  
APO, AE

### California

**Rochelle R. Anzaldo**  
Grimmway Farms Juice Plant  
Arvin

**Kevin Bovee**  
Rich Products Corp., Fresno

**Sarah Goreham**  
Super Store Industries,  
Fairfield

**Michael Ho**  
Cepheid, Sunnyvale

**Heather A. Koshinsky**  
Investigen, Alameda

**Janny A. Lee**  
Alhambra

**Maria T. Pelt**  
Family Health Services  
San Diego

**Ron Pretlac**  
Electronic Sensor Technology  
Newbury Park

**Edward J. Staples**  
Electronic Sensor Technology  
Newbury Park

**Chris W. Wagstaff**  
USDA/FSIS, Los Angeles

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DuPont, Newark

## Florida

**Kelly D. Felkey**  
University of Florida, Gainesville

**Sally K. Williams**  
University of Florida, Gainesville

## Georgia

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ChemStation SouthEast  
Columbus

## Illinois

**Joe Dunn**  
The National Center for Food  
Safety & Technology  
Summit-Argo

**Dan Hamill**  
Keebler Company, Elmhurst

**Grace Ho**  
Praxair Inc., Burr Ridge

**Karl Hofmeier**  
Audits International  
Northbrook

**Ramella Smith**  
Rich Products Corp., Niles

**Erick K. Stief**  
FMC Technologies, Chicago

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**Yingchang Han**  
Purdue University  
West Lafayette

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**Willard J. Grande**  
AIT, LLC, Mt. Pleasant

**Anna M. McColley**  
Iowa State University, Ames

**Lisa M. Moore**  
Sunny Fresh Foods, Mason City

**Jan Tippett**  
AATI, Ames

**Liz Wagstrom**

National Pork Board, Des Moines

## **Kansas**

**Gregg R. Eckardt**

Seaboard Farms, Inc.  
Shawnee Mission

**Mary Wagner**

Midwest Grain Products, Atchison

## **Massachusetts**

**Bill Martin**

Rich Products Corp., Marlborough

**Mark Shakespeare**

Shaw's Supermarkets  
East Bridgewater

## **Minnesota**

**David W. Augustine**

Thermo King Corp., Minneapolis

**William R. Dantzer**

Plymouth

**Alan Deklef**

Old Home Foods, St. Paul

**Denise M. Ferriman**

Land O'Lakes, Inc., St. Paul

**Betty J. Gladfelter**

Ecolab, St. Paul

**Ed Goss**

3M Microbiology Products  
St. Paul

**Antone G. Gregory**

AMEC Simons Industrial  
& PharmaChem, Minneapolis

**Marty Schreier**

Ecolab, Inc., St. Paul

**Ellen P. Swanson**

Minnesota Dept. of Health  
Minneapolis

**Kevin Vought**

Minnesota Dept. of Agriculture  
St. Paul

**Karen M. Wingard**

Mankato State University,  
Mankato

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BCR Foods, Morton

## **New Jersey**

**Domenic Caravetta**

Unilever Bestfoods NA  
Englewood Cliffs

## **New Mexico**

**Durand Smith**

Cyclopass Corp., Albuquerque

## **New York**

**Jaime Estupinan**

New York

**Phil Massey**

Rich Products Corp.  
Buffalo

## **North Carolina**

**Michael E. Michel**

Smithfield Packing Co., Inc.  
Tar Heel

## **Ohio**

**Wendy S. Fox**

Ross Products Division  
of Abbott Labs, Columbus

**Timothy C. Jackson**

Nestle USA, Dublin

## **Oklahoma**

**William Quimby**

Oklahoma State University,  
Stillwater

## **Oregon**

**Connie Kirby**

Northwest Food Processors Assn.  
Portland

**Carri Mathieu**

Yocream International, Inc.  
Portland

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FMC Corp., Philadelphia

## **South Carolina**

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Clemson University, Charleston

**Thomas M. Starnes**

Advantica, Spartanburg

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University of Vermont, Burlington

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Rich Products Corp., Winchester

**Jennifer A. Goode**

Virginia Tech, Blacksburg

**Angela D. Hartman**

Roanoke

**Karim Kone**

Smithfield Packaging Co.  
Smithfield

**Gabriel C. Sanglay**

Virginia Tech, Blacksburg

## **Washington**

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Frigoscandia Equipment  
Redmond

## **Wisconsin**

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Minnesota Dept. of Agriculture  
Baldwin

**Bruce Kasten**

Rich Products Corp., Appleton

**Mark Kreul**

Packerland Packing, Green Bay

**Ann E. Larson**

Food Research Institute,  
Madison

**Dirk N. Vevea**

Marshfield Clinic, Marshfield

# New Members

## AUSTRALIA

**Carolyn Johnson**  
Foss Pacific  
Vermont, Victoria

## BELGIUM

**Eva D'Haese**  
Ghent University  
Ghent

## CANADA

**Ian Culley**  
Schneider Foods  
Kitchener, Ontario

**Lynn Leger**  
DuPont Canada Inc.  
Mississauga, Ontario

**Narine Singh**  
Alberta Agriculture  
Edmonton, Alberta

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Madison

**Dirk N. Vevea**  
Marshfield Clinic, Marshfield

# Updates

## **Todd R. Klaenhammer Named 11th Annual W. C. Frazier Memorial Lecturer**

**T**odd R. Klaenhammer has been named the 11th annual W. C. Frazier Memorial lecturer at the University of Wisconsin-Madison. The lecture will be given on May 29, 2002 in conjunction with the annual meeting of the Food Research Institute which is open to all interested persons.

Dr. Klaenhammer is the William Neal Reynolds professor of food science and microbiology at North Carolina State University, Raleigh, and also is director of the Southeast Dairy Foods Research Center. Klaenhammer, who is recognized nationally and internationally for the excellence of his research, recently was elected as a member of the National Academy of Sciences. His research, reported in approximately 150 publications, deals with physiology, metabolism, and genetics of lactococci and lactobacilli important in food fermentations and probiotics.

## **David Henning, 2001 Milk Industry Foundation Teaching Award**

**T**he recipient of the 2001 Milk Industry Foundation Teaching Award is David Henning, associate professor and Alfred Chair of cheese chemistry and technology in the dairy science department, South Dakota State University.

Henning was director of laboratories for Moseley Laboratories in Indianapolis. He joined Kraft Foods' Research and Development Center in 1971 in the Dairy Products Development Laboratory.

In 1990, Henning joined the faculty of the dairy science department at South Dakota State University as an associate professor of dairy science with an adjunct appointment in the biology and microbiology department. Henning has served the American Dairy Science Association as secretary and chair of the Dairy Foods Division; as a member and chair of the International Relations Committee; as member and chair of Milk Industry Foundation Teaching Award in Manufacturing committee; and member of the National Dairy Research Needs Committee. Henning is a Member of IAFP and executive secretary of the North Central Cheese Industries Association.

## **HACCP Coordinator and Executive Director of Food Safety and Quality Announced at Burke Corporation**

**L**ori Albers has joined Burke Corporation as Hazard Analysis Critical Control Points (HACCP) Coordinator.

Albers will be responsible for maintaining and reviewing HACCP plans, as well as SSP (sanitation standard operating procedure), GMP (good manufacturing practices) and SOP (standard operating procedure) programs.

Albers graduated from Iowa State with a bachelor's degree in animal science; she minored in food science. She previously worked in quality control management and formula development coordination at Osceola Foods and Hormel Foods.

Albers received HACCP certification at Iowa State University in the spring of 1997. She

completed Tricon basic auditor training in February 2001.

Ross Jabaay has been named executive director of food safety and quality at Burke Corporation. In this new position at Burke, Jabaay will manage all food safety and quality programs, including HACCP, and will evaluate any new technology that may be applicable to improving food safety.

Jabaay received the American Meat Science Association (AMSA) 1999 Meat Processing Award. He brings 25 years of experience in the meat industry to Burke. He previously worked in food safety and quality or research and development at Hormel Foods, Fresh Mark, Farmland Foods and Tyson Foods.

Jabaay received his bachelor's and master's degrees in meat science and food science from Purdue University.

## **Ron Vallort Joins Carter & Burgess**

**T**he national consulting firm of Carter & Burgess is pleased to announce the addition of Ron Vallort as an associate and the director of the Food and Beverage Group for the firm's Retail & Distribution Division. Vallort's responsibilities will include all management, design, marketing and business development activities for food and beverage clients nationally and internationally.

Vallort has more than 35 years of worldwide experience in the food industry. His background includes the design and management of facilities for meat and poultry processing, refrigerated and dry storage/distribution, beverage and snack food industries. Vallort also has extensive



experience in the creation of marketing objectives and strategies, client development, project concept development, contract negotiations, problem solving, and on-going client contact.

Throughout his career, Vallort has published and presented papers as an industry expert on topics that include food plant design, sanitation, and energy conservation. Vallort has also been instrumental in developing concepts and designs that have redefined industry standards, including narrow temperature, humidity and air velocity control tolerances. He has written performance guidelines for all engineering activities, including: structural, mechanical, electrical and refrigeration. In addition, Vallort has mentored numerous engineers and architects serving the food and refrigeration industries.

### **Poultry Magazine Names New Executive Editor**

**Y**vonne Vizzier Thaxton, professor of poultry science at Mississippi State University and a 30-year veteran of the poultry processing industry, has joined *Poultry* magazine as its new executive editor. In this role, Dr. Thaxton will advise on editorial content and direction, review contributed articles, write expert commentaries and represent the magazine at industry events.

Prior to joining the faculty at Mississippi State in 1999, Yvonne Vizzier Thaxton's storied career included a 23-year tenure at Marshall Durbin Companies, where she oversaw all aspects of operations and regulatory affairs as vice president of science & quality assurance. Her expertise and training as a microbiologist led to three presidential appoint-

ments to the USDA Advisory Committee on Meat & Poultry Inspection during the 1980s.

### **TFiS Announces New Senior Project Manager**

**T**FiS announces that Troy R. Jones has joined its staff as senior project manager. In this capacity, Mr. Jones will serve as a consultant, trainer, and auditor to the food industry. Mr. Jones has been with H.J. Heinz, Eskimo Pie and Baskin-Robbins in a variety of quality, food safety and production/operations capacities and has worked in the food industry for over 25 years. He joins the TFiS staff directed by Martha-Hudak-Roos, who has recently been appointed as TFiS president, and Bruce Ferree who has assumed the position of vice president.

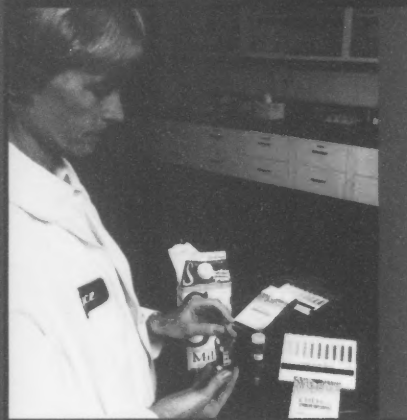
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## Zoonoses Commission Puts Forward Proposals to Combat Foodborne Diseases like *Salmonella* or *E. coli*

Diarrhea, fever, headaches, vomiting – familiar symptoms for 166,000 people in the European Union who were infected with human salmonellosis in 1999. Salmonellosis is a serious illness and sometimes can even be fatal. Salmonellosis is the most reported zoonotic disease in European countries.

Zoonoses are diseases or infections that can be transmitted from animals to humans. Infection usually happens as a result of eating products of animal origin. *Salmonella* can be found in a whole series of food products such as raw eggs, poultry, pork, beef, other meat products and dairy products.

*Salmonella* is just one zoonotic agent: the “second most common” in humans, *Campylobacter*, is responsible for an additional 127,000 reported cases of foodborne illness in the EU in 1999. The main symptom of *Campylobacter* infection is diarrhea, but it can sometimes lead to a nerve disorder and paralysis in rare cases. Most infections occur sporadically with a seasonal peak in summer. *Campylobacter* infection is mainly found in chicken meat. *Listeria* and *E. coli* are two other common infections caused by zoonotic agents. Against this background the European Commission, on the initiative of David Byrne, health and consumer protection commissioner, has adopted a report and two proposals to review current legislation and to improve the prevention and control of zoonoses.

The report examines the experience gained since the mid 1990s in combating zoonoses and concludes that fundamental changes in the approach to monitoring and control are necessary. To that end, the commission proposes a new



directive obliging Member States to put in place improved and better coordinated monitoring systems. In addition the Commission proposes a regulation on the control of *Salmonella* and other foodborne zoonotic agents. This regulation sets out a framework for pathogen reduction to reduce the occurrence of these organisms by setting community-wide targets for zoonotic agents in specific animal populations, and possibly at other stages along the food chain. The specific rules on the control of zoonoses will concern producers of breeding poultry, laying hens, broilers, turkeys and breeding pigs in all EU Member States.

## Food Safety Information Handbook

This information-packed handbook by Cindy Roberts is an excellent starting point for locating both print and electronic information and resources about food safety.

Consumers, students, and educators can quickly locate authoritative sources of up-to-date and accurate information in this easy-to-use resource. In addition to chapters covering regulations, statistics, careers, and issues in food safety, it contains a unique chronology of food safety-related events and a fascinating look at the history of food safety. This one-stop handbook brings together in one volume recommended books, pamphlets,

reports, newsletters, training materials, Web sites, and other electronic resources, as well as contact information for organizations and hot lines.

Available through Greenwood Publishing Group at [www.greenwood.com](http://www.greenwood.com).

## International Outbreak of *Salmonella* Typhimurium DT 104 — Update from Enternet

An outbreak of *Salmonella* Typhimurium definitive phage type (DT) 104 associated with consumption of an imported foodstuff was reported recently by Sweden. The contaminated product was helva (or halva), a type of dessert made from sesame seeds, and product sampling showed four jars of pistachio flavored and one of chocolate flavored helva to be positive for this organism. The strains were resistant to the antimicrobials ampicillin, chloramphenicol, streptomycin, sulphonamides, and tetracyclines.

Once it was suspected that the vehicle in the Swedish outbreak was an imported product, whose distribution to other countries was not known at the time, a request for information was sent via Enternet on June 29, 2001 to ascertain whether any other countries had any cases that may be associated with this product. Raising other countries' awareness of a problem with this *Salmonella* strain and the particular product involved led some of them to review their own cases, and check for any possible links.

The Australian health authorities had been investigating a cluster of 14 cases of this sero- and phage type in Melbourne, Victoria, and had been unable at the time to identify the vehicle of infection. The information disseminated through Enternet and Eurosurveillance Weekly allowed them to review the cases and identify a clear epidemiological association with helva im-

ported from Turkey. Subsequent product sampling has led to the identification of *S. Typhimurium* DT 104 in two brands of helva; in chocolate, plain, and pistachio flavors. Isolates from the Australian cases and both brands were resistant to ampicillin, chloramphenicol, streptomycin, sulphonamides, and tetracyclines; the strains were also tested for, and showed resistance to, spectinomycin.

No other countries currently have identified cases that are associated with this type of product, but since it is distributed to both Sweden and Australia, it is possible that other countries may also import the product and have cases associated with its consumption. This type of product has also been found to be positive for *S. Typhimurium* in Germany. The fact that an international outbreak of the same infection associated with a similar product on opposite sides of the globe at the same time can be recognized demonstrates the value of being able to rapidly disseminate information on international outbreaks of foodborne disease through mechanisms such as Enternet, Eurosurveillance Weekly, and ProMED.

## Minnesota Firms Lead Nation in Food Safety and Fight against *E. coli* in Ground Beef: Huisken Meats Scores Double-digit Sales Growth with Hamburgers Zapped with Electricity

Minnesota made history a year ago when Chandler-based Huisken Meats became the first processor in the nation to use electricity to eliminate the threat of *E. coli* O157:H7 in its products. From an initial distribution in 84 stores located totally within the Twin Cities, the availability of Huisken "Be Sure" brand products has rapidly grown to literally thousands of supermarkets in 23 states.

This bold step taken by a family-owned business has reaped significant rewards. "Response so far has been outstanding," says Huisken regional sales manager Cliff Albertson. "Sales during June and July are up over 35 percent compared to a year ago."

Huisken Meats is a wave of food processors also attempting to ensure the quality of their products. Minnesota-based Schwan's, the nation's distributor of premium frozen foods via home delivery and Omaha Steaks—renowned for its premium meats—are also successfully marketing irradiated ground beef products nationally. As with Huisken, Schwan's has also reported increasing sales.

The growing number of national food recalls and outbreaks of foodborne disease—coupled with the unique process being employed by Huisken—appears to have fueled consumer demand. More and more companies are turning to SureBeam electronic pasteurization technology, Huisken Meats' technology of choice. SureBeam irradiates food using ordinary electricity. Several other processors are also using the technology, including Excel, a division of Minnesota-based Cargill. Excel, in fact, will be the first company in the nation to install SureBeam's electron beam technology in two of its meat processing plants located in Nebraska and Texas.

The idea of irradiated foods is not new. Scientists have known for decades that exposing food to x-rays, high energy electrons, or cobalt-60 could kill deadly bacteria. While some consumers have been wary of irradiated foods—largely because of unfounded fear mongering hawked by activists opposing the use of nuclear energy—many irradiated products have become commonplace.

Commercial spices used as ingredients in ready-to-eat foods, for example, have been irradiated to kill pests and other contami-

nants for over a decade. Of course, the real pioneers are our astronauts who have been eating irradiated food since the early 1970s.

Albertson, who has been crisscrossing the nation touting the benefits of SureBeamed ground beef, notes that retailers are responding favorably to the notion of using high energy electricity rather than radioactive materials—and so have consumers. A few weeks ago, Huisken announced the expansion of its product line with a promotion launched in a St. Paul city park. Some 2,000 people came and enjoyed free irradiated hamburgers, while snapping up coupons.

## Case of Infant Botulism in the United Kingdom

In June 2001, a 5-month old baby was admitted to hospital with a clinical diagnosis of infant botulism. The diagnosis was confirmed by the Public Health Laboratory Service Food Safety Microbiology Laboratory (FSML) and was due to *Clostridium botulinum* toxin type B. Alerts and inquiries to paediatric intensive care units and consultants in communicable disease control yielded no further suspected cases.

Two different foods from the baby's household were found to be positive for the presence of *C. botulinum*. These were a dried rice pudding powder (which contained *C. botulinum* Type A spores) and an infant formula milk powder (which contained *C. botulinum* Type B spores). Both products were already opened when tested.

Unopened samples of the dried rice pudding powder from the same batch (and subsequent batches) were tested by FSML, and *C. botulinum* organisms were not detected.

Unopened samples of the same batch of infant formula milk powder were obtained from the manufacturer by the Food Standards Agency (FSA). One of five

samples was positive for the presence of *C. botulinum* Type B organisms.

A conclusive link between the product and the baby's illness is, as yet, unproved and further 'fingerprint' testing of the isolates from the baby and the milk powder sample is under way. The manufacturer of the infant formula milk powder has, however, made a public announcement to withdraw the affected products on a precautionary basis.

Infant botulism is very rare and this is only the sixth confirmed case in the United Kingdom. The last case was reported in 1994. The FSA intends to meet with all manufacturers of baby foods of this type later in the year to ensure that infant botulism is adequately accounted for in their hazard analyses.

### **Salmonella Enteritidis Outbreak Phage Type 8 in Southwest France from Contaminated Cantal Cheese**

In mid July 2001, microbiologists from three medical laboratories and a general practitioner alerted the health office of Aveyron, a district in southwest France, to an increase in the number of cases of *Salmonella* Enteritidis infection. To identify the vehicle and source of the outbreak, a descriptive exploratory study was conducted, followed by a case-control study. A case was defined as a resident of Aveyron or its neighboring districts, Lot or Cantal, with fever (38°C) or diarrhea (3 two episodes in 24 hours), from whom *S. Enteritidis* had been isolated since June 1. Cases were identified by contacting the public and private medical laboratories in the three districts, and the Centre National de

Référence des Salmonelles et des Shigelles (the national reference centre for *Salmonella* and *Shigella*).

Controls were randomly selected from the telephone directory of the places of residence of the cases. Cases and controls were interviewed by telephone using a standard questionnaire. The supply channels of the stores where cases had purchased the implicated product were investigated in order to identify a common supplier.

To date, a total of 177 cases have been identified with dates of onset of symptoms between June 1 and August 9, 2001: 147 in Aveyron, 19 in Cantal, and 11 in Lot. Cases were between 10 months and 88 years of age; the male:female sex ratio was 1.5. Cases were more likely than controls to have eaten Cantal cheese: 44 (94%) of the cases and 42 (66%) of the controls reported its consumption (odds ratio 8.4, 95% confidence interval 2.2 to 46). No other food was associated with infection.

Distribution of cases of salmonellosis by week of onset or isolation and time sequence of investigation and control measures. *Salmonella* Enteritidis, France (Aveyron, Cantal, Lot), June to July 2001 Cantal cheese is made from cow's milk, and has a consistency similar to cheddar. Usually it is made from raw milk, as was the case for the Cantal implicated in this outbreak. It is aged for about 1 to 2 months for young cheese, 2 to 4 for medium cheese, and 4 to 6 for mature cheese. In this outbreak, most cases reported eating the younger cheese.

The analysis of distribution channels implicated a single common processing plant. *S. Enteritidis* was subsequently isolated from the implicated brand of Cantal cheese at the production site and at retail

outlets. The strain isolated from food and human cases was phage type 8 and had the same pulsed field gel electrophoresis pattern. On 19 July all Cantal cheeses from that particular producer were withdrawn from the market, and production at the implicated site was stopped. The producer did not export abroad.

### **NAL Database Reaches 4 Million Record Milestone**

The United States Department of Agriculture's National Agricultural Library has added the 4-millionth record to the AGRICOLA (AGRICultural OnLine Access) database of citations to the agricultural literature. AGRICOLA is the largest bibliographic database for agriculture in the world and has been available for free public use via the World Wide Web since 1998 ([www.nal.usda.gov/ag98](http://www.nal.usda.gov/ag98)).

The 4-millionth AGRICOLA record was the citation for "FEIS final environmental impact statement: Boundary Waters Canoe Area Wilderness Fuel Treatment," published by USDA's Forest Service and the Minnesota Department of Natural Resources. Technical services librarians at the National Agricultural Library entered the citation into AGRICOLA on July 9.

AGRICOLA contains citations to books, audiovisual materials and serial publications as well as to journal articles, book chapters, reports, electronic publications and reprints. Many AGRICOLA citations to electronic publications are directly linked to full-text articles, databases and image files.

Subjects included in AGRICOLA encompass all aspects of agriculture and allied disciplines, including animal and veterinary sciences, entomology, plant sciences, forestry, aqua-culture



and fisheries, farming and farming systems, agricultural economics, extension and education, food and human nutrition, and earth and environmental sciences.

The National Agricultural Library is the world's largest and most accessible agricultural research library and is the principal resource in the United States for information about food, agriculture and natural resources. The library established AGRICOLA in 1970 as one of the principal means of carrying out its mission "to ensure and enhance access to agricultural information."

For more information about AGRICOLA or the National Agricultural Library and its programs and services, contact the library at 301.504.5755 or [agref@nal.usda.gov](mailto:agref@nal.usda.gov), or visit the NAL Web site at: [www.nal.usda.gov](http://www.nal.usda.gov).

## Norwalk-like Virus Outbreaks at Two Summer Camps

On June 27 and 28, 2001, the Wisconsin Division of Public Health was notified by two local health departments of outbreaks of gastroenteritis at two summer recreational camps (camps A and B) in northern Wisconsin. This report summarizes the investigation of these outbreaks, which documents person-to-person transmission of "Norwalk-like virus" (NLV) and underscores the importance of cleaning environmental surfaces and the availability and use of hand-washing facilities at recreational camps. Camp A opened for the 2001 season with a week of staff training on June 10. During this week, several counselors became ill with fatigue, nausea, vomiting, and diarrhea with illness duration of 24 to 48 hours. Campers first arrived for a 6-day camp session on June 17 and, within 30 hours

of arrival, began having signs and symptoms identical to those experienced by the counselors. A second group of campers replaced the previous campers on June 24. Because many persons became ill in the second group, the camp session was canceled, the campers were sent home, and the local public health department was notified on June 27. During the 3-week period, approximately 80 (20%) of 400 campers and camp staff were ill. The first case of illness was noted at camp B on June 24 when a child arrived at camp with diarrhea. On June 25, another camper became ill with nausea, vomiting, and diarrhea. During the next 5 days, at least 40 (17%) of the 240 campers and camp staff became ill with identical signs and symptoms lasting 24 to 48 hours. The campers remained at camp B for the full 1-week session.

Inspection of the camps revealed no substantial problems with food storage or preparation; no leftover foods were available for testing. The campers served themselves family style in a single dining hall at each camp. Ill campers were housed in cabins (camp A) or tents (camp B) with campers who were not ill. Most toilet facilities were pit toilets with handwashing facilities consisting of cool running water. The camps provided no soap or towels at the pit toilets. Non-municipal wells were the source of drinking water at the camps. An environmental survey found no deficiencies with these wells. Stool specimens were obtained from ill campers and staff at camps A and B.

Bacterial enteric pathogen testing was negative and reverse transcriptase polymerase chain reaction for NLV was positive for three of the eight specimens from camp A and two of the four specimens from camp B. Samples of the well water obtained 3 weeks after the outbreaks were negative for fecal coliforms.

The camps, which serve boys aged 10 to 18 years and are affiliated with the same national youth organization, are located 80 miles apart. They shared no food or personnel and no epidemiologic links were apparent between the camps. Gene sequencing to determine relatedness of the viruses is pending.

Although the initial sources of NLV were not discovered, the nature of both outbreaks, particularly the onsets of illness during a several day period and the continuation of the outbreak among separate groups of campers at camp A, indicated the infections were spread within each camp by person-to-person transmission.

NLV can be spread from person-to-person by direct contact, fomites, and aerosols. The close contact of ill and well campers and the rustic setting of the camps probably contributed to person-to-person transmission by contaminated surfaces in the toilet, dining hall, and living facilities.

During June 30 to July 1, the washable surfaces at the camps were cleaned with a 10% bleach solution and soap dispensers were added to the handwashing facilities at camp A. No further cases of gastrointestinal illness were reported at the camps after June 30.

## Botulism Outbreak Associated with Eating Fermented Food

On January 18, 2001, the Alaska Division of Public Health was informed by a local physician of a possible botulism outbreak in a southwest Alaska village. This report summarizes the findings of the outbreak investigation, which linked disease to eating fermented food, and describes a new botulism prevention program in Alaska.



A case of foodborne botulism was defined as a clinically compatible illness in a village resident with laboratory confirmation of botulism or a history of eating the same food as a laboratory-confirmed case; 14 persons in the village had eaten fermented beaver tail and paw on January 17. Approximately 20 hours later, three of the 14 had symptoms suggestive of botulism, including dry mouth, blurry vision, and general weakness. Two patients developed respiratory failure and required intubation and mechanical ventilation. One of the two intubated patients suffered cardiac arrest and underwent successful cardiopulmonary resuscitation. Approximately 6 hours after the onset of symptoms, the three patients received

types A/B and E botulism antitoxin. They subsequently were evacuated to an intensive care unit (ICU) in Anchorage. Two patients recovered without further complication. The third required tracheostomy tube placement and mechanical ventilation for 1 month; this patient had been hospitalized with botulism in 1997. Of the other 11 exposed persons, four reported minor symptoms compatible with botulism, including dry mouth and nausea, and were admitted to a hospital for overnight observation. One was hospitalized for 10 days with persistent ileus. The remaining seven exposed persons were held for observation for 48 hours.

Clinical specimens from the 14 exposed persons were tested

for botulinum toxin at CDC. Type E toxin was detected in serum specimens from two of the ICU patients and in stool from the third. Although they displayed minor symptoms, the other 11 persons had no toxin found in specimens and were not considered laboratory-confirmed cases. Type E toxin also was detected in three beaver paws tested from the implicated meal.

Beaver is hunted in southwest Alaska, and certain parts often are fermented and eaten later. In this outbreak, the tail and paws had been wrapped in a paper rice sack and stored for up to 3 months in the entry of a patient's house. Some of the beaver tail and paw had been added to the sack as recently as 1 week before it was eaten.



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Services, Inc.**

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*Urea Standards*  
*Goat Standards*  
*A & B Control Samples*  
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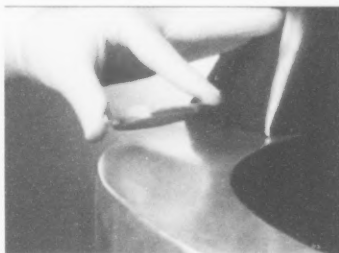
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# Industry Products



Hardy Diagnostics

## Hardy Diagnostics Offers Contact Plates for Environmental Monitoring

The contact plate is a petri dish with a diameter of 60mm, slightly overfilled with a nutrient agar. The petri plate has a grid molded into the bottom to aid in the counting of microorganisms. The Tryptic Soy Agar with Lecithin and Tween contact plate is useful in monitoring total microbial contamination and to assist in determining surface sanitation. Tryptic Soy Agar provides amino acids and other nitrogenous compounds making it a nutritious medium for many microorganisms. Germicidal or disinfectant residue (quaternary ammonia compounds, hexachlorophene, and ethanol) is neutralized by the addition of Lecithin and Tween. TSA with Lecithin and Tween is available as a 15x60mm contact plate. For cleanroom applications,

TSA with Lecithin and Tween contact plates are available double bagged and gamma irradiated.

Hardy Diagnostics, Santa Cruz, CA

Reader Service No. 306

## Slideways, Inc. Custom Plastic Components Made for Packaging and Process Machinery

A wide range of custom engineered and precision machined wear resistant plastic components for packaging and process machinery builders are being introduced by Slideways, Inc.

Slideways Custom Packaging and Process Machinery Components are precision machined to  $\pm .001$ ", depending upon material and configuration, and can be manufactured in sizes up to 60" dia. or as wear strips up to 20 ft. long.

Helping machinery builders select the best material for their application, typical products manufactured include bearings, star wheels, cams, linear slides, chain guides and returns, belt guides, wear strips and rollers.

Slideways, Custom Packaging and Process Machinery Components can be machined from UHMW which provides wear

resistance and economy, acetal for rigidity and high temperature applications, nylon for load capacities to 2,600 psi, Teflon<sup>®</sup> for chemical resistance and operation at up to 550°F, and a variety of other engineering plastics. Assembled components with threaded inserts, press-fit ball bearings, and steel mounting channels can also be supplied.

Slideways, Custom Packaging and Process Machinery Components can be produced in prototype to production quantities.

Slideways, Inc., Shrewsbury, MA

Reader Service No. 307

## Idexx Laboratories Launches New HerdChek<sup>®</sup> Mycobacterium paratuberculosis DNA Test Kit

Idexx Laboratories, Inc. Production Animal Services Division has announced that it has received approval to market and sell its USDA-licensed HerdChek<sup>®</sup> Mycobacterium paratuberculosis (*M.pt*) DNA Test Kit. The *M.pt* DNA Test Kit detects Mycobacterium paratuberculosis and is one of two Idexx diagnostic kits that allow for the diagnosis of Johne's Disease in cattle. The kit uses preformulated reagents, deliver-

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ing results in less than 3 days compared to up to 12 weeks for culture and does not require the use of radioactive isotopes or gel electrophoresis equipment. Customer training and installation are available.

The *M.pt* DNA Test Kit has been validated using feces and utilizes the IS900 sequence that is specific for *M.pt*. It has enhanced detection due to polymerase chain reaction amplification and use of an enzyme conjugated probe. The kit also has a sensitivity of  $2 \times 10^2$  organisms and there is no cross-reactivity with related species, including *M. phlei*.

Idexx Laboratories, Inc.,  
Westbrook, ME

Reader Service No. 308

### Nuclear Associates' Nema Compression Paddle Deflection Test Tool

At least once a year, at the very minimum, a QC test should be performed to determine that the compression paddle is firmly attached to the mammographic system, or when effective compression is not achieved, because of angulation of the paddle relative to the breast support surface as compression is applied.

The NEMA Compression Paddle Deflection Test Tool (model 18-233) from Nuclear Associates is an indispensable mammographic QC tool that has everything you need to help ensure proper attachment and effectiveness of the compression paddle. It consists of a 5 mm Gage Block (2 pieces), a 10 mm Gage Block (2 pieces), the Telescoping Gage and two Test Objects (one for  $18 \times 24$  compression paddles and one to accommodate  $24 \times 30$  compression paddles). Also included is a Support Plate that

is considerably more rigid than either the breast support surface or the compression paddle, so that the deflection of the paddle is accurately measured and not the deflection on the base on which it rests.

The NEMA Compression Paddle Deflection Test Tool has been hailed by those who have used it as a great improvement over the "tennis ball technique." Without question, it quickly and easily determines that the compression paddle is firmly attached to the mammographic system and capable of applying effective compression to the breast.

Nuclear Associates, Carle Place, NY

Reader Service No. 309



GrayWolf Sensing Solutions

### Palmheld PC-based Air Velocity Meter from Gray Wolf Sensing Solutions

GrayWolf Sensing Solutions introduces an air velocity probe, along with application software, for HP Jornada™ and Compaq Ipaq™ Pocket PC™S. The AS-201 probe is designed for commercial airspeed and volume flow measurement applications such as air handling system balancing, fumehood face velocity testing and indoor air quality surveys.

A thermal (or "hotwire") sensor is mounted on a 34 inch (extended) telescoping probe that incorporates patent pending

technology to eliminate internal cabling. The probe connects to the palmheld computer where airspeed, temperature and volume flow may simultaneously be displayed and data-logged in a choice of unit symbols.

GrayWolf's Wolf Sense™ application software unleashes the power of the Pocket PCs to provide a broad range of features including: A versatile averaging function; test site identification; auto-linked Notes, Pocket Word™ reports, graphic and audio files, and detailed tips and application instructions

The hotwire probe, software, probe pouch, computer belt case and HP Jornada Pocket PC are available together as a complete kit from GrayWolf; the Direct Sense™ AIR air velocity kit. Other probes are also available for relative humidity, carbon monoxide, carbon dioxide, particulates and other measurements.

GrayWolf Sensing Solutions,  
Trumbull, CT

Reader Service No. 310

### Sigma-Aldrich Introduces Stemline™ Methylcellulose Media Line for Optimized Hematopoietic CFU Assay Results

Sigma-Aldrich launches its Stemline Methylcellulose Media line to provide consistent performing CFU (colony forming units) assay systems for hematopoietic progenitors. This product line features eight new media for human and mouse cultures, and formulations with and without growth factors. Stemline media are manufactured under tightly-controlled conditions using rigorously-qualified raw materials to ensure reliable and predictable results.

When appropriately supplemented with cytokines, Stemline media will support the growth of granulocyte colonies (CFU-G), macrophage colonies (CFU-M), granulocyte/macrophage colonies (CFU-GM), erythroid colonies (BFU-E and CFU-E), and pluripotent mixed colonies (CFU-GEMM). Stemline media are provided ready-to-use in 24 x 3 ml tubes or in 100 ml bottles. These convenient formats provide ease of use and save time and money.

Sigma-Aldrich Corporation,  
St. Louis, MO

**Reader Service No. 311**

### Italcoppie Immersable RTD Probes Available from the Instrumentation Group

The Instrumentation Group has introduced a new series of Italcoppie® brand RTD probes. These rugged, long-lasting, and accurate temperature sensors offer significant advantages in harsh operating conditions and corrosive environments.

The IKE series of platinum RTD probes features a one-piece molded design with a vulcanized cover protecting the entire sensor exterior, including the vulnerable transition area where the sensor and cable are joined. They are moisture, temperature, and corrosion resistant and suitable for long-term immersion. These sensors are tough enough to survive in applications usually proving fatal to others.

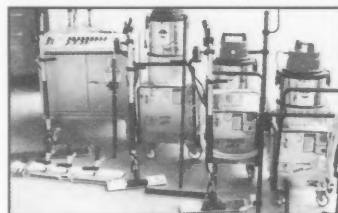
IKE series RTD probes are available with either Pt 100 or Pt 1000 sensing elements and a choice of IEC Class "B" or Class "A" accuracy specifications. The attached thermoplastic cables may be ordered in lengths up to 5,000 mm (16') and are available in either two-wire or four-wire configurations. The 3.5 mm

diameter outer cable has ambient temperature limits of -50°C to 105°C (-58°F to 221°F). The probe tip containing the RTD sensor is 5 mm in diameter and 20 mm long.

For applications demanding stainless steel probes, the IKE series also offers an option for a 316 SS sensor tip. The 6 mm diameter cap is available in two lengths: 50 mm and 100 mm and provides the same watertight construction and corrosion resistance as the vulcanized sensors. The stainless steel tip probes are available in all the cable lengths, sensor types and accuracy configurations as the vulcanized probes.

Instrumentation Group,  
Asheville, NC

**Reader Service No. 312**



AmeriVap Systems

### Amerivap Systems/R.E.A. Saturno

R.E.A. Saturno is 94% saturated dry steam at 240°F, with 150 PSI cleaning and sanitizing power. Being a state of aeriform aggregation, it has a remarkable propagation capacity even in places that are difficult to reach on machines, production lines, conveyors, tools, working environments, etc. AmeriVap Systems rapidly and economically solve problems of sanitizing, cleaning, washing, degreasing, as well as reducing the disposal of liquid waste. Leaves surfaces dry and sanitized. Does not alter flavor and integrity

of food products. Destroys pathogenic microorganisms without using antibacterial agents.

Water savings, chemical reduction. Portable, self-contained with chemical injector and vacuum. Heater booster option to 575°F plus automatic conveyor belt cleaner.

AmeriVap Systems, Atlanta  
GA

**Reader Service No. 313**

### Subminiature Flush Diaphragm Pressure Sensor from Sensotec

The Sensotec subminiature Model S is a small, rugged, submersible transducer which features a 0.250" diameter flush diaphragm. Common applications include industrial process control, pharmaceutical manufacturing, and land-based, offshore and subsea oil drilling operations.

The Model S delivers 1% FS accuracy. The excellent thermal characteristics and highly stable output provide reliable data for a variety of harsh industrial applications.

This rugged transducer features a unitized I7-4 PH Stainless Steel flush diaphragm, heavy sidewall construction and standard 3/8" threaded housing. Standard excitation is 5 VDC, and output is 2mV/V for high ranges. Amplified output is also available.

The Model S is available in pressure ranges from 10 to 20,000 psig, psia. High frequency response and overload capacity up to 100% make this one of our most versatile units. Many ranges are immediately available from stock.

Sensotec, Inc., Columbus, OH

**Reader Service No. 314**

## Metering Pumps for Hydrogen Fuel Cell Humidification

**M**etering Pumps manufactured by Fluid Metering, Inc., have found application in the development of Hydrogen Fuel Cell technology. FMI pumps feature one moving part, no valves and a ceramic & fluorocarbon fluid path. Models are available for both production and R&D applications.

Unlike most conventional methods of generating electric energy which develop power through combustion, the Hydrogen Fuel Cell generates power through an electro-chemical process. The process is extremely efficient and virtually emission free.

Manufactured in its ISO 9002:1994 facility, Fluid Metering, Inc.'s valveless piston metering pump has been chosen to perform a critical function of the fuel cell operation. The FMI pump precisely humidifies air going into the fuel cell by accurately recirculat-

ing deionized water created as a by product of the reaction. The accuracy and reliability of this function is important to the operation and efficiency of the fuel cell.

Fluid Metering, Inc., Syosset, NY

Reader Service No. 315

## USDA Approves Neogen's Test for Fumonisin

**N**eogen Corporation's test for fumonisin, a natural toxin in grain, has been approved by the USDA's Grain Inspection, Packers and Stockyards Administration (GIPSA) for official testing in the national grain inspection system.

GIPSA sought rapid methods to detect fumonisin as concerns about the detrimental effects of the mold toxin have escalated. The EPA classifies fumonisin, which is produced by molds that commonly infect corn and rice, as a Category II-B carcinogen. Horses are extremely sensitive

to low amounts of fumonisin, which can cause liquefaction of the brain.

The concerns have led the FDA to issue guidelines to limit fumonisin to 2 parts per million (ppm) in corn and corn by-products destined for humans, and as little as 5 ppm in the corn used for animal feed.

Neogen's GIPSA-approved fumonisin test adds to its comprehensive list of rapid tests for toxins in grain, which also includes kits for aflatoxin, deoxynivalenol (DON), ochratoxin, zearalenone and T-2 toxin. Neogen has had a contract with the USDA's Federal Grain Inspection Service (FGIS) every year since 1994 for the exclusive use of the company's test to monitor grain commodities, primarily corn, for aflatoxin. In April, GIPSA approved Neogen's improved Veratox® for DON 5/5 for determining DON levels in wheat, barley, malted barley, oats and corn.

Neogen Corporation, Lansing, MI

Reader Service No. 316



**AINIA**  
INSTITUTO TECNOLÓGICO  
AGROALIMENTARIO



**Food in Europe:  
Building in Safety**

### EHEDG 11th Annual Conference and Training Workshop in Valencia, Spain — October 15-17, 2001

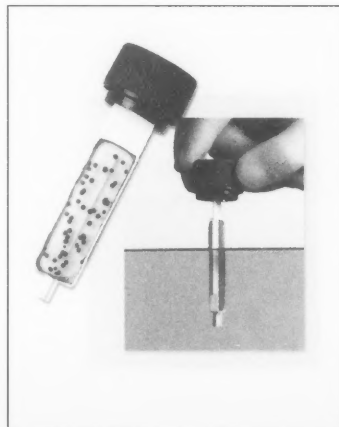
The programme features a two-day conference with:

- panel discussions
- one-day training course on hygienic engineering
- exhibit of suppliers of hygienic engineering-related material
- poster display
- workshop meetings for subgroup members

The training workshop on October 17 will take the form of a series of training sessions and group work permitting a deeper understanding of hygienic engineering and design and their applications to the needs of different products and their associated consumers.

For more information, visit [www.ainia.es/safetycongress](http://www.ainia.es/safetycongress)

BD Diagnostic Systems — BD Hycheck™ — The Flexible Tool for Bioburden Sampling on Surfaces and in Liquids or Semi-Solids





# PUBLICATION SURVEY RESULTS

## INTRODUCTION

In May and June of 2001 with the assistance of Research USA, Inc. in Arlington Heights, Illinois, the International Association for Food Protection conducted a readership survey. The survey focused on *Dairy, Food and Environmental Sanitation's* content while asking readers about potential new sections for the journal. In addition, we wanted to learn about *Journal of Food Protection* reader's actions, our Members' Internet usage and general demographics of those surveyed. Survey results were tabulated by Research USA, Inc. in July and a report was issued. We present the summary of results for your review.

## METHODOLOGY

The names used for this survey were selected on an n<sup>th</sup> name basis from the **International Association for Food Protection's** membership list for a total of 800 names.

|                                   |          |          |
|-----------------------------------|----------|----------|
| Questionnaires mailed             |          | 800      |
| Returned:                         |          |          |
| Incomplete                        | 4        |          |
| Undelivered                       | <u>2</u> | <u>6</u> |
| Net effective mailing             |          | 794      |
| Completed questionnaires returned |          | 546      |
| Percentage return                 |          | 68.8%    |

The information in this report is based on a computer tabulation of the 546 completed questionnaires that were returned.

Results are projectable within a range of  $\pm 4.3$  (with 95% confidence) for most of the tables in this report.

## READERSHIP OF IAFP PUBLICATIONS

Most of the IAFP Members surveyed (94.7%) receive *Dairy, Food and Environmental Sanitation* and about two-thirds (67.8%) receive *Journal of Food Protection*.

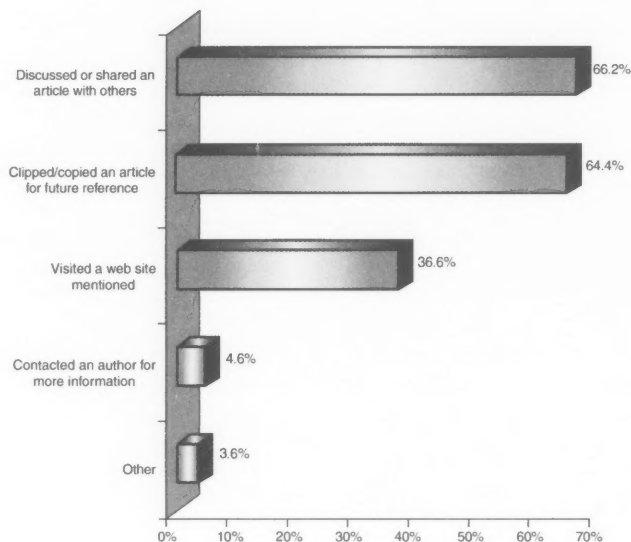
*Dairy, Food and Environmental Sanitation* has an average of 2.9 readers per copy, and the *Journal of Food Protection* has an average of 3.7.

More than 90% of those who receive each of the publications find them to be "very" or "somewhat" helpful to their jobs.

## ABOUT DAIRY, FOOD AND ENVIRONMENTAL SANITATION

Nearly 9 out of 10 recipients of *Dairy, Food and Environmental Sanitation* (88.5%) have taken one or more actions in the past 12 months as a result of reading an article in the publication.

### Actions Taken in the Past 12 Months as a Result of Reading an Article in *Dairy, Food and Environmental Sanitation*



Took one or more actions 88.5%

Similarly, nearly two-thirds (63.3%) took one or more actions in the past 12 months as a result of seeing advertising in the publication.

Most respondents (93.6%) feel that the length of the articles in *Dairy, Food and Environmental Sanitation* "is about right."

A large majority (84.6%) also feel that the level of the articles "is about right."

The topics in *Dairy, Food and Environmental Sanitation* that are of strongest interest to readers include Thoughts on Food Safety, News, Updates, and Industry Products.

From a list of seven possible features that could be added to *Dairy, Food and Environmental Sanitation*, readers expressed the greatest interest in Point/Counterpoint columns.

|                            | <u>Strong interest</u> | <u>Moderate interest</u> |
|----------------------------|------------------------|--------------------------|
| Reader comments            | 11.7%                  | 57.5%                    |
| Member profiles            | 6.3                    | 40.2                     |
| Letters to the Editor      | 11.3                   | 54.1                     |
| Point/Counterpoint columns | 20.2                   | 51.8                     |
| Affiliate spotlights       | 6.9                    | 35.6                     |
| PDG profiles               | 4.9                    | 32.5                     |
| Guest columns              | 15.0                   | 53.1                     |

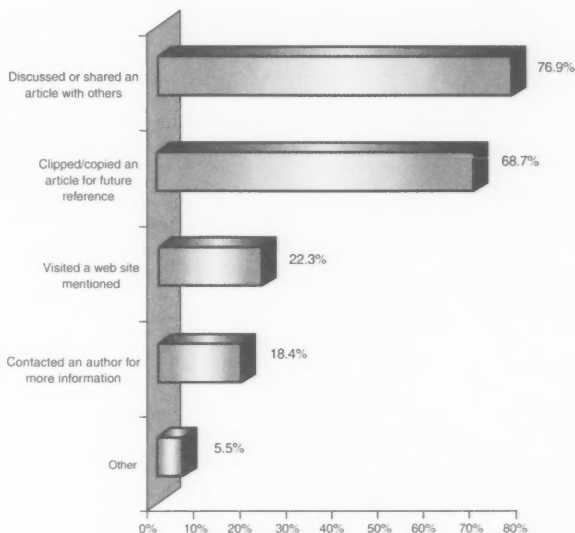
When *Dairy, Food and Environmental Sanitation* was rated for various qualities, an overwhelming number of readers rated it "excellent" or "good" in every instance.

|                                    | <b>Rated<br/>Excellent/Good</b> |                           | <b>Rated<br/>Excellent/Good</b> |
|------------------------------------|---------------------------------|---------------------------|---------------------------------|
| Paper quality                      | 95.0%                           | Overall aesthetic quality | 88.8%                           |
| Overall readability                | 91.1                            | Design graphics           | 87.3                            |
| Attractiveness of the front covers | 90.3                            | Format/navigability       | 86.3                            |

## ABOUT JOURNAL OF FOOD PROTECTION

In the past 12 months, 90.9% of those who receive the *Journal of Food Protection* have taken one or more actions as a result of reading an article in the publication, and over one-half (52.1%) have taken one or more actions during this period as a result of seeing advertising in it.

### Action Taken in the Past 12 Months as a Result of Reading an Article in *Journal of Food Protection*



Took one or more actions 90.9%

## INTERNET USAGE

Nearly all Members responding (98.1%) have Internet access. Usually this access is at work (91.3%) and/or at home (80.1%).

Most respondents (70.7%) have visited IAFP's Web site ([www.foodprotection.org](http://www.foodprotection.org)).

Those with access spend an average of 6.2 hours per week using the Internet. Over one-half use it for all of these reasons:

|                              |       |
|------------------------------|-------|
| Research scientific findings | 63.0% |
| Research products/vendors    | 55.2  |
| Read industry news           | 51.0  |
| Professional development     | 50.2  |

## ABOUT THEIR IAFP MEMBERSHIP

Respondents have been IAFP Members for an average of 7.9 years.

Over one-fourth of the Members surveyed (27.9%) attended the IAFP Annual Meeting in Atlanta (2000). Most Members (73.6%) replied that they would be "very" or "somewhat" likely to attend future IAFP Annual Meetings.

Approximately one out of every seven respondents (14.3%) is a member of an IAFP committee or group.

Most Members indicated "strong" or "moderate" interest in IAFP adding each of the following Member services:

|                               |       |
|-------------------------------|-------|
| Educational training          | 77.5% |
| Workshops                     | 77.4  |
| Discounts on books/videotapes | 76.2  |

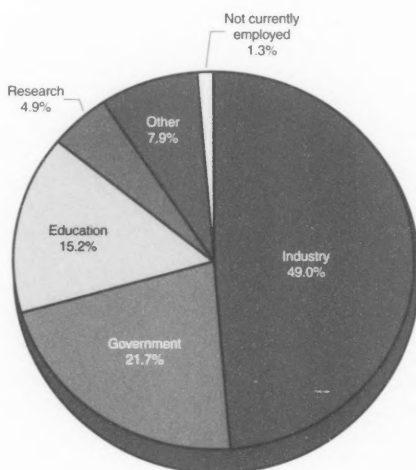
## ABOUT THEIR WORK

The largest number are employed in the areas of multiple foods (18.1%), dairy (15.1%) or processed foods (10.1%).

Most Members (85.1%) are involved in purchasing products and services for their organization.

Respondents work for various types of organizations with most employed by industry (49.0%), government (21.7%) or education (15.2%).

Type of Organization



Complete survey results were presented to the Executive Board and members of the Journal Management Committees. Results were also available for review by attendees at IAFP 2001 in Minneapolis. If you are interested in obtaining a copy of the results, E-mail our office at [info@foodprotection.org](mailto:info@foodprotection.org) and we will E-mail a copy for your review.



## NOTICE

Dates for  
IAFP 2003  
have been  
changed to

**August 10-13,  
2003**

**New Orleans,  
Louisiana**



**HACCP and  
QMI Products  
are your  
best defense  
for fighting  
contamination.**



QMI Aseptic  
Transfer System



QMI Aseptic  
Sampling System



QMI has the proven, patented systems to monitor critical control points to assure an effective HACCP program:

- QMI Aseptic Transfer System eliminates contamination during inoculation of yogurt, cheese, culture, buttermilk and other fermented products.
- QMI Aseptic Sampling System identifies sources of contamination and documents process control.
- Validation Studies have proven that QMI products, when used properly, will control contamination resulting from sampling or inoculation. Visit [www.qmisystems.com](http://www.qmisystems.com) for details.
- Microbiological Test Results are only as good as the sample. And, QMI Products are the answer to your microbial sampling needs.

Don't take chances. Take action against contamination. To learn more about QMI products and services - including validation studies on safety and effectiveness, our Standard Operating Procedure (SOP) Manual, training videos and CD-Roms - call, write or visit our Web site.

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TRANSFER SYSTEMS

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Reader Service No. 113



# *How the Audiovisual Library Serves IAFP Members*

## **Purpose ...**

The Audiovisual Library offers International Association for Food Protection Members an educational service through a wide variety of quality training videos dealing with various food safety issues. This benefit allows Members free use of these videos.

## **How It Works ...**

- 1) Members simply fill out an order form (see page 864) and fax or mail it to the IAFP office. Members may also find a Library listing and an order form online at the IAFP Web site at [www.foodprotection.org](http://www.foodprotection.org).
- 2) Material from the Audiovisual Library is checked out for a maximum of two weeks (three weeks outside of North America) so that all Members can benefit from its use.
- 3) Requests are limited to five videos at a time.

## **How to Contribute to the Audiovisual Library ...**

- 1) As the IAFP Membership continues to grow, so does the need for additional committee members and materials for the Library. The Audiovisual Committee meets at the IAFP Annual Meeting to discuss the status of the Audiovisual Library and ways to improve the service. New Members are sought to add fresh insight and ideas.
- 2) Donations of audiovisual materials are always needed and appreciated. Tapes in foreign languages (including, but not limited to Spanish, French, Chinese [Mandarin/Cantonese]), are especially desired for International Members who wish to view tapes in their native language.
- 3) Members may also make a financial contribution to the Foundation Fund. The Foundation Fund sponsors worthy causes that enrich the Association. Revenue from the Foundation Fund supports the IAFP Audiovisual Library. Call Lisa Hovey, Assistant Director or Lucia Collison McPhedran, Association Services at 800.369.6337 or 515.276.3344 if you wish to make a donation.

# Audiovisual Library

as of September 1, 2001

## A Member Benefit of IAFFP

### DAIRY

- 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) (Reviewed 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). (Reviewed 1998)
- 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) (Reviewed 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) (Reviewed 1998)
- D1050 The Farm Bulk Milk Hauler**-(30 minute-135 slides-tape-script). This slide 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) (Reviewed 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) (Reviewed 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) (Reviewed 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) (Reviewed 1997)
- D1090 Managing Milking Quality**-(33 minute videotape). This training video is designed to help dairy farmers develop a quality management process and is consistent with ISO 9000 certification and HACCP processes. The first step is to evaluate the strengths and weaknesses of a dairy operation. The video will help you find ways to improve the weaknesses that are identified on your farm.
- 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) (Reviewed 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) (Reviewed 1998)
- D1150 Processing Fluid Milk**-(30 minute-140 slides-script-tape). This slide set 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) (Reviewed 1998)

### ENVIRONMENTAL

- E3010 The ABCs of Clean-A Handwashing & Cleanliness Program for Early Childhood Programs**-For early childhood program employees. This tape illustrates how proper handwashing and clean hands can contribute to the infection control program in daycare centers and other early childhood programs. (The Soap & Detergent Association-1991)
- E3020 Acceptable Risks?**-(16 minute videotape). Accidents, deliberate misinformation, and the rapid proliferation of nuclear power plants have created increased fears of improper nuclear waste disposal, accidents during the transportation of waste, and the release of radioactive effluents from plants. The program shows the occurrence of statistically 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) (Reviewed 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.) (Reviewed 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) (Reviewed 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) (Reviewed 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) (Reviewed 1998)
- E3075 EPA: This is Super Fund**-(12 minute videotape). Produced by the United States Environmental Protection Agency (EPA) in Washington, D.C., this videotape focuses on reporting and handling hazardous waste sites in our environment. The agency emphasizes community involvement in identifying chemical waste sites and reporting contaminated areas to the authorities. The primary goal of the "Super Fund Site Process" is to protect human health and to prevent and eliminate hazardous chemicals in communities. The film outlines how to identify and report abandoned waste sites and how communities can participate in the process of cleaning up hazardous sites. The program also

explains how federal, state and local governments, industry and residents can work together to develop and implement local emergency preparedness/response plans in case chemical waste is discovered in a community.

- 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) (Reviewed 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). (Reviewed 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.) (Reviewed 1999)
- E3150 Radon**—(26 minute videotape). This program looks at the possible health implications of radon pollution, methods home-owners 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 clean-up 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). (Reviewed 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)

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#### FOOD

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- F2260** **100 Degrees of Doom... The Time & Temperature Caper**—(14 minute videotape). Video portraying a private eye tracking down the cause of a *Salmonella* poisoning. Temperature control is emphasized as a key factor in preventing foodborne illness. (Educational Communications, Inc.—1987) (Reviewed 1998)
- F2450** **A Guide to Making Safe Smoked Fish**—(21 minute videotape). Smoked fish can be a profitable product for aquaculturalists, but it can be lethal if not done correctly. This video guides you through the steps necessary to make safe smoked fish. It provides directions for brining, smoking, cooling, packaging and labeling, and cold storage to ensure safety. The video features footage of fish smoking being done using both traditional and modern equipment. (University of Wisconsin-Madison-Spring, 1999)
- F2005** **A Lot on the Line**—(25 minute videotape). Through a riveting dramatization, "A Lot on the Line" is a powerful training tool for food manufacturing and food service employees. In the video, a food plant supervisor and his pregnant wife are eagerly awaiting the birth of their first child. Across town, a deli manager is taking his wife and young daughter away for a relaxing weekend. Both families, in a devastating twist of fate, will experience the pain, fear, and disruption caused by foodborne illness. This emotionally charged video will enthrall new and old employees alike and strongly reinforce the im-



- portance of incorporating GMPs into everyday work routines. Without question, "A Lot on the Line" will become an indispensable part of your company's training efforts. (Silliker Laboratories-2000)
- F2440** **Cleaning & Sanitizing in Vegetable 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.) (Reviewed 1998)
- F2015** **Controlling Listeria: A Team Approach**-(16 minute videotape). In this video, a small food company voluntarily shuts down following the implication of one of its products in devastating outbreak of *Listeria monocytogenes*. This recall dramatization is followed by actual in-plant footage highlighted key practices in controlling *Listeria*. This video provides workers with an overview of the organism, as well as practical steps that can be taken to control its growth in plant environments. Finally, the video leaves plant personnel with a powerful, resounding message: Teamwork and commitment are crucial in the production of safe, quality foods. (Silliker Laboratories-2000)
- F2037** **Cooking and Cooling of Meat and Poultry Products**-(2 videotapes - 176 minutes). (See Part 1 Tape F2035 and Part 2 Tape F2036). This is session 3 of a 3-part Meat and Poultry Teleconference cosponsored by AFDO and the USDA Food Safety Inspection Service. Upon completion of viewing these videotapes, the viewer will be able to (1) recognize inadequate processes associated with the cooking and cooling of meat and poultry at the retail level; (2) Discuss the hazards associated with foods and the cooking and cooling processes with management at the retail level; (3) Determine the adequacy of control methods to prevent microbiological hazards in cooking and cooling at the retail level, and (4) Understand the principle for determining temperature with various temperature measuring devices. (AFDO/USDA-1999)
- F2030** **"Egg Games" Foodservice Egg Handling and Safety**-(18 minute videotape). Develop an effective egg handling and safety program that is right for your operation. Ideal for manager training and foodservice educational programs, this video provides step-by-step information in an entertaining, visually-exciting format. (American Egg Board-1999)
- F2020** **Egg Handling & Safety**-(11 minute videotape). Provides basic guidelines for handling fresh eggs which could be useful in training regulatory and industry personnel. (American Egg Board-1997)
- F2036** **Emerging Pathogens and Grinding and Cooking Comminuted Beef**-(2 videotapes - 165 minutes.) (See Part 1 Tape F2035 and Part 3 Tape F2037.) This is session 2 of a 3-part Meat and Poultry Teleconference co-sponsored by AFDO and the USDA Food Safety Inspection Service. These videotapes present an action plan for federal, state, local authorities, industry, and trade associations in a foodborne outbreak. (AFDO/USDA-1998)
- F2035** **Fabrication and Curing of Meat and Poultry Products**-(2 videotapes - 145 minutes). (See Part 2 Tape F2036 and Part 3 Tape F2037). This is session 1 of a 3-part Meat and Poultry Teleconference cosponsored by AFDO and the USDA Food Safety Inspection Service. Upon viewing, the sanitarian will be able to (1) Identify typical equipment used for meat and poultry fabrication at retail and understand their uses; (2) Define specific terms used in fabrication of meat and poultry products in retail establishments, and (3) Identify specific food safety hazards associated with fabrication and their controls. (AFDO/USDA-1997)
- F2039** **Food for Thought-The GMP Quiz Show**-(16 minute videotape). In the grand tradition of television quiz shows, three food industry workers test their knowledge of GMP principles. As the contestants jockey to answer questions, the video provides a thorough and timely review of GMP principles. This video is a cost-effective tool to train new hires or sharpen the knowledge of veteran employees. Topics covered include employee practices, including proper attire, contamination, stock rotation, pest control, conditions for microbial growth and employee traffic patterns. Food safety terms such as HACCP, microbial growth niche, temperature danger zone, FIFO and cross-contamination, are also defined. (Silliker Laboratories-2000)
- F2040** **Food Irradiation**-(30 minute videotape). Introduces viewers to food irradiation as a new preservation technique. Illustrates how food irradiation can be used to prevent spoilage by microorganisms, destruction by insects, overripening, and to reduce the need for chemical food additives. The food irradiation process is explained and benefits of the process are highlighted. (Turnelle Productions, Inc.) (Reviewed 1998)
- F2045** **Food Microbiological Control**-(6-videotapes - approximate time 12 hours). Designed to provide information and demonstrate the application of basic microbiology, the Good Manufacturing Practices (GMPs), retail Food Code, and sanitation practices when conducting food inspections at the processing and retail levels. Viewers will enhance their ability to identify potential food hazards and evaluate the adequacy of proper control methods for these hazards. (FDA-1998)

- F2050 Food Safe—Food Smart—HACCP & Its Application to the Food Industry**—(2-16 minute videotapes). (1)—Introduces the seven principles of HACCP and their application to the food industry. Viewers will learn about the HACCP system and how it is used in the food industry to provide a safe food supply. (2)—Provides guidance on how to design and implement a HACCP system. It is intended for individuals with the responsibility of setting up a HACCP system. (Alberta Agriculture, Food and Rural Development) (Reviewed 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 Foodservice 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) (Reviewed 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) (Reviewed 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) (Reviewed 1998)
- F2133 Food Safety First**—(50 minute videotape). This food safety training video presents causes of foodborne illness in foodservice and ways to prevent foodborne illness. Individual segments include personal hygiene and handwashing, cleaning and sanitizing, preventing cross contamination and avoiding time and temperature abuse. Foodhandling principles are presented through scenarios in a restaurant kitchen. (Glo-Germ 1998). Available in Spanish.
- 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. (US Department of Health & Human Services—1997)
- Food Safety for Foodservice**—An employee video series containing quick, 10-minute videos that teach food service employees how to prevent foodborne illness. This four video series examines sources of foodborne illness, plus explores prevention through awareness and recommendations for best practices for food safety. It also looks at how food safety affects the food service employee's job. (J.J. Keller & Associates—2000)
- F2100 Tape 1—Food Safety for Food Service: Cross Contamination**—(10 minute videotape). Provides the basic information needed to ensure integrity and safety in foodservice operations. Explains proper practices and procedures to prevent, detect and eliminate cross contamination.
- F2101 Tape 2—Food Safety for Food Service: HACCP**—(10 minute videotape). This video takes the mystery out of HACCP for your employees, and explains the importance of HACCP procedures in their work. Employees will come away feeling confident, knowing how to make HACCP work. The seven steps of HACCP and how HACCP is used in foodservice are some of the topics discussed.
- F2102 Tape 3—Food Safety for Food Service: Personal Hygiene**—(10 minute videotape). This video establishes clear, understandable ground rules for good personal hygiene in the foodservice workplace and explains why personal hygiene is so important. Topics include: personal cleanliness; proper protective equipment; correct hand washing procedures; when to wash hands, hygiene with respect to cross contamination and prohibited practices and habits.
- F2103 Tape 4—Food Safety for Food Service: Time and Temperature Controls**—(10 minute videotape). This video examines storage and handling of raw and cooked ingredients, and explains how to ensure their safety. Employees learn how to spot potential problems and what to do when they find them. Topics include: correct thermometer use, cooling, thawing and heating procedures, food storage procedures, holding temperature requirements, and handling leftovers.

**F2120 Food Safety: For Goodness Sake, Keep Food Safe**-(15 minute videotape). Teaches food-handlers 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) (Reviewed 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. - (Reviewed 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)

**Food Safety Zone Video Series**-A one-of-a-kind series that helps get your employees to take food safety issues seriously! These short, to-the-point videos can help make your employees aware of various food hazards, and how they can help promote food safety. The 4 topics are: Basic Microbiology, Cross Contamination, Personal Hygiene, and Sanitation. (J.J. Keller & Associates - 1999). (Also available in Spanish.)

**F2125 Tape 1-Food Safety Zone: Basic Microbiology**-(10 minute videotape). In this video, food service personnel will gain a deeper understanding of food safety issues and what they can do to prevent recalls and contamination. It describes the different types of bacteria that can be harmful to food, and tells how to minimize bacterial growth through time and temperature controls, personal hygiene practices, and sanitation.

**F2126 Tape 2-Food Safety Zone: Cross Contamination**-(10 minute videotape). Quickly teach your employees how they can help prevent cross contamination. Employees are educated on why contaminants can be extremely dangerous, cause serious injury, and even death, to consumers of their food products. This fast-paced video will give your employees a deeper understanding of the different types of cross contam-

ination, how to prevent it, and how to detect it through visual inspections and equipment. The emphasis is that prevention is the key to eliminating cross contamination.

**F2127 Tape 3-Food Safety Zone: Personal Hygiene**-(10 minute videotape). After watching this video, your employees will understand why their personal hygiene is critical to the success of your business. This video teaches employees about four basic good personal hygiene practices: keeping themselves clean, wearing clean clothes, following specific hand washing procedures, and complying with all related work practices. Personnel are also taught that personal hygiene practices are designed to prevent them from accidentally introducing bacteria to food products, and are so important that there are federal laws that all food handlers must obey.

**F2128 Tape 4-Food Safety Zone: Sanitation**-(10 minute videotape). Don't just tell your employees why sanitation is important, show them! This training video teaches employees about the sanitation procedures that cover all practices to keep workplaces clean, and food produced free of contaminants and harmful bacteria. Four areas covered include personal hygiene, equipment and work areas, use and storage of cleaning chemicals and equipment, and pest control.

**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)

**F2137 GMP Basics: Avoiding Microbial Cross-Contamination**-(15 minute videotape). This video takes a closer look at how harmful microorganisms, such as *Listeria*, can be transferred to finished products. Employees see numerous examples of how microbial cross-contamination can occur from improper traffic patterns, poor personal hygiene, soiled clothing, unsanitized tools and equipment. Employees need specific knowledge and practical training to avoid microbial cross-contamination in plants. This video aids in that training. (Silliker Laboratories-2000)

**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 wash-

- ing. 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)
- 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 food-service operation. A leader's guide is provided as an adjunct to the tape. (The Canadian Restaurant & Foodservices Association-1990) (Reviewed 1998)
- F2169 HACCP: Training for Employees - USDA Awareness**-(15 minute videotape). This video is a detailed training outline provided for the employee program. Included in the video is a synopsis of general federal regulations; HACCP plan development; incorporation of HACCP's seven principles; HACCP plan checklist, and an HACCP employee training program. (J.J. Keller & Associates-1999)
- F2172 HACCP: Training for Managers**-(17 minute videotape). Through industry-specific examples and case studies, this video addresses the seven HACCP steps, identifying critical control points, recordkeeping and documentation, auditing, and monitoring. It also explains how HACCP relates to other programs such as Good Manufacturing Practices and plant sanitation. (J.J. Keller & Associates, Inc.-2000)
- 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)
- F2171 HACCP: The Way to Food Safety**-(53 minute videotape). The video highlights the primary causes of food poisoning and stresses the importance of self-inspection. Potentially hazardous foods, cross-contamination and temperature control are explained. The video is designed to give a clear understanding of the seven HACCP principles and practical guidance on how to apply these principles to a work environment. Critical limits, monitoring systems and corrective action plans are emphasized. The video also provides an overview of foodborne pathogens, covering terminology, the impact of pathogens, and what employees must do to avoid problems. Also described are the sources, causes and dangers of contamination in the food industry. (Southern Illinois University-1997)
- 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 dis-



- eases. 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) (Reviewed 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) (Reviewed 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. (Temelle Production, Ltd.) (Reviewed 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) (Reviewed 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. (Reviewed 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. (Reviewed 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) - (Reviewed 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.) (Reviewed 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). (Reviewed 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) (Reviewed 1998)
- F2325 Safe Practices for Sausage Production**-(3 hour videotape). This videotape is based on a series of educational broadcasts on meat and poultry inspections at retail food establishments produced by the Association of Food and Drug Officials (AFDO) and USDA's Food Safety and Inspection Service (FSIS), along with FDA's Center for Food Safety and Applied Nutrition. The purpose of the broadcast was to provide training to state, local, and tribal sanitarians on processes and procedures that are being utilized by



retail stores and restaurants, especially those that were usually seen in USDA-inspected facilities. The program will cover the main production steps of sausage products, such as the processes of grinding, stuffing, and smoking, and typical equipment used will be depicted. Characteristics of different types of sausage (fresh, cooked and smoked, and dry/semi-dry) will be explained. Pathogens of concern and outbreaks associated with sausage will be discussed. The written manual for the program is available at [www.fsis.usda.gov/ofc/hrds/STATE/RETAIL/manual.htm](http://www.fsis.usda.gov/ofc/hrds/STATE/RETAIL/manual.htm). (1999)

- F2460 Safer Processing of Sprouts**-(1 hour and 22 minute videotape). Sprouts are enjoyed by many consumers for their taste and nutritional value. However, recent outbreaks of illnesses associated with sprouts have demonstrated a potentially serious human health risk posed by this food. FDA and other public health officials are working with industry to identify and implement production practices that will assure that seed and sprouted seed are produced under safe conditions. This training video covers safe processing practices of sprouts including growing, harvesting, milling, transportation, storage, seed treatment, cleaning and sanitizing, sampling and microbiological testing. (CA Dept. of Health Services, Food and Drug Branch; U.S. Food and Drug Administration, and the Centers for Disease Control and Prevention - 2000)
- 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) foodhandlers as a source of food contamination, (2) personal hygiene as a means of preventing food contamination, (3) approved food storage techniques including safe storage temperatures, (4) sources of cross-contamination, (5) contamination of food by insects and rodents, (6) garbage handling and pest control, and (7) design and location of equipment and physical facilities to facilitate cleaning. (Reviewed 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) (Reviewed 1998)
- F2350 ServSafe® Steps to Food Safety**-The ServSafe food safety series consists of six videos that illustrate and reinforce important food safety practices in an informative and entertaining manner. The videos provide realistic scenarios in multiple industry segments. English and Spanish are provided on each tape. (National Restaurant Association Education Foundation -2000)
- Step One: Starting Out with Food Safety**-(12 minute videotape). Defines what foodborne illness is and how it occurs; how foods become unsafe; and what safety practices to follow during the flow of food.
- Step Two: Ensuring Proper Personal Hygiene**-(10 minute videotape). Introduces employees to ways they might contaminate food; personal cleanliness practices that help protect food; and the procedure for thorough hand-washing.
- Step Three: Purchasing, Receiving and Storage**-(12 minute videotape). Explains how to choose a supplier; calibrate and use a thermometer properly; accept or reject a delivery; and store food safely.
- Step Four: Preparing, Cooking, and Serving**-(11 minute videotape). Identifies proper practices for thawing, cooking, holding, serving, cooling and reheating food.
- Step Five: Cleaning and Sanitizing**-(11 minute videotape). Describes the difference between cleaning and sanitizing; manual and machine warewashing; how sanitizers work; how to store clean items and cleaning supplies; and how to setup a cleaning program.
- Step Six: Take the Food Safety Challenge: Good Practices, Bad Practices - You Make the Call**-(35 minute videotape). Challenges viewers to identify good and bad practices presented in five short scenarios from different industry segments.
- 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) (Reviewed 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) (Reviewed 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) (Reviewed 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). (Reviewed 1998)

#### OTHER

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

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

- M4030 Ice: The Forgotten Food**-(14 minute videotape). This training video describes how ice is made and where the critical control points are in its manufacture, both in ice plants and in 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)
- 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)

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# Coming Events

## NOVEMBER

• **4-7, Food Microbiology Research Conference XVII**, Ramada Inn, O'Hare, Rosemont, IL. For further information, contact Paul Hall, Kraft Foods, 801 Waukegan Road, Glenview, IL 60025.

• **5-7, Hazard Analysis and Critical Control Point Workshop**, University of California-Davis, Davis, CA. For further information, contact Sharon Munowitch at 530.757.8899.

• **5-8, Better Process Control Schools (BPCS)**, Rutgers University, Cook Campus, New Brunswick, NJ. For further information, contact Keith Wilson at 732.932.9271; E-mail: ocpe@aerp.rutgers.edu.

• **5-8, Better Process Control Schools (BPCS)**, University of Arkansas, Fayetteville, AR. For further information, contact Mike Heilman at 501.575.2978.

• **6-7, Sensory Evaluation: Real World Techniques and Applications**, Rutgers University, New Brunswick, NJ. For further information, contact Keith Wilson at 732.932.9271; E-mail: ocpe@aerp.rutgers.edu.

• **6-7, 13th Annual Kosherfest 2001**, Meadowlands Exposition Center, Secaucus, NJ. For further information, contact call 212.981.3650.

• **7-8, Alabama Association for Food Protection Annual Meeting**, Homewood Holiday Inn, Birmingham, AL. For further information, contact Karen Crawford at 205.554.4546.

• **7-9, The Dairy Practices Council® (DPC) 32nd Annual Conference**, Harrisburg East Holiday Inn, Harrisburg, PA. For further information, contact DPC at 732.203.1947; E-mail: dairypc@dairypc.org.

• **9-10, Mexico Association for Food Protection Annual Meeting**, Guadalajara Mission-

Carlton Hotel, Guadalajara. Contact M. Refugio Torres-Vitela at 011.523.619.8158, ext. 16.

• **9-10, 3rd International Food Safety Conference**, Sponsored by University of Guadalajara, Mexico and Mexico Association for Food Protection. For additional information, contact Dr. M. Refugio Torres-Vitela, phone: 523.619.8158 ext. 16; E-mail: torres@ccip.udg.mx.

• **12-15, Dairytech 2001**, The China International Exhibition Center, Beijing, China. For further information, contact Messe Dusseldorf North America at 312.781.5180; E-mail: info@mdna.com.

• **13-14, Food Plant Sanitation**, Best Western Carlton Place, Toronto, Ontario, Canada. For further information, contact Guelph Food Technology Center at 519.821.1246; E-mail: gftc@uoguelph.ca.

• **14-16, Florida Association for Food Protection Annual Education Conference**, FFA Leadership Training Center, Haines City, FL. For further information, contact Frank Yiannas at 407.397.6060.

• **14-17, Agritrade 2001**, Hyatt Regency Convention Center, Guatemala City, Mexico. For additional information, call 502.362.2002 ext. 163; Fax: 502.362.1950; E-mail: agritrade@agexpront.org.gt.

• **15, Ontario Food Protection Association Annual Meeting**, Delta Meadowvale Hotel, Mississauga, Ontario. For further information, contact Glenna Haller at 519.823.8015.

• **19, Waste and Wastewater in the Food Processing Industry Seminar**, Greenwood Inn, Winnipeg, Canada. For further information, contact the Food Development Center at 800.870.1044.

• **21-24, 3rd International Dairy and Food Technology Expo 2001**, Mumbai, India. For further information, call 49.0.221.8210; Fax: 49.0.221.821.2092; E-mail: idftexpo@kmi.koelnmesse.de.

• **21-24, Food Technology Expo 2001**, Xiamen International Conference & Exhibition Center, Fujian, China. For further information, contact Mr. Louis Leung at 852.2865.2633; Fax: 852.2866.1770; E-mail: enquiry@bitf.com.hk.

• **21-24, Better Process Control Schools (BPCS)**, Clemson University. For further information, contact Dr. Felix Barron at 864.656.5694.

• **29, Maryland Dairy Industry Association (MDIA) Annual Meeting**, Rutgers University, New Brunswick, NJ. For further information, contact Paul Weller or Jonathan Moore at 202.293.0476.

## DECEMBER

• **4-5, Food Service HACCP to Ensure Food Safety**, Rutgers University, New Brunswick, NJ. For further information, contact Keith Wilson at 732.932.9271; E-mail: ocpe@aerp.rutgers.edu.

• **5-6, Developing and Implementing HACCP for the Fresh-cut Industry Workshop**, Holiday Inn Airport North, Atlanta, GA. For further information, contact the International Fresh-cut Produce Association (IFPA) office at 703.299.6282; E-mail: info@fresh-cuts.org.

• **17-19, Microbiology III: Foodborne Pathogens**, Guelph, Ontario, Canada. For further information, contact Marlene Inglis at 519.821.1246 ext. 5028; E-mail: minglis@gftc.ca.

## JANUARY 2002

• **9-11, Frontiers in Microbial Fermentation and Preservation**. Joint meeting of the Society for Applied Microbiology and The Netherlands Society for Microbiology, Wageningen, The Netherlands. We invite you to submit an abstract of your recent research activities. We need your contribution(s) before October 1, 2001,

together with your booking form. See details at [www.foodmicro.nl](http://www.foodmicro.nl); booking form downloading at [www.foodmicro.nl](http://www.foodmicro.nl).

• **16-18, International Poultry Exposition**, Georgia World Congress Center, Atlanta, GA. For further information, call 770.493.9401.

• **31-Feb. 3, Association of Water Technologies Regional Training Seminar West**, The Fairmont Hotel, Dallas, TX. For further information, call Carrie Harley at 800.858.6683.

**FEBRUARY**

• **20-21, California Association of Dairy and Milk Sanitarians Annual Meeting**, Holiday Inn Capitol Plaza, Sacramento. Contact John Bruhn at 530.752.2192.

• **6-7, Sensory Evaluation: Real World Techniques and Applications**, Rutgers University, New Brunswick, NJ. For further information, contact Keith Wilson at 732.932.9271; E-mail: [ocpe@aerp.rutgers.edu](mailto:ocpe@aerp.rutgers.edu).

• **19-21, Kentucky Association of Dairy, Food and Environmental Specialists Annual Meeting**, Executive West Hotel, Louisville, KY. For further information, contact David Burton at 270.781.8039.

• **20-21, California Association of Dairy and Milk Sanitarians Annual Meeting**, Holiday Inn, Capitol Plaza, Sacramento, CA. For further information, contact John Bruhn at 530.752.2192.

**APRIL**

• **11-13, International Fresh-cut Produce Association's (IFPA)**

**15th Annual Conference and Exhibition**, Millennium Biltmore Hotel and the Los Angeles Convention Center, Downtown Los Angeles, CA. For additional information, call 703.299.6282; Web site: [www.fresh-cuts.org](http://www.fresh-cuts.org).

• **18, Indiana Environmental Health Association, Inc. Spring Conference**. For further information, contact Helene Uhlman at 219.853.6358.

• **18, Missouri Milk, Food and Environmental Health Association Annual Meeting**, Ramada Inn, Columbia, MO. For further information, contact Linda Wilson at 417.864.1661.

• **19-24, Conference for Food Protection**, Sheraton Nashville, Nashville, TN. For further information, contact Trevor Hayes at 408.848.2255; E-mail: [TWHgilroy@aol.com](mailto:TWHgilroy@aol.com).



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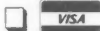
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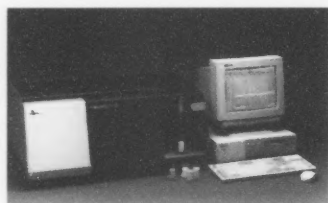
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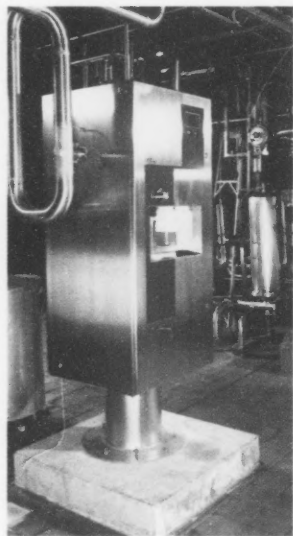
Laboratory Analysis  
of Dairy Products



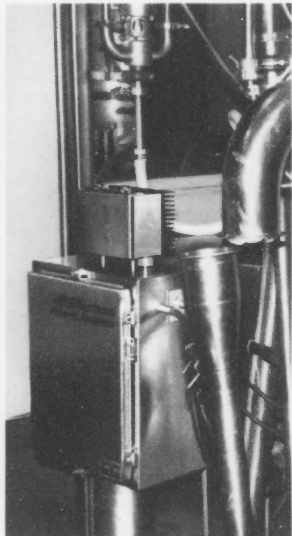
Laboratory Analysis of  
Cheese & Food Products



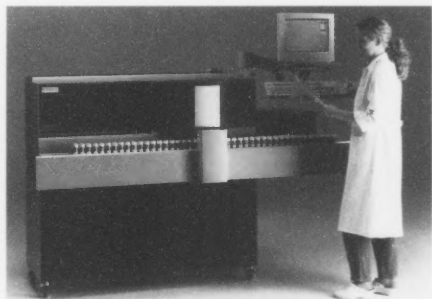
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