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PERIODICALS

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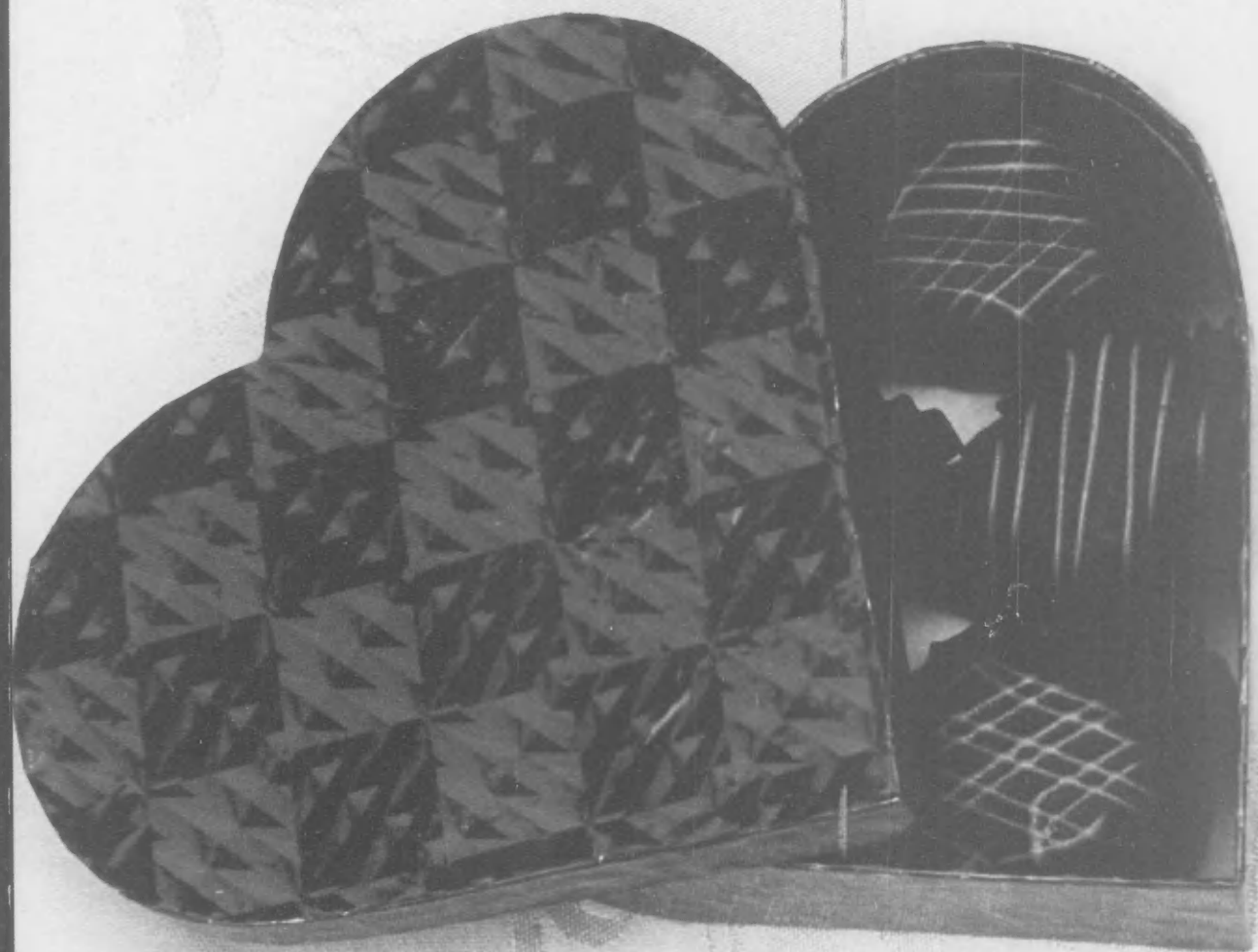
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FOOD PROTECTION TRENDS

SCIENCE AND NEWS

FROM THE
INTERNATIONAL ASSOCIATION
FOR FOOD PROTECTION

FEBRUARY 2006



The International Association for Food Protection (IAFP) Foundation Fund was established in the 1970s to support the mission of IAFP – “To provide food safety professionals worldwide with a forum to exchange information on protecting the food supply.”



Advancing Food Safety Worldwide®

We live in a global economy and the way food is grown, processed, and handled can impact people around the world. From a public health perspective, it often provides unique challenges to food safety professionals. Combine these issues with the complexity of protecting the food supply from food security threats and the challenges seem overwhelming. However, with your support the Foundation can make an impact on these issues. Funds from the Foundation help to sponsor travel for deserving scientists from developing countries to our Annual Meeting, sponsor international workshops, and support the future of food scientists through scholarships for students or funding for students to attend IAFP Annual Meetings.

The Foundation is currently funded through contributions from corporations and individuals. A large portion of the support is provided from the Sustaining Members of IAFP. The Sustaining Membership program is a unique way for

organizations to partner with the Association. Contact the Association office if you are interested in this program.

Support from individuals is also crucial in the growth of the Foundation Fund. Contributions of any size make an impact on the programs supported by the IAFP Foundation. Programs currently supported by the Foundation include the following:

- Student Travel Scholarships
- Ivan Parkin Lecture
- John H. Silliker Lecture
(Funded through a contribution from Silliker, Inc.)
- Travel support for exceptional speakers at the Annual Meeting
- Audiovisual Library
- Developing Scientist Competition
- Shipment of volumes of surplus *JFP* and *FPT* journals to developing countries through FAO in Rome

Donate Today!



It is the goal of the Association to grow the Foundation to a self-sustaining level of greater than \$1.0 million by 2010. This will allow the Foundation to provide additional programs in pursuit of our goal of *Advancing Food Safety Worldwide!*

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Student Travel Scholarship Program

Sponsored by  IAFP
FOUNDATION

The Student Travel Scholarships will provide travel funds to enable selected students to travel to IAFP 2006 in Calgary, Alberta, Canada.

For 2006, four scholarships will be awarded. As the IAFP Foundation grows, additional scholarships will be added to this program.

Full details of the scholarship program are available on the IAFP Web site at www.foodprotection.org.

Application deadline is March 13, 2006.

IS YOUR PROGRAM CRUMBINE MATERIAL? PUT IT TO THE TEST!

The Samuel J. Crumline Consumer Protection Award for Excellence in Food Protection at the Local Level is seeking submissions for its 2006 program. The Crumline Award is given for excellence and continual improvement in a comprehensive program of food protection at the local level. Achievement is measured by:

- Sustained improvements and excellence over the preceding four to six years;
- Innovative and effective use of program methods and problem solving to identify and reduce risk factors that are known to cause foodborne illness;
- Demonstrated improvements in planning, managing, and evaluating a comprehensive program; and
- Providing targeted outreach; forming partnerships; and fostering communication and information exchange among regulators, industry and consumer representatives.



All local environmental health jurisdictions in the U.S. and Canada are encouraged to apply, regardless of size, whether "small," "medium" or "large."

The Award is sponsored by the Conference for Food Protection, in cooperation with the American Academy of Sanitarians, American Public Health Association, Association of Food and Drug Officials, Foodservice & Packaging Institute, Inc., International Association for Food Protection, International Food Safety Council, National Association of County & City Health Officials, National Environmental Health Association, NSF International, and Underwriters Laboratories, Inc.

For more information on the Crumline Award program, and to download the 2006 criteria and previous winning entries, please go to www.fpi.org or call the Foodservice & Packaging Institute at (703) 538-2800. **Deadline for entries is March 15, 2006.**



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Membership in the International Association for Food Protection will put you in charge of your career. From quick access to cutting-edge technical and scientific information, becoming a Member is your link to the food safety industry and a clearinghouse of resources. Increase the knowledge and ideas you can implement in your work environment.

Is your organization in
pursuit of "Advancing
Food Safety Worldwide®"?
As a Sustaining Member
of the International
Association for Food
Protection, your
organization can help to
ensure the safety of the
world's food supply.

Sustaining Membership

Sustaining Membership provides organizations and corporations the opportunity to ally themselves with the International Association for Food Protection in pursuit of *Advancing Food Safety Worldwide*®. This partnership entitles companies to become Members of the leading food safety organization in the world while supporting various educational programs through the IAFP Foundation that might not otherwise be possible.

Organizations who lead the way in new technology and development join IAFP as Sustaining Members. Sustaining Members receive all the benefits of IAFP Membership, plus:

- Monthly listing of your organization in *Food Protection Trends* and *Journal of Food Protection*
- Discount on advertising
- Exhibit space discount at the Annual Meeting
- Organization name listed on the Association's Web site
- Link to your organization's Web site from the Association's Web site
- Alliance with the International Association for Food Protection

Gold Sustaining Membership \$5,000

- Designation of three individuals from within the organization to receive Memberships with full benefits
- \$750 exhibit booth discount at the IAFP Annual Meeting
- \$2,000 dedicated to speaker support for educational sessions at the Annual Meeting
- Company profile printed annually in *Food Protection Trends*

Silver Sustaining Membership \$2,500

- Designation of two individuals from within the organization to receive Memberships with full benefits
- \$500 exhibit booth discount at the IAFP Annual Meeting
- \$1,000 dedicated to speaker support for educational sessions at the Annual Meeting

Sustaining Membership \$750

- Designation of an individual from within the organization to receive a Membership with full benefits
- \$300 exhibit booth discount at the IAFP Annual Meeting





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Sustaining Membership: Three levels of sustaining membership are available to organizations. For more information, contact Julie A. Cattanach, Membership Services, International Association for Food Protection.

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IAFP 2007

JULY 8-11

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AUGUST 3-6

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“PERSPECTIVES FROM NORTH OF THE 49TH”

I am sure that everyone recognizes that students really are the future of our great organization. IAFP is truly making a concerted effort to reach out to our Student Membership. There are a number of initiatives that we have undertaken and others that we will initiate in the future to continue to attract and maintain new student members. We really want students to feel at home and see that IAFP is the organization for them to join and that our Annual Meeting is the one scientific meeting that they should not miss.

One of the key foundation pieces for students is the Student Professional Development Group (PDG). The mission of the Student PDG is to provide students with a platform upon which to enrich their experience(s) as Members of IAFP. This is done through providing an opportunity for students to network with peers, and to (1) serve as a resource for food safety employers to seek qualified applicants; (2) encourage effective exchange of information on protecting the food supply by fostering relationships at the student level; (3) maintain high membership in IAFP by encouraging students to join the Association; (4) serve the interests and needs of students, and (5) incorporate change according to the interests and needs of students. Of particular note, besides the Student PDG, there are currently six other student initiatives.

1. With regards to networking with members, we now have the very successful student mixer at the Annual Meeting where students get to interact with members from diverse backgrounds and locations.



By **JEFFREY FARBER**
PRESIDENT

“IAFP is truly making a concerted effort to reach out to our Student Membership”

2. Equally as successful has been the student luncheon where a member of the Executive Board usually gives a stimulating talk. At this luncheon, students get to meet with their peers from around the world.
3. At the Annual Meeting, students usually get involved in some fundraising activities, as well as have a student booth set up with some fun activities going on. However, we want it to be more than just the Annual Meeting experience for students, and are always

looking for ideas. For example, through the Student PDG, we are hoping that students can stay in touch throughout the year. One activity that has been discussed is the potential of setting up a chat room with the President and/or Executive Board for a certain time period to discuss any topics of interest to students.

4. The Student PDG newsletter is a good communications tool that can also be used to keep students abreast of the latest news and views of the student body during the year.
5. An additional activity that has proven to be very rewarding is the student-led symposia. Here, students choose topics of interest to the group and actually organize a whole symposium. This gives the students a great opportunity to learn how to plan, organize and produce a symposium. An additional benefit is that it gives students a chance to meet with the speakers, many of whom are experts in their field.
6. Another student program that we are extremely proud and excited about is the student travel scholarship program. IAFP and the IAFP Foundation are truly dedicated to supporting the development of our future food safety professionals from around the world. To demonstrate this commitment, we are continuing and expanding our student travel scholarship program,

which is now in its second year. Thus, for the IAFP 2006 in Calgary, in addition to one student from outside of North America and two from North America, IAFP will be supporting the travel of a student from a developing country. This is truly a milestone for the organization and a really exciting new benefit for IAFP Student Members. This program is open to IAFP Student Members who are enrolled full-time in a food safety related degree program as either a graduate or undergraduate student. During the selection process, priority will be given to those applicants who have not previously attended an IAFP Annual Meeting. The application form and full details can

be found at the IAFP Web site. Please remember that applications must be received prior to the application deadline of March 13, 2006, and that students will be notified of the selection committee's decision by April 28, 2006. Award recipients will also be recognized at our Annual Meeting. We also introduce our student scholarship winners to a long time member of IAFP, so that the students can learn about our great organization through the lenses of a devoted IAFP Member.

We are really doing our utmost to encourage and maintain our student membership in IAFP. As you can see from above, there are many things planned for students and there are good reasons why

students keep coming to our Annual Meeting. I know many students have mentioned to me that they enjoy the meeting because it is relatively small and that year after year, they can meet key people in the field.

The Board and staff will be holding another of our strategic planning sessions this April, and I know that we will be discussing what more we can do to foster and nurture the future of our organization — the IAFP Student Members! If you have ideas we can discuss, please contact me or a Member of the Executive Board.

As always, I can be reached by E-mail at jeff_farber@hc-sc.gc.ca and would love to hear from you!

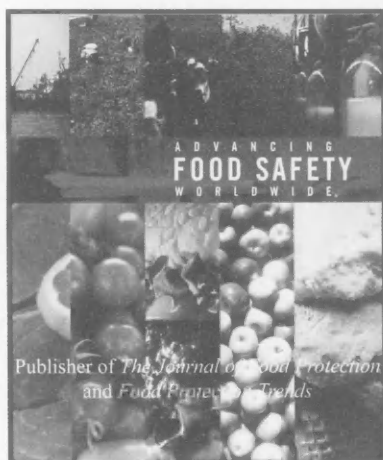
Have a great month.

Quote of the month:

It's not what is poured into a student that counts, but what is planted.

Linda Conway

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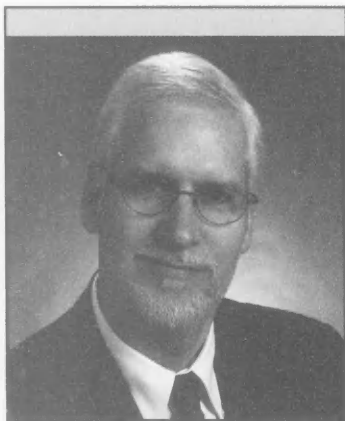
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“COMMENTARY” FROM THE EXECUTIVE DIRECTOR

As of the end of 2005, the IAFP Foundation held about \$350,000 in its reserves. This is a huge improvement over where the balance stood approaching the end of the year 2000. As I recall, in 1999, Harry Haverland and the Foundation Committee set a goal of reaching \$100,000 in the year 2000. At the time, this seemed like a lofty goal, as the Foundation balance had remained steady between \$70,000 and \$80,000 for many years. To increase it by \$20,000 or more in fifteen to eighteen months would be considered a big accomplishment! This goal was met late in 2000 and Harry was so proud that we exceeded what we set out to achieve.

More recently, the Foundation Committee size has been expanded and additional enthusiasm evolved from the Committee Members. Bigger goals have been set – a really BIG goal has now been set for the Foundation. Our goal is to build funds in the Foundation to reach \$1 million by 2010 while continuing to support the many worthy programs. Not only do we want to continue to support the current programs, but also there are plans to expand our Foundation-supported programs!

You can see that the current Committee Members are not afraid of setting the bar high! But, you can also see that support for the IAFP Foundation has run at an unparalleled pace since reaching our \$100,000 goal in 2000. More than \$250,000 has been raised in five years time! Even with that success, we have a huge goal in front of us now as we have to raise more than one-half-a million dollars in just five years



By **DAVID W. THARP, CAE**
EXECUTIVE DIRECTOR

***“Thanks to all
who are actively
supporting
the IAFP
Foundation!”***

time!!! I invite you to contact me or a member of the Foundation Committee if your company might be interested in supporting the fundraising campaign.

This is not something that was conceived without a plan to back it up. There are three parallel efforts underway to help the Foundation meet its goal. First and foremost, there has been and will continue to be efforts to expand the number of individual IAFP Members who contribute to the Foundation. Prior to the year 2000, there were very few individual contributors. Now, if

you look at page 127, you will see many of your colleagues are actively supporting the Foundation! Every contribution helps further the mission of IAFP so we encourage you to consider a contribution to the Foundation to help further its work. We have made it easy to contribute either directly through the IAFP Web site (under the “Foundation” tab) or with your Membership renewal. Please consider making a contribution if you have not done so in the past and if you have made contributions – Thank You for your support!

A second effort to raise additional funds for the Foundation was made when we added Gold and Silver levels to the Sustaining Member Program. A substantial portion of Sustaining Membership fees are allocated directly to the Foundation and has led to growth in the fund. The Gold and Silver Sustaining Member Program was introduced in 2001 and we have been fortunate to see steady growth over the years. You may review a listing of our Gold and Silver Sustaining Members on page 76. Please extend your thanks to individuals from these companies for their wonderful support!

The third effort is just reaching its beginning although the effort has been underway for some time. This involves IAFP reaching out directly to corporate donors. You may recall the filming that took place at IAFP 2005. We are in the final editing phase of completing a promotional DVD for the IAFP Foundation, which will allow us to carry our message to corporate officials with decision-making power. We recognize that most contributions

will need to be worked into future budgets and we are ready to work together to this end. We extend our sincere thanks to Kraft Foods, F&H Food Equipment Co., Wilbur Feagan, and Silliker, Inc. for their substantial contributions to the IAFP Foundation. They have seen the vision for the Foundation and agreed to support its efforts. For that, we are thankful!

In addition to these efforts, we also want to recognize that some of IAFP's Affiliate organizations choose to support the Foundation, too. Over the past few years, Affiliates from California, Florida, Ontario, Texas, and Wisconsin have contri-

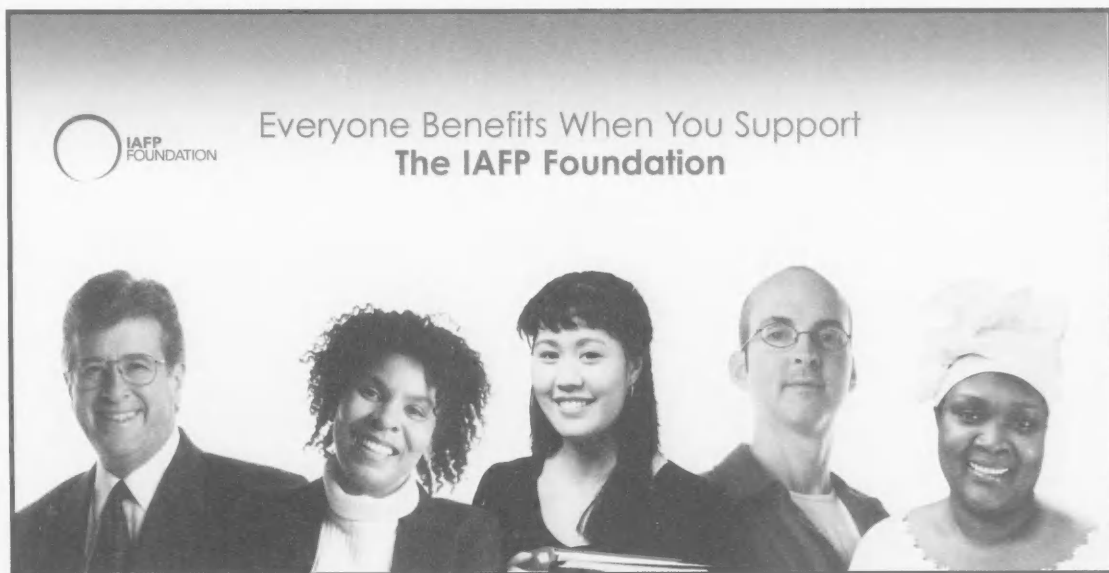
buted to the Foundation. Thanks to each of these IAFP Affiliates – we hope your enthusiasm will be matched by other Affiliate organizations!


Overall, the IAFP Foundation is thriving. We continue to search for ways to increase the support mechanism so that additional programs can be supported. In this month's column, I did not cover the programs supported. They were outlined in my May column and are also available on the IAFP Web site. Surely, you may contact me if you have any questions regarding the IAFP Foundation and I will be glad to assist you on either a corporate level or as an individual.

Thanks to all who are actively supporting the IAFP Foundation!

One other item to note this month is the December death of Earl Wright. Earl served as President for this Association in 1974 and as Executive Secretary from 1974 until 1983 when he retired. He joined the Association in 1948 and attended every Annual Meeting from 1948 until, and including, IAFP 2000. He was a very kind and caring person and one who we will miss so much. A tribute to Earl is printed on page 95. It is also noteworthy that Earl was instrumental in beginning the IAFP Foundation. Our thoughts are with his family.

Contribute Today!



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Use of Behavioral Change Theories in Development of Educational Materials to Promote Food Thermometer Use

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SUMMARY

Although visual methods are inadequate to determine safe endpoint cooking temperatures of meats such as ground beef, consumers often rely on color and texture. Fewer than 6% of American consumers use a food thermometer when cooking small cuts of meat. Most people are unaware of how to insert a food thermometer into small cuts and of recommended endpoint temperatures. Behavioral change theories (Health Belief Model and Stages of Change Model) were used in developing educational materials to promote food thermometer use. A majority of the 295 people who received the materials and returned a completed post-survey rated all materials as easy to understand and useful in explaining how and why to use a thermometer. The brochure and video, which contained information targeted toward people who do not use a thermometer, were rated higher than the recipe cards regarding effectiveness in helping people learn about thermometer use. The video, which also contained information about selection and use of thermometers, was ranked most useful and most motivating by the small portion of consumers who were using thermometers prior to receiving the educational materials. Increased use of food thermometers and improved knowledge about and attitudes toward food thermometers were reported.

A peer-reviewed article

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INTRODUCTION

Foods from animal sources are frequently contaminated with pathogens (25). An estimated one-fourth to three-fourths of retail meat and poultry is contaminated with *Campylobacter*, *Escherichia coli* or *Salmonella* (25) and these pathogens cause millions of foodborne illnesses each year (11). Adequate cooking to a temperature sufficient to assure pathogen destruction is the only way consumers can kill pathogens found in meat and poultry (13) and undercooking of meat is a major contributor to the burden of foodborne illness (13). Use of a food thermometer to determine if foods are cooked adequately is considered of primary importance for the prevention of illness associated with undercooked meat and poultry (14).

In cooking small cuts of meat, few consumers use a food thermometer to assure that the meat is adequately cooked (17, 18, 23). Reliance on color and appearance of cooked meats are common ways to judge whether meats are done (17, 18). Research shows that visual methods are inadequate to determine safe end-point cooking temperature of meats such as ground beef (7); indeed, the USDA estimates that one out of four hamburgers turns brown before reaching a safe end-point temperature (2).

Fewer than 6% of American consumers use a food thermometer on a regular basis when cooking small cuts of meat (17, 18, 23). Consumers most often associate thermometer use with cooking large items, such as turkeys or roasts, for meals at holidays or other special events and they may consider using a thermometer unnecessary for hamburgers and chicken breasts (18, 19, 20). Knowledge of how to insert a food thermometer into thin cuts of meat and of recommended safe internal temperatures for different types of meat is very limited (8). Several focus groups have been conducted with consumers to determine perceived barriers, potential motivators, and other mediating factors related to food thermometer use (8, 10, 18, 19). Most participants were aware of the importance of cooking meats thoroughly to ensure food safety, but were unaware that color is not a good indicator of doneness and felt that the color of meat could be used to assess adequate cooking (8, 18). Barriers mentioned by participants included not knowing how to use a food thermometer with small cuts of meat, inconvenience, lack of time, habits acquired from family members, and a perception that their actions in cooking

meat would not affect their risk of foodborne illness (8).

Several strategies for encouraging food thermometer use emerged from the focus group research, including portraying thermometers as being easy and convenient to use as well as time-saving (8, 20) and illustrating thermometer use as a normal part of the cooking process (10). Participants suggested that convincing people that the quality and taste of meat would improve by using a food thermometer would be the best way to promote this behavior (20). Participants recommended that research findings that one in four hamburgers turns brown before it has reached a safe temperature should be included in food thermometer education materials (8, 20).

Additional educational materials to encourage use of thermometers when cooking small cuts of meat are needed. Research conducted on effective methods to promote food thermometer use has yielded many suggestions for design of the materials, such as using high quality, custom photographs featuring the use of a variety of food thermometers, displaying fully prepared meals in thermometer education materials and featuring other meat cuts as well as hamburgers (8, 17, 18, 19, 20). Other suggestions include use of illustrations to show the different types of available food thermometers and how to actually use them, particularly in small cuts of meat (8, 18, 20).

Because food thermometer use is an infrequently practiced behavior, use of behavioral change theories is an essential consideration in the development of materials to promote thermometer use. According to the Health Belief Model (HBM), individuals will adopt a health-related behavior when they consider themselves susceptible to a risk (perceived susceptibility), consider the consequences of the risk to be serious (perceived severity), and believe the benefits of adopting the behavior (perceived benefits) outweigh the personal costs of adopting such behavior (perceived barriers) (5).

Other important parts of the Health Belief Model are self-efficacy and cues to action. In terms of food safety behavior, self-efficacy is an individual's belief that he/she can take personal action to reduce the chance of foodborne illness (1). Cues to action are strategies to support and reinforce behavior change (5). Self-efficacy and perceived threat have been shown to predict food safety behavior (22), and increased self-efficacy among consumers following a food safety education intervention has been reported

(16). Hanson and Benedict found that cues to action were predictive of safe foodhandling behaviors (4).

The Transtheoretical Model (TTM) proposes that behavior change occurs as a process in which individuals move through a series of stages or Stages of Change (SOC) (15). Nutrition education interventions based on the Stages of Change model have been shown to be effective in moving individuals forward in behavior change when the learning activities are tailored toward subjects in each particular Stage of Change (3). About 50% of any given population with health problems is predicted to be in Precontemplation (3); however, regarding food thermometer use, almost the entire consumer population is in the Precontemplation stage (23). Individuals in Precontemplation are not aware of a problem or the need to change and may be resistant to adopting healthier behaviors. Most nutrition education interventions tend to be action-oriented (3) and there is also a lack of food safety education materials tailored to the Stages of Change prior to the action stage (12).

The purpose of this study was to develop attractive, high-quality educational materials to encourage consumers at various Stages of Change to use a food thermometer when cooking small cuts of meat such as hamburger patties, pork chops, chicken breasts and sausage patties. We evaluated these materials to determine whether targeted educational materials appealed to individuals at various Stages of Change relating to thermometer use with small cuts of meat.

Educational materials were developed based on a review of the literature related to food thermometer use by consumers and incorporated findings from research conducted by the project team to determine the most effective method to sanitize food thermometers (6), efficacy of different consumer cooking methods to kill *E. coli* O157:H7 in ground beef (21), an analysis of the availability and accuracy of food thermometers (9), and the use of focus groups to identify barriers and motivators regarding food thermometer use (10).

METHODS

The educational objectives for the educational materials were that people who prepare meats at home would

1. understand that risk of foodborne illness is reduced by using a food thermometer when cooking small cuts of meat,

FIGURE 1.



2. understand that quality of small cuts of meats is improved when a food thermometer is used to determine endpoint cooking temperature,
3. understand how to use an instant-read food thermometer to determine endpoint cooking temperatures of small cuts of meat, and
4. be aware of the most effective methods of cooking hamburger patties to ensure destruction of *E. coli* O157:H7.

We developed a set of materials, including recipe cards, a brochure and a video, with a shared title of *Now You're Cooking...Using a Food Thermometer*. The materials were based on the Health Belief Model and Transtheoretical Model and addressed barriers and motivators to food thermometer use. All of these materials were designed to have a similar look, and consistent repeated images and messages (Fig. 1). We conducted extensive peer-review to assure accuracy of information, used graphic designers to incorporate visual appeal, provided concrete suggestions, reinforced concepts through repetition, and translated recommendations into actions. Although most consumers are likely to be in the Precontemplation stage regarding food thermometer use, specific intervention messages were developed in an effort to reach individuals in all five Stages of Change. Examples of messages for people at different Stages of Change are in Table 1.

Brochure

The full-color brochure was designed for audiences in all Stages of Change. The first sections were designed for those not yet convinced to use a thermometer (Precontemplators and Contemplators). Facts about the safe cooking of meat and cooking meat of high quality were included in order to increase awareness about safety and quality aspects of thermometer use. For those in Preparation, a section on using an instant-read food thermometer was included. For those moving into Action, a section on cooking hamburgers recommended that home cooks either use a double-sided, clam-shell-type grill or turn patties frequently and gave a brief summary of research that supports this recommendation (21). For those in Action and Maintenance, end-point cooking temperatures for meat were included, as well as a recipe that included directions for testing internal temperature of the chicken breast with an instant-read thermometer and an illustration of the proper procedure for using both dial and digital instant-read thermometers.

Video

The 15-minute video was also designed for all Stages of Change. Types of thermometers suitable for small cuts of meat were displayed. Thermometer use in several small cuts of meat was illustrated, using actors to demonstrate proper techniques as a normal part of cooking meats.

Recipe cards

Five full-color, folded 4 × 6" recipe cards were developed that featured recipes for hamburger patties, turkey burgers, sausage patties, boneless skinless chicken breasts, and pork chops. Individuals in the Action and Maintenance stages were considered to be most likely to use these materials. All five recipes were developed to have 5 or fewer ingredients and to take no more than 15 minutes to prepare. Directions included recommended endpoint temperatures and cooking instructions for skillet, broiler, and indoor and outdoor grills. The recipe cards emphasized quality in addition to safety, as well as ease of using a food thermometer, and they featured pictures of thermometers being inserted into small cuts of meat.

The recipes were initially reviewed and tested by members of the research team and then were pilot tested with 18 consumers who prepared, tasted and evaluated the recipes and also commented on food thermometer and food safety information provided in the recipe. A graphic designer created a full-color proof of each recipe, using photographs that had been taken of each of the five meat items. Each recipe card included two photographs, one with a colorful, everyday, prepared recipe and one with a food thermometer being inserted into the meat. A variety of dial and digital instant-read thermometers were used in the photos to make consumers more aware of the variety of thermometers available. Because the meat patties featured were all less than 1/2" thick, the photographs demonstrated how to insert the probe into the side of the meat while using a spatula or tongs to secure the meat and slightly lift it off the cooking surface. The temperature reading on the thermometer is prominent in the photograph and reflects the recommended end-point temperature for the particular type of meat.

Evaluation of materials

In fall 2003, the educational materials and a post-survey were sent to 793 consumers in Washington and Idaho. These consumers had previously completed a pre-survey regarding their use of a food thermometer. The pre-survey and post-survey included questions to assess knowledge and attitudes toward food thermometer use and a staging question to determine where along the Stage of Change continuum each respondent was with regard to thermometer use with small cuts of meat. The post-survey also had

TABLE 1. Characteristics of each Stage of Change. Educational strategies, messages and methods used in food thermometer educational materials to target individuals in each stage

Characteristics of each Stage of Change	Educational strategies	Messages and methods	Educational materials
<i>Precontemplation</i>			
<ul style="list-style-type: none"> Individuals are not aware of need to use a food thermometer when cooking small cuts of meat 	Personalize risk of not using a food thermometer when cooking small cuts of meat	"Millions of people get sick from dangerous bacteria in food every year."	Brochure, Video
		"Raw meat may contain harmful bacteria."	Brochure, Video
		"These bacteria are killed when meat is cooked to 160°F"	Brochure, Video
<ul style="list-style-type: none"> Individuals may be in denial about need to use a food thermometer 	Increase awareness of importance of using a food thermometer when cooking small cuts of meat	"Color is not a good indicator of doneness."	Brochure, Video
		"One in four hamburgers turns brown before cooked to a safe temperature."	Brochure, Video
<ul style="list-style-type: none"> Individuals have no intention to use a food thermometer in small cuts of meat in the near future 	Focus on benefits of using a food thermometer when cooking small cuts of meat	"The ONLY way to be sure when meat is safe to eat is by testing the temperature with a thermometer."	Brochure, Video
		Included photo of brown hamburger patty with unsafe internal temperature of 135°F compared with photo of pink hamburger cooked to safe temperature of 160°F	Brochure, Video
		"Using a food thermometer can improve safety and quality of meat."	Brochure, Video
		"Meat cooked to 160°F is juicy and tender."	Brochure, Video
		"Unless you use a thermometer, it is very easy to overcook meat."	Brochure, Video
<i>Contemplation</i>			
<ul style="list-style-type: none"> Individuals are thinking about using a food thermometer when cooking small cuts of meat 	Emphasize strategies to reduce barriers and enhance benefits to using a food thermometer in small cuts of meat	"Using a food thermometer is quick and easy."	Brochure, Video
<ul style="list-style-type: none"> Individuals are evaluating the pros and cons of using a food thermometer in small cuts of meat and are seeking information 	Increase self-efficacy for using a food thermometer in small cuts of meat	"Be a better cook." "Be a safer cook."	Recipe Cards Recipe Cards

TABLE 1. (Continued) Characteristics of each Stage of Change. Educational strategies, messages and methods used in food thermometer educational materials to target individuals in each stage

Characteristics of each Stage of Change	Educational strategies	Messages and methods	Educational materials
<i>Preparation</i>			
<ul style="list-style-type: none"> Individuals are planning to use a food thermometer in small cuts of meat in near future 	Provide information on how to choose a food thermometer for small cuts of meat	"An instant-read dial or digital thermometer is recommended for small cuts of meat."	Brochure, Video
<ul style="list-style-type: none"> Individuals need information on how to make specific, small changes in behavior 		Provide photos and narrative explaining differences between digital and dial thermometer in small cuts of meat	Brochure, Video
<i>Action</i>			
<ul style="list-style-type: none"> Individuals are committed to using a food thermometer in small cuts of meat 	Provide information on how to use a food thermometer in small cuts of meat	Provided "quick and easy steps to check your meat for proper temperature."	Brochure, Video
<ul style="list-style-type: none"> Individuals are experimenting with using a food thermometer when cooking small cuts of meat 	Remind individuals that using a food thermometer in small cuts of meat is a learned behavior and will take time to develop as habit	Included color photos of comparing sensing areas of dial and digital instant read thermometers	Brochure, Video
<ul style="list-style-type: none"> Individuals acknowledge personal susceptibility to foodborne illness associated with undercooked small cuts of meat 		"Practice makes perfect."	Recipe Cards
<i>Maintenance</i>			
<ul style="list-style-type: none"> Individuals have adopted and are committed to the use of a food thermometer when cooking small cuts of meat 	Goal is to make using a food thermometer when cooking small cuts of meat commonplace	Included recommended safe endpoint temperature in recipes for small cuts of meat	Brochure Video Recipe Cards
		Used photos of a variety of different types of instant read thermometers being used to take temperature of small cuts of meat	Brochure Video Recipe Cards
<ul style="list-style-type: none"> Individuals are less likely to undercook small cuts of meat or return to using visual cues to determine doneness 	Require support, reward and reinforcement	Continued to repeat messages of benefits of safety and quality of using a food thermometer when cooking small cuts of meat	Brochure Video Recipe Cards
	Reminders of risk and consequences	Continued to repeat messages of risk of foodborne illness from undercooked meats and that use of a food thermometer as the only way to determine that meat is cooked to a safe temperature	Recipe Cards

questions regarding whether the materials had been used, how easy the materials were to understand, and the usefulness of the materials in helping participants understand why and how to use a thermometer. In addition, participants were asked to rank the three materials according to their effectiveness of helping people like them learn about thermometer use. Data were coded, entered, and analyzed using Statistical Package for the Social Sciences (SPSS), Release 11.0 for Windows (SPSS Inc., Chicago, IL 2000).

RESULTS AND DISCUSSION

Thirty-seven percent ($n = 295$) of those who received the materials returned a completed post-survey. The brochure was read by 88% of respondents, the recipe cards were read by 76%, and 21% of respondents had prepared at least one of the recipes. The video was viewed by 56% of respondents. On a 5-point scale of "easy to understand" to "not easy to understand", the materials were rated as "easy" or "very easy to understand" by 87% (brochure) to 90% (recipe cards) of respondents, with fewer than 3 people choosing the 'not easy to understand' option for any one of the materials.

The respondents gave similar responses related to each of the materials, with 80 to 90% of respondents rating the brochure, video and recipe cards as being useful or very useful in helping them to understand why and how to use a food thermometer. Respondents ranked the brochure and video higher than the recipe cards regarding effectiveness in helping them to learn about food thermometer use ($P < .01$); rankings of the brochure and video were similar. The introductory portions of the brochure and video had been designed to appeal to individuals in the Precontemplation Stage of Change and contained information about improved safety and quality when a thermometer is used in cooking small cuts of meat. The information about improved safety and quality apparently caught the attention of the majority of respondents, who were primarily Precontemplators regarding food thermometer use. The video, which contained more detailed information than the brochure about the variety of different types of thermometers and recommended uses in addition to demonstrating the use of these thermometers with several kinds of meat, was most useful and most motivating for the small portion of consumers who were already using a food thermometer (in Action or Maintenance SOC) prior to receiving the materials (24). This find-

ing confirms our theory that detailed information about thermometer use is needed for persons who adopt the recommended behavior.

Changes in knowledge and attitudes occurred in the time between the pre- and post-intervention surveys, an indication that the educational objectives have been achieved. On the post-survey, respondents had increased knowledge regarding roles of food thermometers in reduction of risk from foodborne illness and improvement of cooking quality (23). They were also more likely to choose the correct answers about how to use a dial gauge thermometer and about the need for frequent turning of hamburger patties; however, knowledge regarding the latter topic was still limited following the intervention, because only 38% of respondents answered the question correctly.

As reported previously, participants reported increased use of a food thermometer in the post-survey (23). In the pre-survey, 88% were classified in Precontemplation or Contemplation Stages of Change regarding food thermometer use, indicating that these participants did not use a food thermometer. A few (3%) were in Preparation, indicating that they were beginning to think about food thermometer use, and only 9% were thermometer users (Action or Maintenance). In the post-survey, there was a significant shift toward food thermometer usage, with 34% of persons in Action or Maintenance, 7% in Preparation to use a thermometer and 58% remaining in the Precontemplation or Contemplation stages (23).

In conclusion, it appears that the set of materials is appropriate for use with consumers at various Stages of Change regarding food thermometer use with small cuts of meat. The brochure was designed to catch the attention of the consumers who are currently in Precontemplation, which is the dominant attitude regarding use of a food thermometer with small cuts of meat. After the participants had reviewed the materials, an increase in thermometer use was reported.

Food safety education activities should be matched to SOC (12). It is not always practical or economical to develop individual materials specific for each SOC. The results of this project suggest that food thermometer educational interventions targeting all Stages of Change, with considerable emphasis on pre-Action SOC (Precontemplation, Contemplation, Preparation), can be effective in motivating consumers to adopt behavior change. Including messages to reinforce and support the desired behavior for those indi-

viduals already in or moving to the Action and Maintenance stages can increase the likelihood that the materials will remain useful and pertinent for a longer period. Although the recipe cards received the lowest ranking for overall effectiveness in helping people like them learn about thermometer use, we believe that recipes are a necessary part of thermometer education materials, because it is likely that the specific information about cooking procedures included in the recipe cards is essential when home food preparers are ready to use a food thermometer with small cuts of meat.

Suggested avenues for distribution of these and other food safety educational materials include grocery and cooking store displays, community classes and public events such as fairs and festivals, 4-H and Extension programs, and family and consumer science classrooms. The recipes easily lend themselves to use in a cooking demonstration or television appearance.

ACKNOWLEDGMENTS

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Implementation of *Listeria* Controls by Ready-to-Eat Seafood Processors Following a National Workshop Series

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ABSTRACT

A series of five workshops was conducted in 2003 to help processors of ready-to-eat (RTE) seafood products implement appropriate in-plant controls to minimize the potential for finished product contamination with the foodborne pathogen *Listeria monocytogenes*. A total of 170 individuals attended these workshops: 94 from firms that process smoked fish, crawfish, crabs, clams and other RTE seafood products; 60 from federal and state government agencies; and 16 from trade associations, universities or other service providers. Approximately two-thirds of the industry attendees had implemented some *Listeria* controls prior to attending the workshop, but one-third had not. A follow-up mail evaluation survey was sent to workshop attendees 8 months after the first workshop was held, and 59 individuals (37% overall response rate) returned a completed evaluation survey, including 25 processors of RTE seafood products (40% of the firms that attended). Approximately 80% of the firms who responded to this follow-up survey reported that they had modified their existing *Listeria* controls or implemented new controls since attending the workshop. These controls included conducting employee-training programs, modifying sanitation procedures, implementing new employee policies, changing the location of processing steps, changing or implementing a *Listeria* testing program, and investing in equipment or facility upgrades to facilitate control of *Listeria monocytogenes*. Eleven firms provided information on the resources they had devoted to *Listeria* controls in their operation. The mean reported expenditure for the 6-to-8 month period after respondents attended the workshop was \$19,411, with a range of \$1,200 to \$75,000. The mean reported annual cost of all *Listeria* controls was \$25,032, with a range of \$6,000 to \$84,000.

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INTRODUCTION

Under current United States regulatory policy, if any *Listeria monocytogenes* is detected in a 25-gram sample of a ready-to-eat (RTE) product, the product is considered adulterated. The presence of *L. monocytogenes* in RTE seafood products has resulted in numerous product recalls and hence in considerable economic loss. *L. monocytogenes* is widespread in the environment and can be readily isolated from humans, domestic animals (including pets), raw agricultural commodities, food processing environments, and the home (13). The organism is found in a wide variety of foods, including meats, poultry, vegetables, dairy products, and fishery products (2, 5, 11, 13). Although *L. monocytogenes* present in raw seafood may survive process treatments typical for some minimally processed products, such as cold-smoked fish (3), contamination from the processing plant environment appears to be a major source of finished product contamination for smoked seafood, as well as for other RTE foods (1, 7, 12, 20). Because *L. monocytogenes* is ubiquitous, it can constantly be re-introduced into the plant environment via raw materials, employees' shoes or clothes, and containers and equipment (boxes, crates, carts). *L. monocytogenes* also has the tendency to establish persistent resident populations that colonize niches in the plant (7, 9, 18).

The Smoked Seafood Working Group (SSWG), a collaboration of two US trade organizations, smoked seafood processors and academia, developed guidelines to minimize *L. monocytogenes* contamination of finished products in smoked seafood operations (4, 6, 8, 15). The SSWG identified five elements important for a comprehensive *Listeria* control program: (1) *Listeria*-specific Good Manufacturing Practices (GMPs) and sanitation procedures, (2) employee training, (3) environmental microbiological testing, (4) raw material controls, and (5) temperature controls for finished products. These control strategies were evaluated in a 2000-03 US Food Safety Initiative project, Agreement No.00-51110-9769 (9, 17). In the final year of this project, an outreach effort was conducted to share project results and current knowledge of effective *Listeria* controls with the RTE seafood processing industry, to encourage them to implement controls. The evaluation results presented here summarize the impacts that this educational effort had on RTE seafood processors and demonstrate the important role that education and training programs have in helping industry implement effective *Listeria* controls.

METHODS

Five *Listeria* Control Workshops were conducted in the spring of 2003 in Breaux Bridge, LA; New York, NY; Virginia Beach, VA; Seattle, WA; and Chicago, IL. The workshops were held in locations convenient for the types of RTE seafood processors targeted in this project, including smoked seafood, crab, and crawfish processors. The National Fisheries Institute (NFI), the Food Products Association (FPA), Cornell University, the Universities of Delaware and Maryland, Virginia Tech and Louisiana State University co-sponsored the workshop series.

The basic workshop format was a full-day symposium designed to provide detailed information on project research results and on the five key elements of a *Listeria* control program identified by the SSWG. Topics of the presentations targeting smoked seafood processors were: Overview of *Listeria*, Its Incidence, Risk Assessment and Regulatory Status; Review of Research Results from the Cornell/USDA Project: An Industry Perspective on *Listeria* Controls; Strategies for Implementing a *Listeria* Control Plan; Specific Sanitation and Good Manufacturing Practice Controls for *Listeria*; Employee Training and Training Materials; Testing and Monitoring for *Listeria* in the Plant; Raw Material and Finished Product Controls; Sources of Information and Help. Variations of this basic format were used for the workshops for crab and crawfish processors. Each attendee received a resource notebook that included the workshop presentations, the SSWG *Listeria* Control Manual (16), employee training PowerPoint presentations (10), and the Safe Food: It Depends on You employee training guide (14).

All workshop attendees were asked to complete an evaluation questionnaire at the end of each workshop. The post-workshop evaluation asked attendees to rate the workshop and each presentation on a 5-point scale, where 5 = excellent, 4 = good, 3 = average, 2 = below average and 1 = poor. The post-workshop questionnaire also collected information from industry attendees on the *Listeria* controls they had or planned to implement after attending the workshop.

A follow-up evaluation questionnaire was developed and mailed to 165 workshop attendees on November 14, 2003 (6.5 months after the last workshop, in Chicago, and 8.5 months after the first workshop, in Louisiana). The objective of this follow-up evaluation was to determine what *Listeria* controls workshop

attendees had actually implemented; the resources (time and money) that RTE seafood processors had devoted to *Listeria* controls; the training and industry assistance activities that had occurred, and future training needs.

RESULTS AND DISCUSSION

A total of 170 individuals attended the five *Listeria* control workshops. Of these, 94 (56%) were from 62 different companies that process RTE seafood products. Industry attendees included 35 individuals from firms that process smoked fish, 33 from firms that process other RTE seafood, 14 from firms that process crawfish, and 12 from firms that process blue crab. A number of firms reported that they process more than one type of RTE seafood product. Sixty of the attendees (35%) were from federal or state government agencies, including the US Food and Drug Administration, the US National Marine Fisheries Service, the US Army Veterinary Service, and US state government agencies in LA, NY, VA, OR and WA. Sixteen attendees (9%) were from trade associations, universities, consulting firms or other service firms.

Post workshop evaluation

Workshop attendees returned a total of 111 post-workshop evaluation forms. Sixty-four (58%) were from industry attendees, 41 (37%) were from government agency attendees, and 6 (5%) were from universities or industry service providers. The mean rating for the workshops from the 108 attendees who provided feedback was 4.5 on the 5-point scale described earlier.

Two-thirds (43 of 64) of the industry attendees who returned a post-workshop evaluation had implemented some *Listeria* controls prior to attending the workshop and one-third (21 of 64) had not. Of the 43 firms who had some *Listeria* controls in place prior to attending the workshop, 42 reported that they planned to change or enhance their existing controls after attending the workshop. For the 21 firms that reported that they had not implemented any *Listeria* controls, 19 said that they planned to implement new controls after attending the workshop. Specific examples of each of the elements in a *Listeria* control program covered in the workshops could be selected as possible actions that participants were planning to take. The responses received from all firms are summarized in Table 1.

TABLE 1. *Listeria* control actions that participants from RTE seafood processing firms reported that they were planning to take at the end of the workshops

Firms who had implemented some <i>Listeria</i> controls prior to attending the workshop n = 42		Firms who had not implemented any <i>Listeria</i> controls prior to attending the workshop n = 19	
<i>Listeria</i> control action	n (%)	<i>Listeria</i> control action	n (%)
Conduct employee training	36 (86%)	Conduct employee training	17 (89%)
Change sanitation procedures	27 (64%)	Change sanitation procedures	18 (95%)
Implement new employee policies	35 (83%)	Implement new employee policies	13 (68%)
Develop a <i>Listeria</i> testing program	20 (48%)	Develop a <i>Listeria</i> testing program	16 (84%)
Upgrade equipment of facility	19 (45%)	Upgrade equipment or facility	5 (26%)
Change location of processing steps	10 (24%)	Change location of processing steps	5 (26%)

TABLE 2. *Listeria* control actions that RTE seafood processing firms (n=19) reported that they had implemented in the 6 to 8 month period following the workshops

<i>Listeria</i> Control Action Implemented	n (percent of all responses)
Conducted Employee Training	19 (100%)
Changed or Implemented New Sanitation Procedures	16 (84%)
Changed procedures for cleaning & sanitizing processing areas	11 (58%)
Changed procedures for cleaning & sanitizing specific equipment	9 (47%)
Changed cleaning and/or sanitation chemicals	5 (26%)
Changed monitoring or supervision of cleaning & sanitizing procedure	5 (26%)
Installed foam barriers or footbaths at entrance to processing areas	5 (26%)
Changed frequency or timing of cleaning and sanitizing procedures	3 (16%)
Changed or Implemented New Employee Policies	12 (63%)
Changed policies associated with employee movement in the plant	8 (42%)
Changed employee personal hygiene policies	4 (21%)
Changed employee attire (gloves, aprons, hairnets, etc.) policies	2 (11%)
Changed employee hand-washing policies	2 (11%)
Changed Location of Processing Steps	11 (58%)
Established processing zones to minimize contamination	7 (37%)
Modified timing of processing steps to separate raw and finished product	4 (21%)
Moved equipment	4 (21%)
Separated raw material processing steps from finished product handling	1 (5%)
Changed or Implemented New <i>Listeria</i> Testing Program	10 (53%)
Started environmental testing or changed frequency or sample locations	8 (42%)
Started testing finished products or changed testing procedures	6 (32%)
Started testing raw materials or changed testing procedures	2 (11%)
Upgraded Equipment or Facility	8 (42%)
Purchased new equipment that is easier to maintain and to clean & sanitize	5 (26%)
Upgraded, remodeled or modified specific processing areas	3 (16%)
Installed new hand washing or other employee facilities	1 (5%)

Follow-up evaluation

By February 2004, 59 completed follow-up evaluation questionnaires had been returned, for an overall response

rate of 37 percent. Of those who returned a follow-up evaluation, 25 were from RTE seafood processing firms (40% response rate), 26 were from government agencies (43% response rate), and 8 were from

industry service providers or educational institutions (50% response rate). On the basis of this return rate, the data collected from industry, government agencies and service providers in this follow-up evalu-

ation can be considered reasonably representative of the types of actions taken by all of the workshop attendees.

Impacts reported by RTE seafood processors

Twenty-five firms returned a follow-up evaluation questionnaire. Eleven of these firms produced smoked fish, 8 produced crab meat, 4 produced crawfish meat, 2 produced clam products, 2 produced shrimp products, and 1 each produced roe and pickled products. A number of firms reported that they processed more than one type of RTE seafood product.

Of the 25 firms that returned a follow-up evaluation questionnaire, 21 (84%) had implemented some *Listeria* controls in their plant prior to attending the workshop, and 19 (76%) had modified their existing controls or implemented new controls since attending the workshop. Firms were asked to provide information on the specific types of *Listeria* controls that were implemented in their plant, choosing from a list of choices similar to those used in the post workshop evaluation questionnaire. Table 2 summarizes the controls that were implemented by the 19 firms that reported making changes since attending these workshops.

All of the firms that had made changes or implemented new *Listeria* controls had conducted employee training programs. Employee training is an important part of an overall *Listeria* control program in RTE food processing operations (6). Research and experience has shown that employee food handling practices, hygiene, and movement in the plant can increase the likelihood that finished products become contaminated with *Listeria*. To minimize this potential and avoid mistakes, all employees should understand the potential importance of *Listeria* contamination and their own role in the firm's overall *Listeria* control program. Questionnaire respondents reported that 33 different in-plant employee training programs were conducted in the 6-8 month period after the workshops. Plant managers or supervisors conducted 80% of these employee training programs. Two firms used internal company trainers from another location for their training programs, and one firm used trainers from outside the company. Half of the firms used the training programs provided at the workshop (10, 14).

Over 80% of the firms that modified or implemented new controls reported that they had made changes in their sani-

tation procedures. Effective sanitation procedures are critical to ensure that routine cleaning and sanitizing eliminate new contamination sources as well as niches where *Listeria* may persist over time (4). The specific types of changes that these firms made in their sanitation procedures are described in Table 2. Based on the feedback provided, the RTE seafood processors who attended these workshops were motivated to re-evaluate their cleaning and sanitation procedures for specific processing areas and equipment to eliminate sporadic contamination and niches. Other changes included the use of new chemicals and equipment such as footbaths or foam barriers. Approximately one-fourth of the firms modified their monitoring or supervision of cleaning and sanitation activities to enhance or ensure performance.

The workshops emphasized the importance of having policies and procedures in place to minimize the potential for cross contamination by the movement, hygiene, and practices of employees, and by the movement of equipment and product within the plant (4). Follow-up evaluation feedback indicated that most firms used the workshop information to evaluate their existing policies, and approximately two-thirds of the firms made changes in employee policies to enhance their ability to prevent cross contamination. Almost 60% of the firms made changes in the location or timing of their processing activities to minimize the potential for cross contamination of finished products from raw materials. The specific changes reported by firms related to cross contamination are provided in Table 2.

An important element of a comprehensive *Listeria* control program is to conduct testing in the plant (15). Testing can include monitoring the plant environment to determine whether or not sanitation procedures are effective and to identify potential contamination sources and problems as they develop. Testing can also provide a tool to monitor contamination levels in raw materials and finished products. Each workshop included a presentation outlining options to consider in designing and implementing an effective *Listeria* testing program. As a result, over 50% of the firms who made changes in their *Listeria* control program also made changes in their *Listeria* testing program after attending the workshops. The specific *Listeria* testing changes reported by firms are reported in Table 2.

To effectively control *Listeria*, processors need to evaluate the condition of their facility and equipment and identify

areas where *Listeria* niches are likely to exist or develop and take steps to eliminate them (4). This element of a *Listeria* control plan can be among the most expensive, because it may require new equipment purchases, as well as construction or remodeling of existing facilities. In the 6 to 8 months since attending the workshops, just over 40% of the firms reported that they had invested in new equipment or facility upgrades. The specific upgrades reported by firms in the follow-up evaluation are reported in Table 2.

These data provide a general overview of the types of *Listeria* controls that these firms felt were important and the actions that they had taken in the 6- to 8-month period after the workshops. Although reported actions may or may not accurately reflect all of the actions taken, the responses received indicated that firms were motivated by the workshops and received the information that they needed to implement new controls or modify their existing controls. Anecdotally, many firms said that the workshops helped them to gain confidence that the control strategies that they were considering implementing would be effective, as well as helping them prioritize expenditures on the types of *Listeria* controls that would be most effective for their operation.

Cost of *Listeria* controls implemented after the workshops

A series of question included in the follow-up questionnaire asked firms to estimate the amount of money that they had spent on *Listeria* controls prior to attending the workshop, and after attending the workshop, as well as on the specific elements of their *Listeria* control plan. Eleven firms that returned the post-workshop evaluation questionnaire provided information on the time and money spent on *Listeria* controls (Table 3). These firms spent almost twice as much money on *Listeria* controls in the 6-to-8 month period after the workshops were conducted as they reported spending prior to attending a workshop. The limited data gathered indicate that the largest expenditures were on *Listeria* testing, followed by construction and materials to upgrade specific processing areas, and new equipment. The lowest cost element of the *Listeria* control plan was employee training, a control plan element that all of the firms conducted after attending the workshop. Because most firms reported that training was conducted by plant employees using the training materials provided at the workshops, overall costs for training activities were low.

TABLE 3. Cost of *Listeria* control plan elements reported by RTE seafood processing firms (n=11) in the 6 to 8 months after attending workshops

	Mean expenditure	Range of expenditures	Number of responses
Total amount spent on all <i>Listeria</i> controls prior to attending the workshop	\$10,935	\$0 to \$50,000	10
Total amount spent on all <i>Listeria</i> controls in 6-8 month period following workshops	\$19,411	\$1,200 to \$75,000	10
Total amount spent in the 6-to-8 month period following the workshop on:			
<i>Listeria</i> testing	\$6,921	\$750 to \$28,000	6
Planning, construction, and materials to upgrade or remodel one or more areas of the processing facility	\$4,446	\$3,000 to \$6,400	3
New equipment	\$2,820	\$400 to \$8,000	5
Consultant fees or outside expertise	\$1,750	\$1,500 to \$2,000	2
Implementing new sanitation procedures	\$1,433	\$300 to \$3,600	3
Training employees and implementing new policies	\$1,133	\$160 to \$2,000	8
Total time devoted to implementing <i>Listeria</i> controls in the period following the workshop	60 Hours	2 to 200 Hours	11
Reported routine monthly cost for all <i>Listeria</i> controls that have been implemented in the plant	\$2,086	\$150 to \$7,000	9
Calculated annual cost based on reported routine monthly cost for all <i>Listeria</i> controls	\$25,032	\$1,800 to \$84,000	9

Routine costs of *Listeria* controls

Firms were asked to estimate the routine monthly cost for all of the *Listeria* controls that have been implemented in their plant. Nine firms provided cost estimates (Table 2). The mean reported cost was \$2,086 per month, with a range of \$150 to \$7,000 per month, and the mean calculated annual cost was \$25,032 per year, with a range of \$1,800 to \$84,000 per year. Eleven firms also estimated the number of hours per week for all employees in one plant whose time is devoted to conducting all routine procedures associated with their new or modified *Listeria* Control Plan. The reported mean was 12 hours per week, with a range of 2 to 200 hours per week.

Impacts reported by service providers and educator

Eight individuals from universities, trade associations, Sea Grant, Cooperative Extension or other programs that provide information and technical assistance to the RTE seafood industry returned the

follow-up evaluation questionnaire. Seven of these individuals reported that they had provided workshop information or materials related to *Listeria* controls to 46 RTE seafood processors in the US and 21 RTE seafood processors in foreign countries in the 6-to-8 month period following the workshops. The professionals who attended these workshops were able to provide assistance to more RTE seafood processing firms (67) in the first 6 to 8 months following the workshops than had been reached in the original workshop series (62). These data demonstrate the significant multiplier effect that this workshop series has had, and likely will continue to have, via professionals who will convey this information and the resources that were developed for this project to other RTE seafood processors around the world.

Impacts from government agencies

Twenty-six individuals from federal and state government agencies who attended the workshops returned a follow-

up evaluation questionnaire. Eleven responses were received from federal agencies including 7 from the US Food and Drug Administration, 3 from the US Army Veterinary Service and 1 from the US National Marine Fisheries Service. Fifteen responses were received from state food safety regulatory agencies in Louisiana, New York, Oregon, Virginia and Washington. Seventy-three percent of the regulatory agency respondents had implemented regulatory programs, conducted inspections, and/or provided assistance to RTE seafood processors to help them implement *Listeria* controls since attending the workshop. Table 4 describes how government agency attendees used the workshop information.

Additional training needs

Approximately 80% of those who returned a questionnaire indicated that additional training is needed. The type of training that respondents said that they or their employees would attend is described in Table 5. Based on this feedback, it can

TABLE 4. How government agency attendees (n = 19) used the information or training materials in the 6 to 8 month period following the workshops

Information provided at the workshop was:	n (percent)
Given to processors of RTE foods to help them implement <i>Listeria</i> controls or solve problems	14 (74%)
Used when conducting inspections of RTE food processing establishments	11 (58%)
Used in the development of new regulations or regulatory initiatives to control <i>Listeria</i> in RTE foods	1 (5%)

TABLE 5. Additional training needs identified by the follow-up evaluation respondents who believed that there was a need for additional training on *Listeria* control procedures (n = 47)

Type of training the respondent or their employees said they would attend	n (percent)
Specialized training on sanitation and GMP controls	26 (55%)
Specialized training on raw materials or finished product controls	21 (45%)
A workshop similar to the one that they attended in the spring of 2003	17 (36%)
Specialized training on <i>Listeria</i> testing	12 (25%)
Other topics: (building & design materials; updates on new control strategies; training for legislators or policy makers)	3 (6%)

be concluded that additional workshops similar to the ones conducted in 2003, for RTE firms or individuals unable to attend the original series, are needed. Focused in-depth training on sanitation and GMPs and raw material and finished product controls is also needed to help RTE seafood processing firms fine-tune and maximize their *Listeria* controls. This specialized training would also provide an opportunity to update the industry as new technology and scientific research become available.

CONCLUSIONS

The follow-up evaluation feedback collected in this study demonstrates that these detail-oriented "how to" workshops motivated a significant number of the RTE seafood processing firms that attended to evaluate and modify their existing *Listeria* controls or implement new controls. Most of these firms implemented lower-cost controls, such as employee training, sanitation procedure modifications, and new employee policies that could have an impact on preventing finished product contamination. Fewer firms implemented higher cost measures, such as enhancing their testing program, changing the location of processing steps or upgrading equipment or facilities, in the 6-to-8 month period following this educational activity. However, as these processors allocate additional resources to their operations over time, the information provided on

Listeria controls is likely to continue to be utilized when decisions are made about new equipment purchases and plant upgrades.

The limited data acquired in this study provides some insight into RTE seafood processor costs for *Listeria* controls. The considerable variation in the reported annual cost estimates, from \$1,800 to \$84,000 per year, is likely due to plant size and production volume, the type and scope of processing operations, the number and type of *Listeria* controls implemented, the condition of the plant facility and equipment, and other factors. However, the relationship between these factors and the cost of *Listeria* controls cannot be evaluated on the basis of the data collected. The authors are not aware of other cost estimates of *Listeria* controls for RTE seafood processors. Data on the cost of *Listeria* controls in other types of RTE food processing plants are scanty. In 2004, USDA published a Final Regulatory Impact Analysis (19) of *Listeria* controls necessary to meet mandated performance standards for RTE meat and poultry manufacturers. A complex estimate of costs by firm size and various actions needed to comply with this rule is provided. Of the total cost, 3.6% was allocated to processing line validation, 78% to processing line equipment and operations, 15% to growth inhibiting agents or processes, 0.2% to food contact surface testing, 1.5% to production adjustments, and 1.3% to product handling and storage costs. This estimate

cannot be directly compared to these data for RTE seafood producers because of the differences in the types of control strategies used.

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In Memory...

Earl O. Wright

IAFP would like to extend our deepest sympathy to the family and friends of Earl O. Wright who recently passed away. IAFP will always have sincere gratitude for his contribution to the association and the profession.

Earl Wright, 88, of Hubbard, Iowa, formerly of Bella Vista, Arkansas, died on December 10, 2005, at the Hubbard Care Center in Hubbard, Iowa.

Earl Orville Wright was born July 2, 1917, in Bloomington, Wisconsin. He was raised on a farm in Grant County Wisconsin, and received his education in Bloomington. Earl then attended the University of Platteville and received his Bachelor of Science Degree. Earl served his country during World War II in the United States Army 33rd Infantry Division in the South Pacific. He entered the service on April 18, 1942, and was honorably discharged on November 27, 1945. On June 22, 1946, he was united in marriage to Florence E. Hinkins in Platteville, Wisconsin.

Earl attended the University of Wisconsin at Madison and received his Masters Degree. In 1954, the family moved to Ames, Iowa, and Earl became an associate professor at Iowa State University. Earl was a professor for over twenty years, retiring in 1979 from the University.

Earl served as the executive secretary of the International Association of Milk, Food and Environmental Sanitarians from 1974 until 1983. He was a member of the Association for 57 years and served as President in 1974.



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 50322-2864, USA
Phone: 800.369.6337; 515.276.3344
Fax: 515.276.8655
Web site: www.foodprotection.org
E-mail: info@foodprotection.org

Nominations deadline is March 13, 2006. You may make multiple nominations. All nominations must be received at the IAFP office by **March 13, 2006.**

- ◆ Persons nominated for individual awards must be current IAFP Members. Black Pearl Award nominees must be companies employing current IAFP Members. FPA 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 2006 – the Association's 93rd Annual Meeting in Calgary, Alberta, Canada on August 16, 2006.



Nominations will be accepted for the following Awards:

Black Pearl Award — Award Showcasing the Black Pearl

Presented in recognition of a company's outstanding commitment to, and 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 distinction over an extended period of time.

Honorary Life Membership Award — Plaque and Lifetime Membership in IAFP

Presented to Member(s) for their dedication 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 many years of dedication and devotion to the Association ideals and its objectives.

Sponsored by Zep Manufacturing Co.

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

Presented to an individual for dedication and exceptional service to IAFP, the public, and the food industry.

Sponsored by Nasco International, Inc.

Educator Award — Plaque and \$1,000 Honorarium

Presented to an individual for dedicated and exceptional contributions to the profession of the Educator.

Sponsored by Nelson-Jameson, Inc.

Sanitarian Award — Plaque and \$1,000 Honorarium

Presented to an individual for dedicated and exceptional service to the profession of Sanitarian, serving the public and the food industry.

Sponsored by Ecolab, Inc., Food and Beverage Division

Maurice Weber Laboratorian Award — Plaque and \$1,500 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 2006

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 Cargill, Inc.

Food Safety Innovation Award — Plaque and \$2,500 Honorarium

Presented to a Member or organization for creating a new idea, practice or product that has had a positive impact on food safety, thus, improving public health and the quality of life.

Sponsored by 3M Microbiology

FPA Food Safety Award — Plaque and \$3,000 Honorarium

This Award alternates between individuals and groups or organizations. In 2006, the award will be presented to a group or organization in recognition of a long history of outstanding contributions to food safety research and education.

Sponsored by Food Products Association



2006-2007 *Secretary Election*

The following page contains biographical information for the 2006-2007 Secretary candidates. Review the information carefully as you make your voting decision.

Ballots were mailed to all International Association for Food Protection Members during the first week of February. Completed ballots are due back to the Association office by March 17, 2006. Sealed ballot envelopes are forwarded to the Tellers Committee for opening and counting. Watch for the election results in the May issue of *Food Protection Trends*.

If you have questions about the election process, contact David W. Tharp, CAE, Executive Director at 800.369.6337, or 515.276.3344, or E-mail dtharp@foodprotection.org.



LEON G. M. GORRIS



VICKIE LEWANDOWSKI

The Candidates

Biographical Information

DR. LEON G. M. GORRIS

Dr. Leon Gorris resides in The Netherlands and since 1998, has worked with Unilever, a multi-national food and non-food company active worldwide in over 150 countries. He headed the microbiology and preservation department at Unilever's food R&D facility in The Netherlands and, from 2002 onward, established a department for multi-disciplinary risk assessments in Unilever's UK corporate function, comprised of toxicologists, microbiologists, environmental care specialists, as well as occupational safety and hygiene experts. This group worked on complex risk assessments for both food and non-food products. In January 2005, when the department was at full strength, Dr. Gorris took a new role as science and technology area leader in the field of risk analysis, further fostering its application in the industry context.

He authored 65 plus refereed articles and more than 90 papers in proceedings or books and delivered over 100 oral presentations at meetings around the world. Since April 2003, Dr. Gorris is the holder of the European Chair in Food Safety Microbiology at the University of Wageningen in The Netherlands. This is a part-time (20%) professorship with responsibilities regarding the University's curriculum, post-graduate and distance learning education, as well as for research and expert advice. He is a member of the International Commission on Microbiological Specifications for Foods (ICMSF), heading the ICMSF's delegation to the *Codex Alimentarius* Committee for Food Hygiene and coordinating ICMSF's input to various other Codex committees.

Dr. Gorris is very active in the International Life Science Institute (ILSI). For the ILSI-Europe Branch, he chairs the task force on risk analysis in microbiology as well as the publication committee, while he is also a member of the scientific advisory committee. He has collaborated with ILSI-Risk Science Institute and ILSI-North America on a number of projects. Dr. Gorris is the Chair of the IAFP Microbial Risk Analysis PDG, is a member of the Editorial Committee for the *Journal of Food Protection* and a Member of the *Food Protection Trends* Management Committee. He was very involved in organizing IAFP's First European Symposium on Food Safety, which was held in Prague and was a great success. In addition to IAFP, Dr. Gorris is a professional member of the Institute of Food Technologists, Society for Applied Microbiology, Netherlands Society for Microbiology and Society for Risk Analysis.

Dr. Gorris has contributed much work to the FAO/WHO/ICD Risk Analysis Manual and to the Microbial Risk Assessment Training course, both of which are new resources intended for awareness and skills building in risk analysis and are soon to be published. He has been invited by FAO/WHO to work on consultations on Exposure Assessment and on the Interaction between Risk Managers and Risk Assessors. He is on the roster of European Specialists in Microbial Risk Assessment of the European Food Safety Authority.

Dr. Gorris obtained his Ph.D. in Microbiology at the Catholic University of Nijmegen. After a post-doc at the same University, he joined the Agrotechnological Research Institute of the Dutch Ministry of Agriculture, Nature Management and Fisheries in Wageningen. There he established the Department of "Food Safety & Applied Microbiology" with research in areas such as milk food preservation, combined processing ('Hurdle Technology'), biological crop protection, detection of microorganisms and health-aspects of bioactive natural compounds. In addition to a responsibility for many national projects, he coordinated four shared cost projects funded by the European Commission (EC) and was a member of more than ten other EC funded projects.

MS. VICKIE LEWANDOWSKI

Ms. Vickie Lewandowski is an Associate Principal Microbiologist for Kraft Foods, Inc. where she is responsible for providing microbiological and food safety expertise to the global cream cheese, cultured dairy products, and specialty cheese businesses. Her responsibilities fall into the areas of HACCP development and support, microbial challenge studies, product development support (growth and productivity initiatives), processing plant support (troubleshooting, product startups), and training.

Ms. Lewandowski has over 19 years of industry experience in microbiology and food safety. Beginning her career as a quality control technologist at Kemps/Marigold Foods, she experienced the challenges that occur daily at a manufacturing facility. She then advanced to a technologist position at Pillsbury, where she became acutely aware of the critical role of microbiology and food safety in product development while working with R&D associates on prepared dough products, and frozen meals (pizza). Ms. Lewandowski then joined the staff at R-Tech (Land O' Lakes) where she developed expertise on test methodologies and development of challenge study/method validation protocols.

Upon completion of her Masters Degree, Ms. Lewandowski accepted a food microbiologist position at Cargill. There she provided microbiological and food safety expertise to a wide variety of global food businesses, including meat, eggs, poultry, juice concentrate, corn milling, wheat milling, chocolate processing, soy processing, etc. In addition to working with product developers at Cargill, Ms. Lewandowski also provided support to the processing plants through applied research and troubleshooting.

Ms. Lewandowski is a recognized expert in molecular subtyping methodology (PFGE), pathogen and spoilage organism test methodologies, challenge study development, and HACCP. The opportunity to work with several large, diverse companies has allowed Ms. Lewandowski to engage in an array of industry experiences, to gain knowledge of a vast number of food products and processes and ultimately, to be an integral part of providing safe food to millions worldwide.

Since joining IAFP in 1995, Ms. Lewandowski has been a very active member. She served on the Local Arrangements Committee for the 2000 IAFP Annual Meeting in Minneapolis. She has organized and convened several well-received symposia and has been a presenter for symposia and technical sessions. Ms. Lewandowski is currently a member of the Program Committee (since 2002) and is serving as Chairperson of this committee for 2006. She is currently the Vice Chairperson of the Dairy Quality and Safety Professional Development Group. Ms. Lewandowski has been a judge for the Developing Scientist Competition for 2004 and 2005 and was Chairperson of that committee for 2005.

Other professional affiliations for Ms. Lewandowski include membership in the Institute of Food Technologists and the American Society for Microbiology. She is also an active member of the Associated Illinois Milk, Food and Environmental Sanitarians, an Affiliate of IAFP.

Ms. Lewandowski earned her Bachelor of Science Degree in Food Science from the University of Minnesota. While pursuing her career, she continued her education and was awarded her Masters Degree in Food Microbiology in 1997.

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 115 of this issue) 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.
- 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 Nancy Herselius, Association Services at 800.369.6337 or 515.276.3344 if you wish to make a donation.

A Member Benefit of IAFP

DAIRY

- D1010 The Bulk Milk Hauler: Protocol & Procedures** – (8 minutes). 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)
- D1031 Dairy Plant** – (28 minutes). Join in on this video as it follows a tour of the University of Wisconsin Dairy Plant. Observe the gleaming machinery and learn the ins and outs of milk processing, packaging, and storage. Watch as workers manufacture butter, cheese, yogurt, sour cream and ice cream, and learn about secondary dairy products. (Chipsbooks Company-2003)
- D1040 Ether Extraction Method for Determination of Raw Milk** – (26 minutes). Describes the ether extraction procedure to measure milk fat in dairy products. Included is an explanation of the chemical reagents used in each step of the process. (CA-1988) (Reviewed 1998)
- D1050 Food Safety: Dairy Details** – (18 minutes). Dairy products are prime targets of contamination because of their high protein and water content, but this presentation shows how to maintain dairy foods. It explores techniques such as selection, handling, preparation and storage for milk, yogurt, cheese and other dairy products. (Chipsbooks Company-2003)
- D1060 Frozen Dairy Products** – (27 minutes). 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, 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 minutes). Describes the Gerber milk fat test procedure for dairy products and compares it to the Babcock test procedure. (CA-1990) (Reviewed 1998)
- D1080 High-Temperature, Short-Time Pasteurizer** – (59 minutes). 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 minutes). 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 tapes). 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, Post milking Teat Dip Protocols, Milk Quality, and Milking Systems. (Nasco-1993)
- D1105 Milk Hauling Training** – (35 minutes). This video covers the procedures and duties of the milk hauler from the time of arrival at the dairy farm, to the delivery of the milk at the processing plant. It also provides the viewer with a general understanding of the quality control issues involved in milk production and distribution. Topics include milk composition breakdown, milk fat content measurement, testing for added water, antibiotic and pesticide residues, somatic cell and bacteria counts, sediment, and aflatoxins. (Avalon Mediaworks LLC-2003)
- D1110 Milk Plant Sanitation: Chemical Solution** – (13 minutes). 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, 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 minutes). Developed by the California Department of Food and Agriculture. It covers pre- and post-inspection meetings 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 lockers and restrooms. Recommended for showing to plant workers and supervisors. (CA-1986)
- D1125 Ohio Bulk Milk Hauling Video** – (15 minutes). Milk haulers, weighers, and samplers are the most constant link between the producer, the producer

cooperative, and the milk processor. This video shows their complete understanding of all aspects of farm milk collection and handling, milk quality and quality tests, and sanitation and sanitary requirements that contribute to the trust between the producer and the dairy plant. The video educates prospective haulers, weighers, and samplers throughout Ohio. (Ohio State University-2001)

- D1130 Pasteurizer: Design and Regulation** - (16 minutes). 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 minutes). 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 minutes). 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)
- D1180 10 Points to Dairy Quality** - (10 minutes). 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)

ENVIRONMENTAL

- E2012 Better TEDs for Better Fisheries** - Introduces the usefulness of turtle excluder devices (TEDs) and demonstrates the working nature of the devices. It covers the major sea turtles and the specific TEDs needed for each. It precedes two segments on installation of appropriate TEDs in shrimp trawl nets. (MS Dept. of Marine Resources-2003)
- E3010 The ABC's of Clean - A Handwashing and Cleanliness Program for Early Childhood Programs** - For early childhood program employees. This tape illustrates how proper hand washing 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 minutes). 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 minutes). In-door 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)
- E3031 Allergy Beware** - (15 minutes). Designed to educate food and beverage company employees about their role in preventing an accidental allergic reaction caused by a product their company produces. Recommended for product development, production, labeling, scheduling and cleaning. Everyone has an important role to prevent cross-contamination and mislabeling issues. (Food and Consumer Products Manufacturers of Canada-2003)
- E3040 Asbestos Awareness** - (20 minutes). 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** - (3.5 minutes). 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 minutes). Demonstrates the Ceriodaphnia Seven-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 Toxicity Tests (Using Fathead Minnow Larva)** - (15 minutes). A training tape that teaches environmental professionals about the Fathead Minnow Larva 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 minutes). 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 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 minutes). 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 minutes). 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 minutes). 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; and effects of deforestation, planting of trees and recycling as means of slowing the build-up of greenhouse gases. (Churchill Films–1995)
- E3125 Good Pest Exclusion Practices** – (28 minutes). Most pests you find inside come from outside your food plant. This video covers numerous tactics of keeping pests out of food processing and distribution operations. Tactics include grounds, landscaping and building design; inbound trailer and bulk transportation materials inspection; and key employee actions. Learn how to defend your perimeter with one of the best weapons in the battle against pests – exclusion. (CTI Publications–2004)
- E3128 Integrated Pest Management (IPM)** – (28 minutes). This video develops the IPM concept into a comprehensive 12-point program. To emphasize this concept, computer-animated, digital graphics are used to piece together the IPM puzzle. This dramatic effect assists participants in visualizing and retaining key points of the video. To paint the complete picture, each of the 12 points is discussed providing an IPM overview. (CTI Publications–2004)
- E3130 Kentucky Public Swimming Pool and Bathing Facilities** – (38 minutes). 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)
- E3131 Key Pests of the Food Industry** – (28 minutes). Many types of pests can cause waste and loss of profits. Keeping food processing operations free of pest problems is a challenge. This video will assist food plant employees in the review of basic identification, biology, habits and control options of three key groups of pests frequently associated with food processing operations: birds, insects, and rodents. (CTI Publications–2004)
- E3133 Physical Pest Management Practices** – (28 minutes). Do you feel that you cannot do your job without pesticides? There are solutions. Many of them are what we call physical controls. This video will provide you with some of the things which can help you manipulate the physical environment in a manner that will prevent the growth of the pest population, causing them to leave or die. (CTI Publications–2004)
- E3135 Plastics Recycling Today: A Growing Resource** – (26 minutes). Recycling is a growing segment of our nation's solid waste management program. It 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 minutes). 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 minutes). This videotape explains the danger associated with hazardous chemical handling and discusses the major hazardous waste handling requirements presented in the Resource Conservation and Recovery Act.

E3160 RCRA-Hazardous Waste – (19 minutes). 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.)

E3161 The Kitchen Uncovered: Orkin Sanitized EMP
This video teaches restaurant workers what they can do to prevent pest infestation, and what health inspectors look for. An excellent training tool for food service workers that can be used in conjunction with HACCP instruction. (Orkin-1997)

The New Superfund: What It Is and 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 minutes). 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 minutes). 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 minutes). 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 enforce-

ment 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 minutes). 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 and hazardous chemical inventory and the toxic chemical release inventory.

E3220 Tape 5 – Underground Storage Tank Trust Fund & Response Program – (48 minutes). 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 minutes). An important new mandate of the new Superfund are the technical provisions for research and development to create more permanent methods in the 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.

E3235 Regulatory and Good Manufacturing Practices – (42 minutes). This video comes in two parts. Part one is a professional, 20-minute drama using real actors emphasizing the importance of food safety and GMPs. This dramatization will focus your emotions on the importance of cleanliness. Part two is a comprehensive 22-minute video introducing your employees to basic GMP elements. This training video uses numerous split screens of "good" and "bad" practices, and will help viewers understand GMPs and basic food safety. (CTI Publications-2004)

- E3236 Rodent Control Strategies** – (22 minutes). Pest control is a vital part of food safety, and leading pest-control specialist Dr. Bobby Corrigan shows you how to design and maintain a rodent-control program at food processing establishments. (J.J. Keller–2004)
- E3240 Sink a Germ** – (10 minutes). A presentation on the rationale and techniques for effective hand washing in health care institutions. Uses strong imagery to educate hospital personnel that hand washing is the single most important means of preventing the spread of infection. (The Brevis Corp.–1986) (Reviewed 1998)
- E3245 Wash Your Hands** – (5 minutes). Hand washing is the single most important means of preventing the spread of infection. This video presents why hand washing is important and the correct way to wash your hands. (LWB company–1995)
- E3250 Waste Not: Reducing Hazardous Waste** – (35 minutes). 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)
- E3251 Would Your Restaurant Kitchen Pass Inspection?** – (29 minutes). Help ensure a perfect score on any health inspection with this video by addressing safe food-handling techniques in the food service industry. Learn how foodborne illness is spread and how it can be prevented. Dramatizations display specific techniques students and employees can use to help any restaurant kitchen meet the highest standards. (Chipsbooks Company–2003)
- E3260 Swabbing Techniques for Sampling the Environment and Equipment** – (DVD) (60 minutes). This training program is designed to assist in providing effective training to technicians that collect environmental samples for APC and *Listeria*. It will help assure that technicians understand the basic principles and best practices, and can demonstrate good sample collection techniques. (Silliker Labs–2005)

FOOD

- F2005 A Lot on the Line** – (25 minutes). 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 importance

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)

- F2007 The Amazing World of Microorganisms** – (12 minutes). This training video provides your employees with an overview of how microorganisms affect their everyday lives and the foods they produce. The video explores how microscopic creatures are crucial in producing foods, fighting disease, and protecting the environment. In addition, certain microorganisms – when given the proper time and conditions to grow – are responsible for food spoilage, illness, and even death. Equipped with this knowledge, your employees will be better able to protect your brand. (Silliker Laboratories Group, Inc.–2001)
- F2008 A Recipe for Food Safety Success** – (30 minutes). This video helps food–industry employees understand their obligations in the areas of safety and cleanliness...what the requirements are, why they exist, and the consequences for all involved if they’re not adhered to consistently. Critical information covered includes the role of the FDA and USDA; HACCP systems; sanitation and pest control; time and temperature controls that fight bacteria growth; and the causes and effects of pathogens. (J. J. Keller–2002)
- F2009 Basic Personnel Practices** – (18 minutes). This training video covers the practical GMPs from the growing field to the grocery store with a common sense approach. Employees learn the necessary training to help them understand the basic principles of food safety. (AIB International–2003)
- F2010 Close Encounters of the Bird Kind** – (18 minutes). 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)
- F2011 Available Post Harvest Processing Technologies for Oysters** – (8 minutes). This video explains three currently available post-harvest processing (PHP) technologies for oysters that continue to be developed to provide safer oysters to consumers. The Gulf oyster industry increasingly adopts solutions offered by modern technology in its efforts to continue to promote quality, food safety and extended shelf life of oysters. (MS Dept. of Marine Resources–2003)
- F2013 Control of *Listeria Monocytogenes* in Small Meat and Poultry Establishments** (English and Spanish) – This video addresses a variety of issues facing meat processors who must meet revised regulations concerning *Listeria monocytogenes* in ready-to-eat meats. Topics covered include personal hygiene, sanitation, biofilms, cross contaminations, in plant sampling, and microbiological testing. (Penn State college of Ag Sciences–2003)

- F2014 Controlling Food Allergens in the Plant** – This training video covers key practices to ensure effective control in food plants and delivers current industry knowledge to help companies enhance in-plant allergen training. Visually communicates allergen-specific Good Manufacturing Practices, from checking raw material to sanitation, to prevent serious, costly problems. (Silliker Laboratories, Inc.–2004)
- F2015 Controlling Listeria: A Team Approach** – (16 minutes). In this video, a small food company voluntarily shuts down following the implication of one of its products in a devastating outbreak of *Listeria monocytogenes*. This recall dramatization is followed by actual in-plant footage highlighting 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)
- F2016 Bloodborne Pathogens: What Employees Must Know** – This program provides an overview of the hazards and controls for worker exposure to bloodborne pathogens. Specifically, the program covers the basic requirements of the standard; definitions of key terms (including AIDS, contaminated sharps, and occupational exposure); engineering controls and work practices; housekeeping techniques; Hepatitis B and more. (J.J. Keller–2005)
- F2020 Egg Handling and Safety** – (11 minutes). Provides basic guidelines for handling fresh eggs which could be useful in training regulatory and industry personnel. (American Egg Board–1997)
- F2021 Egg Production** – (46 minutes). Live action footage of a completely automated operation follows the egg from the chicken to the carton. Watch the eggs as they roll down onto the main line, are washed, "candled," sorted by weight, placed into their packing containers, and prepared for shipment. Sanitation and health concerns are addressed. (Chipsbooks Company–2003)
- F2030 "Eggs Games" Foodservice Egg Handling & Safety** – (18 minutes). 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)
- F2035 Fabrication and Curing of Meat and Poultry Products** – (2 tapes – 165 minutes). (See Part 2 Tape F2036 and Part 3 F2037) This is session one of three-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)
- F2036 Emerging Pathogens and Grinding and Cooking Comminuted Beef** – (2 tapes – 165 minutes). (See Part 1 Tape F2035 and Part 2 Tape F2037) This is session two of a three-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, and local authorities, industry, and trade associations in a foodborne outbreak. (AFDO/USDA–1998)
- F2037 Cooking and Cooling of Meat and Poultry Products** – (2 tapes – 176 minutes). (See Part 1 Tape F2035 and Part 2 Tape F2036) This is session three of a three-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)
- F2039 Food for Thought – The GMP Quiz Show** – (16 minutes). 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 – 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 minutes). 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, over-ripening, 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 tapes – 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 and Its Application to the Food Industry (Parts I & 2)** – (2 tapes – 16 minutes each). (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 videos)** – (4 tapes – 10 minutes each). (1) "Receiving and 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 Facility 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) "Foodservice 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 videos)** – (4 tapes – 10 minutes each). 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 videos)** – (4 tapes – 10 minutes each). 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)
- F2081 Food Safety Begins on the Farm (DVD)** – From planting to consumption, there are many opportunities to contaminate produce. This is an excellent resource for training fruit and vegetable growers Good Agricultural Practices (GAPs). It includes seven PowerPoint presentations that deal with all aspects of food safety relative to growing, harvesting, and packing fresh fruits and vegetables. (Cornell Good Agricultural Practices Program—2000)
- F2090 Food Safety: An Educational Video for Institutional Food Service Workers** – (10 minutes). 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 Dept of Health & Human Services—1997)
- F2095 Now You're Cooking** – (DVD and video) (15 minutes). Using a food thermometer can improve the quality and safety of meat. This 15-minute video describes the why and how of using a food thermometer when cooking small cuts of meat like meat patties, chicken breasts, and pork chops. Topics include: why color is not a good indicator of doneness; how to choose an appropriate food thermometer for small cuts of meat; quick and easy steps for using an instant-read thermometer; how to calibrate an instant-read thermometer; and the most effective cooking methods for reducing *E. coli* O157:H7 in hamburger patties. (University of Idaho—2005) (Reviewed—2005)
- Food Safety for Food Service Series I** – 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 minutes). 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.
- F2102 Tape 2 – Food Safety for Food Service: Personal Hygiene** – (10 minutes). 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.
- Food Safety for Food Service Series II** – An employee video series containing quick, 10-minute videos that boost safety awareness for food service employees and teach them how to avoid foodborne illness. (J.J. Keller & Associates—2002)
- F2104 Tape 1 – Basic Microbiology and Foodborne Illness** – (10 minutes). Covers four common microorganisms in food, how they get into food, and simple ways to prevent contamination. Stresses the importance of keeping food at the right temperature, having proper personal hygiene, and cleaning and sanitizing work surfaces.

- F2105 Tape 2 – Handling Knives, Cuts, and Burns** – (10 minutes). Explains why sharp knives are safer than dull ones, provides tips for selecting a good knife, and gives techniques for cutting food safely. Also explains first aid for cuts and burns and the most common causes of burns.
- F2106 Tape 3 – Working Safely to Prevent Injury** – (10 minutes). Discusses common lifting hazards and how back injuries can happen. Gives proper lifting and carrying techniques to prevent soreness and injury. Also covers how to prevent slips, trips, and falls.
- F2107 Tape 4 – Sanitation** – (10 minutes). Provides tips for good personal hygiene habits, including the proper way to wash your hands, dress, and prepare for work. Also covers cleaning and sanitizing equipment; storing chemicals and cleaning supplies; and controlling pests that can contaminate work areas and food.
- F2110 Food Safety is No Mystery** – (34 minutes). This is an excellent training visual for foodservice 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 foodservice 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) (Reviewed 1998)
- F2111 Controlling Salmonella: Strategies That Work** – (16 minutes). This training video provides practical guidelines to prevent the growth of *Salmonella* in dry environments and avoid costly product recalls. Using this video as a discussion tool, supervisors can help employees learn about water and how it fosters conditions for the growth of *Salmonella* in dry processing plants with potentially devastating consequences. (Silliker Laboratories–2002)
- F2120 Food Safety: For Goodness Sake Keep Food Safe** – (15 minutes). 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)
- F2121 Food Safety the HACCP Way** – (11.5 minutes). Introduces managers and line-level staff to HACCP, or the Hazard Analysis Critical Control Point food safety system. The HACCP system is a seven-step process to control food safety, and can be applied to any size and type of food establishment.
- 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 four topics are: Basic Microbiology, Cross Contamination, Personal Hygiene, and Sanitation. (J.J. Keller & Associates–1999)
- F2125 Tape 1 – Basic Microbiology and Foodborne Illness** – (10 minutes). Covers four common microorganisms in food, how they get into food, and simple ways to prevent contamination. Stresses the importance of keeping food at the right temperature, having proper personal hygiene, and cleaning and sanitizing work surfaces.
- F2126 Tape 2 – Food Safety Zone: Cross Contamination** – (10 minutes). 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 contamination, 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** (English and Spanish) – (10 minutes). 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 minutes). 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 the 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.
- F2129 Food Technology: Irradiation** – (29 minutes). Video covers the following issues: history and details of the irradiation process; effects of irradiation on treated products; and consumer concerns and acceptance trends. Other important concerns addressed include how food irradiation affects food cost, the nutritional food industry, food science and research, and irradiation regulatory industries (such as the Nuclear Regulatory Commission) add insight into the process of irradiation. (Chipsbooks–2001)

- F2130 Food Safety: You Make the Difference** – (28 minutes). Through five food workers from differing backgrounds, this engaging and inspirational documentary style video illustrates the four basic food safety concepts: hand washing, preventing cross-contamination, moving foods quickly through the danger zone, and hot/cold holding. (Seattle-King County Health Dept.–1995)
- F2131 Fruits, Vegetables, and Food Safety: Health and Hygiene on the Farm** (DVD and video) – (15 minutes). This presentation shows ways to prevent contamination of fruits and vegetables while you work. It was filmed in real production fields and packinghouses in the United States. Organisms of concern in fruits and vegetables are discussed, along with proper hygiene practices when handling and harvesting fruits and vegetables. (Cornell University–2004)
- F2133 Food Safety First** (English and Spanish) (DVD and Video) – (50 minutes). Presents causes of foodborne illness in foodservice and ways to prevent foodborne illness. Individual segments include personal hygiene and hand washing, cleaning, and sanitizing, preventing cross contamination, and avoiding time and temperature abuse. Food handling principles are presented through scenarios in a restaurant kitchen. (GloGerm–1998)
- F2134 Food Safety: Fish and Shellfish Safety** – (21 minutes). Seafood tops the list for foods that can become contaminated with bacteria-causing foodborne illness. This video shows how to protect yourself from fish and shellfish contamination by learning proper selection, storage, preparation and safe consumption. (Chipsbooks Company–2003)
- F2135 Get with a Safe Food Attitude** – (40 minutes). Consisting of nine short segments which can be viewed individually or as a group, this video presents safe food handling for moms-to-be. Any illness a pregnant women contracts can affect her unborn child whose immune system is too immature to fight back. The video follows four pregnant women as they learn about food safety and preventing foodborne illness. (US Dept. of Agriculture–1999)
- F2136 GLP Basics: Safety in the Food Micro Lab** – (16 minutes). This video is designed to teach laboratory technicians basic safety fundamentals and how to protect themselves from inherent workplace dangers. Special sections on general laboratory rules, personal protective equipment, microbiological, chemical, and physical hazards, autoclave safety, and spill containment are featured. (Silliker Laboratories–2001)
- F2137 GMP Basics: Avoiding Microbial Cross-Contamination** – (15 minutes). 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, un-sanitized 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 minutes). Through real-life examples and dramatization, this video demonstrates good manufacturing practices that relate to employee hygiene, particularly hand washing. This video includes a unique test section to help assess participants' understanding of common GMP violations. (Silliker Laboratories–1997)
- F2143 GMP Basics: Guidelines for Maintenance Personnel** – (21 minutes). 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)
- F2147 GMP Basics: Process Control Practices** – (16 minutes). 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)
- F2148 GMP – GSP Employee** – (38 minutes). 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 and Practices in Food Manufacturing (English, Spanish, and Vietnamese)** – (14 minutes). 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)
- A GMP Food Safety Video Series** – This five-part video series begins with an introduction to GMPs and definitions, then goes on to review specific sections of the GMPs: personnel, plant and grounds, sanitary operations, equipment and utensils, process and controls, warehousing, and distribution. Developed to assist food processors in training employees on personnel policies and Good Manufacturing Practices (GMPs), the series includes different types of facilities, including dairy plants, canning factories, pasta plants, bakeries, and frozen food manufacturing facilities. (J.J. Keller–2003)

- F2151 Tape 1 – Definitions** – (12 minutes). Provides the definitions necessary to understand the meaning of the CMPs.
- F2152 Tape 2 – Personnel and Personnel Facilities** – (11 minutes). Covers selection of personnel, delegation of responsibilities, development of plant policies for employees, and operational practices.
- F2153 Tape 3 – Building and Facilities** – (16 minutes). Discusses guidelines for the construction and maintenance of the manufacturing plant and grounds around the plant.
- F2154 Tape 4 – Equipment and Utensils** – (12.5 minutes). Provides guidelines for the construction, installation, and maintenance of processing equipment.
- F2155 Tape 5 – Production and Process Controls** – (20 minutes). Covers establishing a food safety committee, in-house inspections, analysis of raw materials and ingredients, cleaning schedules and procedures, and more.
- F2160 GMP: Sources and Control of Contamination during Processing** – (20 minutes). 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)
- GMPs for Food Plant Employees: Five-Volume Video Series Based on European Standards and Regulations** – Developed to assist food processors in training employees in the Good Manufacturing Practices. Examples are drawn from a variety of processing facilities including dairy plants, canning facilities, pasta plants, bakeries, frozen food facilities, etc. (AIB International–2003)
- F2161 Tape 1 – Definitions** – (13 minutes). Begins with an introduction to the GMPs and traces a basic history of food laws in Europe, ending with the EC Directive 93/43/EEC of June 1993 on the hygiene of foodstuffs.
- F2162 Tape 2 – Personnel and Personnel Practices** – (13 minutes). Selecting personnel, delegating responsibilities, developing plant policies for employees and visitors, and establishing operational practices.
- F2163 Tape 3 – Building and Facilities** – (17 minutes). Guidelines for the construction and maintenance of the manufacturing facility and grounds around the factory.
- F2164 Tape 4 – Equipment and Utensils** – (13 minutes). Guidelines for construction, installation, and maintenance of processing equipment.
- F2165 Tape 5 – Production/Process Controls** – (22 minutes). Covers production and process controls, establishing a food safety committee, conducting in-house inspections, analyzing raw materials and ingredients, developing operational methods, establishing cleaning schedules and procedures, creating pest control programs and record keeping.
- F2169 HACCP: Training for Employees – USDA Awareness** – (15 minutes). 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 principals; HACCP plan checklist; and an HACCP employee training program. (J.J. Keller & Associates–1999)
- F2170 The Heart of HACCP** – (22 minutes). 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–1994)
- F2171 HACCP: The Way to Food Safety** – (53 minutes). 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)
- F2172 HACCP: Training for Managers** – (17 minutes). Through industry-specific examples and case studies, this video addresses the seven HACCP steps, identifying critical control points, record-keeping 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–2000)
- F2173 Inside HACCP: Principles, Practices and Results (English and Spanish)** – (15 minutes). This video is designed to help you build a more knowledgeable work-force and meet safety standards through a comprehensive overview of HACCP principles. Employees are provided with details of prerequisite programs and a clear overview of the seven HACCP principles. "Inside HACCP" provides short, succinct explanations of how HACCP works

and places special emphasis on the four principles – monitoring, verification, corrective action, and recordkeeping – in which employees actively participate. (Silliker Laboratories–2001)

- F2175 Inspecting for Food Safety – Kentucky's Food Code** – (100 minutes). Kentucky's Food Code is patterned after the Federal Food Code. The concepts, definitions, procedures, and regulatory standards included in the code are based on the most current information about how to prevent foodborne diseases. This video is designed to prepare food safety inspectors to effectively use the new food code in the performance of their duties. (Dept. of Public Health Commonwealth of Kentucky–1997) (Reviewed 1999)
- F2180 HACCP: Safe Food Handling Techniques** – (22 minutes). 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 Assoc.–1990) (Reviewed 1998)
- F2190 Is What You Order What You Get? Seafood Integrity** – (18 minutes). 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)
- F2191 Microbial Food Safety: Awareness to Action (DVD PowerPoint presentation)** – An overview of GAPs and resources by the United Fresh Fruits and Vegetables Association, a hazard identification self-audit, a sample farm investigative questionnaire, copies of relevant California state information, and US federal regulations. Contains numerous commodity flow charts and photos for more than 30 fruits and vegetables, one dozen PowerPoint presentations containing more than 400 slides, including many in Spanish and two dozen supplemental documents on a variety of food safety topics. (UC Davis–2002)
- F2210 Northern Delight – From Canada to the World** – (13 minutes). A promotional video that explores the wide variety of foods and beverages produced by the Canadian food industry. General in nature, this tape presents an overview of Canada's food industry and its contribution to the world's food supply. (Ternelle Production, Ltd.) (Reviewed 1998)
- F2220 Proper Handling of Peracetic Acid** – (15 minutes). 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 minutes). 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)
- F2240 On the Front Line** – (18 minutes). 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** (English and Spanish) – (30 minutes). 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. (The Food Processors Institute–1993) (Reviewed 1998)
- F2260 100 Degrees of Doom...The Time and Temperature Caper** – (14 minutes). 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)
- F2265 A Day in the Deli: Service, Selection, and Good Safety** – (22 minutes). This training video provides basic orientation for new deli department employees and highlights skills and sales techniques that will build department traffic and increased sales. The focus will be on the priorities of the deli department freshness, strong customer service, professionalism, and food safety. By understanding the most important issues for their position(s), employees can comprehend their contribution to the financial interests of the store. (Food Marketing Institute–2003)
- F2266 HACCP: A Basic Understanding** – (32 minutes). Explore applications for Hazard Analysis Critical Control Points (HACCP), a system of process controls required by federal and state governments for most areas of the food service industry. Learn to minimize the risk of chemical, microbiological and physical food contamination while focusing on the seven principles of HACCP and the chain of responsibility. (Chipsbook company–2003)
- F2270 Pest Control in Seafood Processing Plants** – (26 minutes). 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.

- F2271 Preventing Foodborne Illness** – (10 minutes). This narrated video is for food service workers, with emphasis on insuring food safety by washing one's hands before handling food, after using the bathroom, sneezing, touching raw meats and poultry, and before and after handling foods such as salads and sandwiches. Safe food temperatures and cross contamination are also explained. (Colorado Dept. of Public Health and Environment–1999)
- F2280 Principles of Warehouse Sanitation** – (33 minutes). 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 and Shelf Life** – (40 minutes). 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 problem 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, Inc.–1987) (Reviewed 1997)
- F2310 Safe Food: You Can Make a Difference** – (25 minutes). 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 hand washing as methods of foodborne illness control is provided. The video provides an orientation to food safety for professional food handlers. (Tacoma–Pierce County Health Dept–1990) (Reviewed 1998)
- F2320 Safe Handwashing** – (15 minutes). Twenty-five percent of all foodborne illnesses are traced to improper hand washing. The problem is not just that hand washing 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 & Management–1991) (Reviewed 1998)
- F2325 Safe Practices for Sausage Production** – (180 minutes). 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/fof/hrds/STATE/RETAIL/manual.htm (1999)
- F2330 Sanitation for Seafood Processing Personnel** – (20 minutes). A training video suited for professional food handlers working in any type of food manufacturing plant. The film highlights Good Manufacturing Practices and their role in assuring food safety. The professional food handler is introduced to a variety of sanitation topics including: (1) food handlers as a source of food contamination, (2) personal hygiene as a means of preventing food contamination, (3) approved food storage techniques including safe storage temperatures, (4) sources of cross-contamination, (5) contamination of food by insects and rodents, (6) garbage handling and pest control, and (7) design and location of equipment and physical facilities to facilitate cleaning. (Reviewed 1998)
- F2340 Sanitizing for Safety** – (17 minutes). Provides an introduction to basic food safety for professional food handlers. 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)
- F2341 Science and Our Food Supply** – (45 minutes). Becoming food safety savvy is as easy as A–B–C! This video includes a step-by-step journey as food travels from the farm to the table; the Fight BAC Campaign's four simple steps to food safety, clean, cook, separate (combat cross contamination), and chill, and the latest in food safety careers. Other topics covered include understanding bacteria, food processing and transportation, and the future technology of food processing. (FDA Center for Food Safety & Applied Nutrition–2001)
- F2342 Seafood HACCP Alliance Internet Training Course** – This DVD contains the on-line equivalent material found in the Seafood HACCP Alliance Internet Training Course (<http://seafoodhaccp.cornell.edu>). This new program is designed to be equivalent to the first two days of the "live" three-day Alliance training courses. There are 12 training modules in the course that cover all of the information on HACCP principles, their application to seafood products, and the FDA regulation. Experience has shown that HACCP implementation can be more effective when a number of key people in the operation have a good understanding of the system and its requirements. (Cornell University–2004)
- F2350 ServSafe Steps to Food Safety** (DVD and Video) (English and Spanish) – 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. (National Restaurant Association Education Foundation—2000)

- Tape 1 Step One: Starting Out with Food Safety** – (12 minutes). Defines what foodborne illness is and how it occurs; how foods become unsafe; and what safety practices to follow during the flow of food.
- Tape 2 Step Two: Ensuring Proper Personal Hygiene** – (10 minutes). Introduces employees to ways they might contaminate food; personal cleanliness practices that help protect food; and the procedure for thorough hand washing.
- Tape 3 Step Three: Purchasing, Receiving and Storage** – (12 minutes). Explains how to choose a supplier; calibrate and use a thermometer properly; accept or reject a delivery; and store food safely.
- Tape 4 Step Four: Preparing, Cooking and Serving** – (11 minutes). Identifies proper practices for thawing, cooking, holding, serving, cooling, and reheating food.
- Tape 5 Step Five: Cleaning and Sanitizing** – (11 minutes). 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 set up a cleaning program.
- Tape 6 Step Six: Take the Food Safety Challenge: Good Practices, Bad Practices – You Make the Call** – (35 minutes). Challenges viewers to identify good and bad practices presented in five short scenarios from different industry segments.
- F2370 Supermarket Sanitation Program – Cleaning and Sanitizing** – (13 minutes). 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 minutes). Contains a full range of basic sanitation information with minimal emphasis on product. Filmed in a supermarket, the video is designated as a basic program for manager training and a program to be used by managers to train employees. (1998) (Reviewed 1998)
- F2390 Take Aim at Sanitation** (English and Spanish) – (8 minutes). Produced by the Foodservice & Packaging Institute in cooperation with the US Food and Drug Administration, this video demonstrates how to properly store and handle foodservice disposables so customers are using safe, clean products. This video demonstrates: the problem of foodborne illness; how foodservice disposables are manufactured for cleanliness; tips for storing foodservice disposables; tips to help your customers in self-serve areas; guidelines for serving meals and maintaining proper sanitation; and tips for cleaning up after meals. Throughout the program a roving microscope “takes aim” at common mistakes made by workers to help audiences identify unsanitary handling and storage practices. (Foodservice & Packaging Institute, Inc.)
- F2391 Understanding Foodborne Pathogens** – (40 minutes). Explore the major causes of foodborne illness and review the practices used to minimize the risk of contracting or spreading a foodborne disease. Learn about microorganisms associated with foodborne illness such as parasites, viruses, fungi and bacteria. Study ways to reduce harmful pathogens through proper handling, storage, and cooking. (Chipsbooks Company—2003)
- F2410 Wide World of Food Service Brushes** – (18 minutes). 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)
- F2420 Your Health in Our Hands, Our Health in Yours** – (8 minutes). For professional food handlers, the tape covers the do’s and don’ts of food handling as they relate to personal hygiene, temperature control, safe storage, and proper sanitation. (Jupiter Video Production—1993) (Reviewed 1998)
- F2430 Smart Sanitation: Principles and Practices for Effectively Cleaning Your Food Plant** – (20 minutes). 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—1996)
- F2440 Cleaning and Sanitizing in Vegetable Processing Plants: Do It Well, Do It Safely!** (English and Spanish) – (16 minutes). 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 a processing plant as it is for washing dishes at home. (University of Wisconsin Extension—1996)
- F2450 A Guide to Making Safe Smoked Fish** – (21 minutes). 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—1999)
- F2451 A HACCP-based Plan Ensuring Food Safety in Retail Establishments** (DVD) – (11 minutes).

This is an educational DVD that provides a brief summary of HACCP. It explains the purpose and execution of each of the seven principles. Can be used as part of a wide range of HACCP training programs beyond retail establishments. The major emphasis is on proper documentation and validation. (Ohio State University-2004)

- F2460 Safer Processing of Sprouts** – (82 minutes). 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 Service, Food & Drug Branch-2000)
- Fast Track Restaurant Video Kit** – These five short, direct videos can help make your employees more aware of various food hazards and how they can promote food safety. (Diversey Lever-1994)
- F2500 Tape 1 – Food Safety Essentials** – (23 minutes). This video provides an overview of food safety. All food service employees learn six crucial guidelines for combating foodborne illness. Prepares employees for further position-specific training to apply the six food safety principles to specific jobs.
- F2501 Tape 2 – Receiving and Storage** – (22 minutes). Make sure only safe food enters your doors! Receiving and storage staff learn what to look for and how to prevent spoilage with proper storage with this video.
- F2502 Tape 3 – Service** – (22 minutes). Servers are your last safety checkpoint before guests receive food. This video helps you make sure they know the danger signs.
- F2503 Tape 4 – Food Production** – (24 minutes). Food production tasks cause most food safety problems. Attack dangerous practices at this critical stage with this video training tool.
- F2504 Tape 5 – Warewashing** – (21 minutes). Proper sanitation starts with clean dishes! With this video, warewashers will learn how to ensure safe tableware for guests and safe kitchenware for co-workers.

OTHER

- M4010 Diet, Nutrition and Cancer** – (20 minutes). 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 minutes). 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 minutes). 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 and Sanitation for Food Processing Employees** – (15 minutes). Illustrates and describes the importance of good personal hygiene and sanitary practices for people working in a food processing plant. (Iowa State University-1993)
- M4060 Psychiatric Aspects of Product Tampering** – (25 minutes). 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 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 minutes). 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)
- M4071 Understanding Nutritional Labeling** – (39 minutes). Learn why the government initiated a standardized food labeling system and which foods are exempt. Explore each component listed on the label including cholesterol, carbohydrates, protein, fat, health or nutritional claims, service size, percentage of daily value, and standard calorie reference/comparison. (Chipsboosk Company-2003)

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- D1030 Gold Hand Faces
- D1040 Butter Extraction Method for Determination Raw Milk
- D1041 Dairy Plant
- D1050 Food Safety: Dairy Details
- D1060 Frozen Dairy Products
- D1070 The Gerber Butterfat Test
- D1080 High Temperature, Short-Time Pasteurizer
- D1090 Managing Milking Quality
- D1100 Mastitis: Prevention and Control
- D1105 Milk Handling Training
- D1110 Milk Plant Sanitation: Chemical Solution
- D1120 Milk Processing Plant Inspection Procedures
- D1130 Pasteurizer Design and Regulation
- D1140 Pasteurizer Operation
- D1150 Processing Fluid Milk
- D1160 Safe Milk Handling - You're the Key
- D1170 3-A Symbol Council
- D1180 10 Points to Dairy Quality

ENVIRONMENTAL

- E2012 Better TEDs for Better Fisheries
- E3010 Cleanliness Program for Early Childhood Programs
- E3020 Acceptable Risks
- E3030 Air Pollution: Indoor
- E3041 Allergy Beware
- E3040 Asbestos Awareness
- E3050 Down in the Drumps
- E3055 Effective Handwashing - Preventing Cross-Contamination in the Food Service Industry
- E3060 EPA Test Methods for Freshwater Effluent Toxicity Tests (Using Ceriodaphnia)
- E3070 EPA Test Methods for Freshwater Toxicity Tests (Using Fathead Minnow Larva)
- E3075 EPA: This is Super Fund
- E3080 Fat to Think
- E3080 Food Service Disposables: Should I Feel Guilty
- E3110 Garbage: The Movie
- E3120 Global Warming: Hot Times Ahead
- E3125 Good Pest Exclusion Practices
- E3128 Integrated Pest Management (IPM)
- E3130 Kentucky Public Swimming Pool and Bathing Facilities
- E3131 Key Pests of the Food Industry
- E3135 Physical Pest Management Practices
- E3138 Plastics Recycling Today: A Growing Resource
- E3140 Potting Aisle Pesticides
- E3150 Radon
- E3160 RCRA Hazardous Waste
- E3161 The Kitchen Uncovered: Urban Sanitized EMP The New Superfund: What It Is and How It Works
- E3170 Type 1 - Changes in the Remedial Process: Clean-up Standards and State Involvement Requirements
- E3180 Type 2 - Changes in the Remedial Process: Remedial Additional Program Requirements
- E3190 Type 3 - Enforcement & Federal Facilities
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- E3230 Type 5 - Enforcement & Federal Facilities
- E3240 Type 6 - Emergency Preparedness
- E3240 Type 7 - Emergency Preparedness
- E3240 Type 8 - Research & Development Closing Remarks
- E3245 Regulation and Good Manufacturing Practices
- E3250 Rodent Control Strategies
- E3250 Sink & Germ
- E3245 Wash Your Hands
- E3250 Waste Not: Reducing Hazardous Waste
- E3251 Would Your Restaurant Kitchen Pass Inspection?
- E3260 Swabbing Techniques for Sampling the Environment and Equipment

FOOD

- F2005 A Lot on the Line
- F2007 The Amazing World of Microorganisms
- F2008 A Recipe for Food Safety Success
- F2009 Basic Personnel Practices
- F2010 Close Encounters of the Bird Kind

- F2011 Available Post Harvest Processing Technologies for Oysters
- F2015 Control of *Listeria monocytogenes* in Small Meat and Poultry Establishments
- F2014 Controlling Food Allergens in the Plant
- F2015 Controlling *Histaria*: A Team Approach
- F2016 Bloodborne Pathogens: What Employees Must Know
- F2020 Egg Handling and Safety
- F2021 Egg Production
- F2030 Egg Games: Foodservice Egg Handling & Safety
- F2035 Fabrication and Curing of Meat and Poultry Products
- F2036 Emerging Pathogens and Grinding and Cooking Comminuted Beef
- F2037 Cooking and Cooling of Meat and Poultry Products
- F2039 Food for Thought - The GMP Quiz Show
- F2040 Food Irradiation
- F2045 Food Microbiology and Control
- F2050 Food Safety: Food Safety - HACCP and Its Application to the Food Industry (Part 1 & 2)
- F2050 Food Safe Series I (4 videos)
- F2070 Food Safe Series II (4 videos)
- F2080 Food Safety Begins on the Farm
- F2081 Food Safety: An Educational Video for Institutional Food Service Workers
- F2090 Food Safety for Food Service Series I
- F2095 Food Safety: Food Service Series I
- F2100 Now You're Cooking
- F2100 Type 1 - Food Safety for Food Service: Cross Contamination
- F2102 Type 2 - Food Safety for Food Service: Personal Hygiene
- F2104 Food Safety for Food Service Series II
- F2104 Type 1 - Basic Microbiology and Foodborne Illness
- F2105 Type 2 - Handling Knives, Cuts, and Burns
- F2106 Type 3 - Working Safety to Prevent Injury
- F2107 Type 4 - Sanitation
- F2110 Food Safety is No Mystery
- F2111 Controlling *Salmoneilla*: Strategies That Work
- F2120 Food Safety: For Goodness Sake: Keep Food Safe
- F2121 Food Safety: The HACCP Way
- F2125 Food Safety Zone Video Series
- F2125 Type 1 - Food Safety Zone: Basic Microbiology
- F2126 Type 2 - Food Safety Zone: Cross Contamination
- F2127 Type 3 - Food Safety Zone: Personal Hygiene
- F2128 Type 4 - Food Safety Zone: Sanitation
- F2129 Food Technology: Irradiation
- F2130 Food Safety: You Make the Difference
- F2131 Fruit, Vegetables, and Food Safety: Health and Hygiene on the Farm
- F2133 Food Safety: Food
- F2133 Food Safety: Fish and shellfish Safety
- F2134 Get with a Safe Food Attitude
- F2135 GMP Basics: Safety in the Food Micro Lab
- F2137 GMP Basics: Avoiding Microbial Cross Contamination
- F2137 GMP Basics: Employee Hygiene Practices
- F2137 GMP Basics: Guidelines for Maintenance Personnel
- F2137 GMP Basics: Process Control Practices
- F2137 GMP - GSP Employee
- F2137 GMP: Personal Hygiene and Practices in Food Manufacturing
- F2151 GMP Food Safety Video Series
- F2151 Type 1 - Definitions
- F2152 Type 2 - Personnel and Personnel Facilities
- F2155 Type 3 - Building and Facilities
- F2154 Type 4 - Equipment and Utensils
- F2155 Type 5 - Production and Process Controls
- F2160 GMP: Sources and Control of Contamination during Processing
- F2160 GMPs for Food Plant Employees: Five-Volume Video Series Based on European Standards and Regulations
- F2161 Type 1 - Definitions
- F2162 Type 2 - Personnel and Personnel Practices
- F2163 Type 3 - Building and Facilities
- F2164 Type 4 - Equipment and Utensils

- F2165 Type 5 - Production/Process Controls
- F2169 HACCP: Training for Employees - USDA Awareness
- F2170 The Heart of HACCP
- F2171 HACCP: The Way to Food Safety
- F2172 HACCP: Training for Managers
- F2173 Inside HACCP: Principles, Practices and Results
- F2175 Inspecting for Food Safety - Kentucky's Food Cook
- F2180 HACCP: Safe Food Handling Techniques - Is What You Order What You Get? Seafood Integrity
- F2180 HACCP: Safe Food Handling Techniques - Is What You Order What You Get? Seafood Integrity
- F2190 Microbial Food Safety: Awareness in Action
- F2210 Northern Delight - From Canada to the World
- F2220 Proper Handling of Peroxide Acid
- F2230 Puny Confidential
- F2240 On the Line
- F2250 100 Degrees of Doom... The Time and Temperature Caper
- F2265 A Day in the Deli: Service, Selection, and Good Safety
- F2266 HACCP: A Basic Understanding
- F2270 Pest Control in Seafood Processing Plants
- F2271 Preventing Foodborne Illness
- F2280 Principles of Waterless Sanitation
- F2280 Product Safety and Shelf Life
- F2310 Safe Food: You Can Make a Difference
- F2310 Safe Handling
- F2321 All Hands on Deck
- F2322 The Why, The When, and The How Video Safe Practices for Storage Production
- F2325 Sanitation for Seafood Processing Personnel
- F2340 Sanitizing for Safety
- F2341 Science and Our Food Supply
- F2342 Seafood HACCP Alliance Instructor Training Course
- F2344 ServSafe Steps to Food Safety
- F2350-1 Step One: Saniting Our with Food Safety
- F2350-2 Step Two: Ensuring Proper Personal Hygiene
- F2350-3 Step Three: Purchasing, Receiving and Storage
- F2350-4 Step Four: Preparing, Cooking and Serving
- F2350-5 Step Five: Cleaning and Sanitizing
- F2350-6 Step Six: Take the Food Safety Challenge
- F2350-6 Good Practices, Bad Practices - You Make the Call
- F2370 Supermarket Sanitation Program - Cleaning and Sanitizing
- F2380 Supermarkets Sanitation Program: Food Safety
- F2390 Take Aim at Sanitation
- F2391 Understanding Foodborne Pathogens
- F2410 Wisk: World of Food Service: Brushes
- F2420 Your Health in Our Hands... Our Health in Yours
- F2430 Smart Sanitation: Principles and Practices for Effectively Cleaning Your Food Plant
- F2440 Clearing and Sanitizing in Vegetable Processing Plants: Do It Well, Do It Safely
- F2450 A Guide to Making Safe Smoked Fish
- F2451 A HACCP-based Plan Ensuring Food Safety in Retail Establishments
- F2460 Safe Processing of Seafoods
- F2500 Type 1 - Food Safety Essentials
- F2501 Type 2 - Receiving and Storage
- F2502 Type 3 - Service
- F2503 Food Truck Restaurant Video Kit
- F2504 Type 4 - Food Production
- F2504 Type 5 - Warewashing

OTHER

- M0010 Diet, Nutrition and Cancer
- M0020 Eating Intensively: Food Safety Advice for Persons with AIDS
- M0030 The Progression: Food
- M0050 Personal Hygiene and Sanitation for Food Processing Employees
- M0060 Psychiatric Aspects of Product Tampering
- M0070 Tampering: The Issue Examined
- M0071 Understanding Nutritional Labeling Processing Employees



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Kansas State University
Manhattan

Abbey L. Nutsch
Kansas State University
Manhattan

MICHIGAN

Tina R. Conklin
The Conklin Group, LLC
Dorr

Gary White
Macomb Co. Health Dept.
Mt. Clemens

MISSISSIPPI

Charles H. White
Mississippi State University
Mississippi State

NEW JERSEY

James L. Budd
Prepcheck Food Safety
Ocean View

NORTH CAROLINA

Sheryl Emory
Forsyth Co. Health Dept.
Winston-Salem

OHIO

Hua H. Wang
The Ohio State University
Columbus

UPDATES

FKI Logistex North America Appoints Bob Duplain as President of Warehouse and Distribution Division

FKI Logistex announces the appointment of Bob Duplain as president of the warehouse and distribution division of FKI Logistex North America. A seasoned senior-level executive, Duplain is promoted to the new position from his previous role as acting division president. He succeeds John Westendorf, now president of sister division FKI Hardware Group.

A 10-year veteran of FKI Logistex, Duplain served as warehouse and distribution divisional senior vice president and CFO, with responsibilities over various areas of finance, operations and administration, prior to assuming the acting leadership role.

Mr. Duplain's former positions include vice president and controller of Sheffield Measurement, a metrology equipment manufacturer; and CFO and corporate controller of the Dayton Walther Corporation, an automotive components manufacturer. A certified public accountant, Duplain holds a bachelor of science in mathematics from Ohio State University and a master of business administration in accounting from Wright State University.

Novazone Inc. Appoints Patrick Whalen Vice President of Worldwide Sales

Novazone has announced the appointment of Patrick Whalen as vice president of worldwide sales. In his new position, Mr. Whalen is responsible for all aspects of sales and field application engineering. Reporting to Paul White, Novazone's

president and CEO, Mr. Whalen will be located at the company's headquarters in Livermore, CA.

Prior to joining Novazone, Mr. Whalen was principal of Whalen Consulting, specializing in strategic consulting and the development of high-impact sales organizations for Fortune 500 companies. Before Whalen Consulting, Mr. Whalen held a variety of management positions at emerging technology companies including nCircle, Logictier, Inc., Brightstar Information Technology Group, Inc., Raptor Systems, Inc., Cisco Systems, Inc., and MCI Telecommunications, Inc.

Dairy Farmer Board Names Rick Smith as DFA's Chief Executive Officer

The board of directors of Dairy Farmers of America, Inc. (DFA), has named Rick Smith as president and chief executive officer (CEO) of their farmer-owned dairy cooperative.

Mr. Smith, who served as DFA's president and chief operating officer, assumed the role of CEO on January 1, 2006.

Mr. Smith entered the dairy industry in 1982 when he joined Dairylea Cooperative, Inc. (Dairylea) as vice president and general counsel. In 1988, he became CEO of Dairylea, the Northeast's leading agricultural service and milk marketing organization with 5.5 billion pounds of milk marketed annually for 2,500 dairy farmer-members.

This past August, Mr. Smith who had served on DFA's management team since January of 2001, was promoted to president and chief operating officer of DFA. In that position, he had oversight over all business operations including economic and marketing analysis; member, government and public

relations; human resources; fluid marketing operations; value-added manufacturing; accounting/treasury; and legal and risk management functions.

Mr. Smith will succeed retiring chief executive Gary Hanman.

AACC International Installs New Board

AACC International (formerly the American Association of Cereal Chemists) has announced the newly elected officials for 2005-2006. The following leadership was installed at the conclusion of the AACC International Annual Meeting in September.

Robert Hamer, new president-elect, is the director of the structure and functionality program for the Wageningen Centre for Food Sciences in Wageningen, The Netherlands. He is also a professor of technology of cereal proteins at Wageningen University.

Laura Hansen, new director, is a senior technology manager for General Mills Bakeries and Food-service. She has served on the nominations committee, and as annual program technical chair, AACC international secretary, and rheology division secretary, chair, and chair-elect.

Moses-Okot-Kotber, new appointed director, is director of Analytix Laboratories. He has held offices in the protein division and is current chair of that division.

Stuart Craig, the scientific and regulatory affairs manager for Danisco USA Inc., began his term as AACC International president at the conclusion of the AACC International annual meeting.

Other members of the 2005-2006 board include: George Lookhart, chair of the board; Elizabeth Knight, treasurer; Mary Ellen Camire, director; Khalil Khan, director; Sakharam Patil, director; and Jan Willem Van Der Kamp, international director.

3-A SSI Announces New 3-A Sanitary Standards and 3-A Accepted Practice

3-A Sanitary Standards, Inc. (3-A SSI) announces the availability of five new 3-A Sanitary Standards and one new comprehensive 3-A Accepted Practice.

The new 3-A Sanitary Standards and the 3-A Accepted Practice include:

- Sanitary Standards for Scraped Surface Heat Exchangers, Number 31-04 (replaces document published in 2000);
- Blending Equipment, Number 35-02 (replaces document published in 2003);
- Mechanical Conveyors for Dry Milk and Dry Milk Products, Number 41-02 (replaces document published in 1996);
- Shear Mixer, Mixers, and Agitators, Number 73-01 (replaces document published in 1996);
- Sanitary Standards for Sensors and Sensor Fittings and Connections, Number 74-03 (replaces document published in 2002); and
- 3-A Accepted Practice for Sanitary Construction, Installation, Testing, and Operation of High Temperature Short-time and Higher-heat Shorter-time Pasteurizer (HTST) Systems, Number 603-07 (replaces document published in 1992).

Copies of the new documents are now available for purchase in

electronic format or printed version through the 3-A SSI Web site at: <http://www.3-a.org>.

The new publications represent the first group of consensus documents approved under 3-A SSI's new *Procedures for the Development and Maintenance of 3-A SSI Standards and 3-A Accepted Practices*. A comprehensive list of all documents under revision is also available at the 3-A SSI Web site at: <http://www.3-a.org/standards/chart.htm>.

Salmonella Outbreaks Linked to Produce on the Rise

Most people properly associate *Salmonella* with raw poultry. But according to an analysis of food-poisoning outbreaks by the Center for Science in the Public Interest, fresh produce is catching up with chicken as a major culprit of *Salmonella* infections. And, says CSPI, produce-related outbreaks tend to be larger than poultry-related outbreaks, and sicken more people, sometimes hundreds at a time. In CSPI's Outbreak Alert! database, which contains information on nearly 4,500 outbreaks between 1990 and 2003, produce triggered 554 outbreaks, sickening 28,315 people. Of those 554 outbreaks, 111 were due to *Salmonella*.

Although poultry has historically been responsible for far more *Salmonella* infections, in the most recent years in CSPI's database, produce seems to be catching up. From 1990 to 2001 poultry accounted for 121 *Salmonella* outbreaks and produce accounted for 80. But in 2002–2003, produce accounted for 31 *Salmonella* out-

breaks and poultry accounted for 29. "Fresh fruits and vegetables are at the center of a healthy diet, so it's critical that steps are taken to improve their safety," said CSPI food safety director Caroline Smith DeWaal. "FDA should require growers to limit the use of manure to times and products where it poses no risk. And packers and shippers should mark packaging to ensure easy traceback when fruits and vegetables are implicated in an outbreak."

Although produce outbreaks were responsible for the most illnesses, seafood was responsible for more outbreaks, 899, than any other food, but only 9,312 illnesses. Poultry triggered 476 outbreaks involving 14,729 illnesses; beef triggered 438 outbreaks involving 12,702 illnesses, and eggs triggered 329 outbreaks involving 10,847 illnesses. CSPI's database includes only outbreaks where both the food and the pathogen are identified, so its data represents only a fraction of the total burden of foodborne illnesses. The CDC estimates that 76 million Americans get sick and 5,000 die from foodborne hazards each year.

In recent years, *Salmonella* outbreaks have been traced back to lettuce, salads, melons, sprouts, tomatoes, and other fruit- and vegetable-containing dishes. In 2004, there were three separate outbreaks involving 561 *Salmonella* infections that were linked to contaminated Roma tomatoes. From 2000 to 2002, *Salmonella*-contaminated cantaloupe imported from Mexico sickened 155 and killed two.

Salmonella isn't the only pathogen that ends up on produce.



In 2003, green onions in salsa from a Pennsylvania ChiChi's restaurant transmitted hepatitis A to 555 people, killing three. Also that year, *E. coli* on a bagged salad mix sickened more than 50 restaurant patrons in the San Diego area.

CSPI has long recommended the creation of a single food safety agency and an emphasis on improving on-farm practices to help curb foodborne illness. FDA-regulated foods are linked to two-thirds of foodborne illness outbreaks, yet the FDA's budget is only 38 percent of the total federal food safety budget. While USDA has the resources to inspect meat plants daily, the FDA inspects food facilities it regulates on average just once every five years. Neither agency has principal responsibility for overseeing on-farm food-safety practices. CSPI's report, "Outbreak Alert! Closing the Gaps in Our Federal Food Safety Net," is updated annually, and is available at http://www.cspinet.org/foodsafety/outbreak_report.html.

United, PMA Offer Food Safety Guidance to Melon Industry

In a joint effort to help the fresh produce industry ensure the highest levels of food safety, the United Fresh Fruit & Vegetable Association (United) and the Produce Marketing Association (PMA) have released Commodity Specific Food Safety Guidelines for the Melon Supply Chain. Developed by a group of leading produce food safety experts and representatives of operations within the industry, the document provides food safety guidance for the entire melon supply chain.

"United, PMA, and our industry partners have made food safety our

top priority," said Dr. Jim Gorny, vice president of quality assurance and technology for United. "We are committed to continual improvement of produce safe handling practices and suggest that all companies involved in the melon supply chain consider the recommendations contained within these guidelines."

PMA, United and industry partners also support educational outreach efforts to assure awareness and use of available melon food safety information. In addition, the two organizations will work together to review and implement these and other important produce industry food safety guidelines. "Our organizations and the government also share the common goal of assuring consumer confidence in the safety of fresh fruits and vegetables," said Kathy Means, PMA vice president of government relations. "The myriad health benefits of fruit and vegetable consumption are well documented, and we will take all necessary steps to make our industry's products as safe, nutritious, and delicious as possible."

The document, Commodity Specific Food Safety Guidelines for the Melon Supply Chain, is available on both www.uffva.org and www.pma.com, the respective Web sites of United and PMA.

Education for Prevention of Foodborne Diseases

The World Health Organization produces and disseminates materials for educating consumers about the risks present in food and the safe food handling behaviors that can help minimize those risks. The "Five Keys to Safer Food" are five basic measures helping consumers learn

safe food handling habits. They explain how food hygiene can prevent the transmission of pathogens responsible for many foodborne diseases. The Five Keys concept has been developed into several materials, including a poster, a leaflet and a basic training manual that Member States can use to disseminate effectively the Five Keys.

A colorful educational poster is available in ten languages of the European Region (Bulgarian, Czech, English, French, Italian, Portuguese, Russian, Spanish, Slovak and Turkish) as well as in many others.

The leaflet explains how proper food handling is crucial to prevent foodborne diseases through the use of the Five Keys poster and manual. It is available in English, French, Russian and Spanish.

"Bring Food Safety Home" is a basic training manual for food safety professionals, teachers and other interested organizations to use in training food handlers and consumers, including school children. Because the way food is prepared and the type of food which is eaten varies enormously across and within countries, the Five Keys concept does not set out prescriptions. The manual emphasizes the five main messages which Member States are encouraged to apply to local conditions. WHO organizes country initiatives to prevent foodborne diseases through promotion of the Five Keys to different target audiences, such as schools, food handlers, communities, street-vendors, public catering services, and small enterprises. Countries covered so far include Albania, Georgia, Kyrgyzstan, Russian Federation, Serbia and Montenegro, Tajikistan, the Former Yugoslav Republic of Macedonia, Turkmenistan and Uzbekistan. Other



countries, such as Italy, Switzerland and the UK, have adapted the materials to their own needs.

Irradiated Food Still Faces Hurdles in School Lunchrooms

Irradiated meat products remain slow to appear in the marketplace, and that includes the nation's school lunchrooms. A national survey by Iowa State University found that more than 95 percent of the responding school food service managers indicated that irradiated foods are not available from their distributors. While the managers also noted that they would be likely to serve irradiated food in their schools if available, they also reported that students and parents would probably be concerned if irradiated food was offered. The managers also believed that students should be informed if their schools are serving irradiated food. "There is not a lot of interest across the country in irradiated food products in school lunch programs," said Dan Henroid, a former ISU extension specialist in hotel, restaurant and institution management and current faculty member at the University of Houston, who supervised the survey for the Food Safety Consortium. He explained how the system works and why irradiated products do not figure in prominently.

The 2002 Farm Bill authorized irradiated food to be served in the federal school lunch program and permits – but does not require – USDA to include irradiated food in its commodity distribution. The Child Nutrition and WIC Reauthorization Act of 2004 reiterated that irradiated foods may be served in schools but only at the request of states and school food authorities.

Schools that receive federal assistance for their lunch programs can get free commodity food products from the US Department of Agriculture via the state agency supervising child nutrition programs. Ground beef is the main irradiated food product that is currently available through the USDA. The supervising state agency must request that irradiated ground beef be added to their distribution list. Once it is added, schools can then request it like any other commodity food product.

The demand for irradiated ground beef in schools is not very high and several states including Iowa have opted not to make it available to schools in their state. However, if a school district wants to use irradiated ground beef, it can purchase it from a local food service distribution company.

Although state agencies and school food service managers might be expected to be attracted to the extra margin of safety that irradiation would provide for its food, they also have costs to consider. "When you're talking about 16 cents a pound more for irradiated ground beef compared to non-irradiated, they can stretch their food dollars further," Henroid said. With costs as a factor and the reluctance of much of the public to embrace irradiation if they are not well informed about it, food service managers would face the prospect of educating their patrons.

"School food service managers generally did not feel like that they were knowledgeable enough to educate the general public," said Jason Ellis, an extension specialist in the hotel, restaurant, and institution management program at Iowa State and the study's co-author. Schools usually have some controversial issues to face at any given time.

"Why would school districts take on another controversial issue

to add to their already overburdened plate?" Henroid said. "That's the attitude I sense from some people. I think it may take a major outbreak in the schools, God forbid, for that to happen." Though the survey was conducted before the fall of 2004 when irradiated ground beef was available to school districts, Henroid believes that several main issues still must be addressed before irradiated foods are commonly found in schools.

"The demand for irradiated food must be greater," Henroid said. "The costs for irradiated food must be comparable to non-irradiated food. And interested people in the community outside of the school systems need to be more informed before we see more schools using irradiated foods."

UW Scientists Use Technology to Tackle Foodborne Illnesses

On its journey to your dinner plate, food is vulnerable to contamination along the way. Usually, it arrives at its final destination without picking up dangerous microbial hitchhikers — but not always. According to estimates from the US Centers for Disease Control and Prevention, foodborne pathogens account for 76 million illnesses, 325,000 hospitalizations and 5,000 deaths in the United States each year. As the food industry continues to globalize, food safety is expected to remain a significant public health issue.

In 2000, the University of Wisconsin-Madison, one member of the food safety team, now holds patents for two promising devices that harness cold plasma—a state of



matter similar to a chemically and electrically reactive gas—to kill foodborne pathogens. The innovative devices are particularly suited for eventual use in industrial settings, such as food-processing plants in Madison made a commitment to help tackle this complex problem by hiring an interdisciplinary group of researchers with expertise in food safety.

“Plasma technology is a very important process that is applied in industry. It can do many things, things that often conventional chemistry cannot,” said Frank Denes, associate professor of biological systems engineering in the College of Agricultural and Life Sciences. Denes designed and holds patents on the two devices through the Wisconsin Alumni Research Foundation (WARF).

Plasma is considered the fourth state of matter, along with the more familiar forms: solid, liquid and gas. In a nutshell, a plasma is a gas with free electrons whizzing about. The electrons, accelerated by an electric or electromagnetic field, collide with gas atoms and molecules, fragmenting them to create reactive species, such as ions, free radicals and other excited species.

“Plasma species interact with inorganic and organic materials and change their structure,” says Denes, who is also affiliated with the Food Research Institute, the Department of Food Science and the College of Engineering’s Center for Plasma-Aided Manufacturing.

When only a small fraction of the gas molecules are broken up into ions, or ionized, and the atomic and molecular species have low energies, it is called a cold plasma. By comparison, hot plasma is the stuff of stars—including the sun—and is characterized by a high degree of ionization and very high energy levels.

In the lab, cold plasma is generated by sending an electrical current through a gas. By adjusting the type of gas, the flow of the electrical current and other factors, cold plasma can be manipulated to perform a variety of practical functions, most involving the alteration of surfaces.

Cold plasma can be used to etch, oxidize, and deposit thin layers of macromolecular structures on surfaces, among other things. “Most of the plasma research is about surface chemistry,” explains Denes. Surface chemistry alteration also explains how cold plasma kills bacterial pathogens. As in any living cell, bacteria are enveloped by a protective outer layer that provides structural support and regulates the flow of nutrients and other molecules required for survival. “If you expose bacteria to plasma, you alter the surface of the bacteria and it kills them,” says Denes.

Although cold plasma technology has been used for various manufacturing processes, including microelectronics, since the fluorescent light bulb was designed in the 1930s, Denes’s cold plasma reactors

are the first to work at atmospheric pressure.

One device looks like a sandwich-sized block of white ceramic. One side features over 200 circles, arranged in a grid. Each circle houses an electrode, and when the reactor is on, they all work together to produce a constant and uniform flow of plasma. The reactor can be suspended, electrodes pointing downward, above any surface in need of disinfection, such as a moving conveyer belt. In collaboration with Amy Wong, a microbiologist at the Food Research Institute, Denes says they have found that the plasma treatments reduce some bacteria populations by a factor of 1,000 to 100,000.

The second device decontaminates water and other fluids. The device looks like a large glass jug that holds about 1 liter, fitted with specialized caps that house the electrical gadgetry needed to produce a plasma. As liquids swirl inside the reactor, cold plasma inactivates the contaminants. Wong found that within 20 seconds, the reactor inactivates high concentrations of bacteria, killing up to 100,000 colony-forming units per milliliter of liquid.

With their increased ease of use and effective disinfection capabilities, the new atmospheric-pressure cold plasma reactors may end up playing an important role in the delivery of safe food products to dinner plates around the world, Denes says.

INDUSTRY PRODUCTS



DuPont Qualicon

Strategic Alliance Yields New DuPont Qualicon BAX® System Q7

DuPont Qualicon is pleased to introduce the BAX® System Q7, a giant leap forward in pathogen detection designed to revolutionize food safety and quality testing. This next-generation BAX® system is the result of a strategic alliance formed earlier this year between DuPont Qualicon and Applied Biosystems Group, an Applera Corporation business.

BAX® Q7 combines the ease-of-use and superior performance of the current BAX® System with additional technologies from Applied Biosystems that result in a highly flexible PCR instrument and new assays that exploit the technology.

While totally compatible with current BAX® System assays, the new BAX® Q7 instrument can use both real-time and end-point detection methods. It has the ability to detect up to five different dyes used for probe-based detection, as well as intercalating dyes, allowing the use of the best chemistry to match the needs of the assay. It completes 40 cycles of PCR in less than two hours, leading

to faster results. And for the first time, food companies can use the same automated platform for both safety and quality testing.

"The BAX® Q7 is a major step-change in PCR detection systems," said Peter Mrozinski, business development manager for DuPont Qualicon. "Innovations in the new instrument will enable us to develop BAX® Q7 assays that provide new and meaningful information on food samples, such as presence and amount of multiple microbes in a single sample. This, in turn, will help food companies make informed business decisions at an earlier point in the process."

"The first instrument for our alliance with DuPont Qualicon incorporates Applied Biosystems' Real-Time PCR technology, already widely used in research laboratories and in other applications worldwide," said Mark P. Stevenson, president of the Applied Markets Division for Applied Biosystems.

DuPont Qualicon
302.695.2511
Wilmington, DE
www.qualicon.com

Valley Logistics Maximizes Freshness and Shelf Life of Produce with AirOcare

Valley Logistics, a storage facility for fresh produce, is reducing spoilage, ensuring freshness, and extending the shelf life of its customers' produce, since it installed AirOcare's patented air purification technology in its warehouse space. AirOcare has

air purification and sanitation systems for the agricultural, meat processing, grocery, and other related industries.

"Since we have installed the AirOcare system in our warehouses, our customers are reporting zero produce rejections from end retailers," says Jason Toney, general manager of Valley Logistics.

Valley Logistics warehouses lemons, avocados, blackberries, cucumbers, and bell peppers for weeks before shipping them to retailers across the US and Canada. The company recently installed AirOcare's air purification technology in all 12,000 sq. ft. of its storage space after one of its customers, the Harold Crawford Co., a grower in Bakersfield, CA, described the dramatic difference AirOcare can make in keeping produce fresh.

Now Valley Logistics is using AirOcare's technology to virtually eliminate the spread of mold and other airborne contaminants, which keeps its warehoused produce fresh for three to four weeks longer than previously possible. In fact, as an informal test, Valley Logistics has been storing one container of lemons for over two months without spoilage!

AirOcare's patented technology uses oxygen ions to sanitize ambient air, killing bacteria, fungi, viruses, molds, mildews, and other contaminants that spoil produce and cause unpleasant odors—without harming humans or the environment. AirOcare units can be customized to fit any cold storage facility, from warehouses, rail cars, and tractor trailers, to supermarket displays. The company now has over

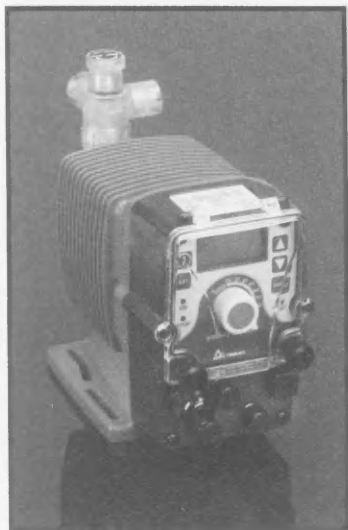
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INDUSTRY PRODUCTS

5,000 units deployed worldwide along the fresh food cold chain, in meat and food processing plants, grocery stores, and commercial office buildings.

AirOcare
301.231.5373
Rockville, MD
www.AirOcare.com



Walchem Corporation

Walchem Corp. Electronic Metering Pump in Control

Walchem Corporation highlights the control features and programmability of the EW Metering Pump Series with the Y Control Module. The EW Series pumps are solenoid-driven, diaphragm metering pumps with output capacities up to 6.7 GPH (25.4 L/H) and maximum pressures of 150 PSI (10 bar). An 8-bit microprocessor, LED digital display and keypad ensure accurate and reliable operation and programming. This design, combined with input

control signals, output relays, and a turndown ratio of 1800:1, makes the EW-Y pump adept in virtually any application.

The Y Control Module also has two output relays that can be configured to trigger on any of the six possible output indications. These can be used to operate a second pump, start a redundant pump, or provide the following indications: a need for service, a low level, an empty level, a loss of prime (using a PosiFlow sensor), a pump stop, an end-of-batch, and a pump operational. An integral feed verification system is possible with the Y Control Module and the signal from a PosiFlow sensor. All of the inputs and outputs interface with the pump via external connectors making for quick and easy connections.

Analog or digital signals can be used to control the pump for either proportional control or remote operation. The analog input can be programmed using two points to create a signal vs. SPM curve with any slope. Digital inputs are most often used for proportional control, but batching can also be accomplished with this signal utilizing the multiply feature (divide is also possible).

The EW Series metering pumps are covered with a complete 2-year warranty, including all liquid end components. The EW Series is another example of Walchem's commitment to bring its customers the best technology in metering pumps and analytical controls.

Walchem Corporation
508.429.1110
Holliston, MA
www.walchem.com

Systemate Numafa Introduces Eco Clean Master

Systemate Numafa now offers the Eco Clean Master (ECM) industrial cleaning system as an economical alternative for washing smaller quantities of crates.

The ECM can be used as a stand-alone system or can be combined with other modules including a pre-washing system, a main-washing system and an airblow drying system. Depending on specific needs, multiple modules can be linked together.

The system cleans up to 400 crates per hour. An economical, powerful and thorough cleaning system, the ECM is energy efficient, provides ease of cleaning and offers easy access to the machine. It also is designed to be adjusted easily to different types and sizes of crates.

With the exception of accessories, the ECM is completely stainless steel in construction. It is easily installed within any industrial setting.

Systemate Numafa
800.240.3770
Atlanta, GA
www.numafa.com

Jaccard's New SafeHands Mandolin Slicer Combines Versatility and Safety for Kitchen Work

Jaccard's latest product offers professional grade quality for specialty grating and slicing.

It could be called the safest kitchen mandolin on the market today — and one that is as versatile as it is safe. Jaccard has introduced the new SafeHands Mandolin Slicer for use in the home or in professional kitchen.

Be sure to mention, "I read about it in Food Protection Trends"!

INDUSTRY PRODUCTS

ens. The sure grip handle and the SafeHands food holder not only protect hands and fingers but also provides a great gripping handle for ease and speed. The SafeHands food holder makes it virtually impossible for finger to slip off and be injured. The design of the SafeHands Mandolin takes advantage of the downward and forward motion during the slicing operation to keep hands and fingers safe while providing professional quality slicing of foods.

The Jaccard Mandolin comes equipped with seven easily interchangeable blades, including: a razor sharp straight blade; 4mm, 6mm, 10mm julienne blades; a serrated blade for crinkle and waffle cuts; and fine and medium grater blades. The blades simply slip in and click securely in place. The mandolin's slicing ramp can even be adjusted to produce slices at varying thicknesses.

The solid, stainless steel unit has non-slip foldout legs that lock into position for stability. The Jaccard SafeHands Mandolin folds away compactly and the blades can be easily and conveniently stored in a slotted case for protection. Both the unit and the blades are dishwasher safe.

Jaccard
716.825.3814
Buffalo, NY
www.jaccard.com

FDA Gives Proteus Industries Green Light on Fat-Blocking and Moisture Retention Poultry Proteins

Proteus Industries' poultry proteins have been deemed "generally regarded as safe" (GRAS) by the Food and Drug Administration for fat blocking and moisture retention applications, the company announced.

The notice allows Proteus to begin using the protein in production, subject to USDA labeling rulings.

Proteus has developed a unique, patented protein application process that decreases fat absorption and improves the quality of meat, poultry, fish and other foods while extending the food's shelf life and reducing bacteria. The all-natural protein application increases both the moisture and protein content of fish and meat. The multiple benefits have recently drawn considerable interest from both the food and health science industries.

"We are very pleased with the FDA GRAS Notice. This is a huge step forward for Proteus Industries and we anticipate great success with the use of the poultry protein product," said Proteus Industries founder and chief scientist Stephen D. Kelleher.

Products containing the protein application are currently being used in food service programs throughout the country.

Proteus Industries
978.675.9140
Gloucester, MA
www.proteusindustries.com

Eagle's LIFESTOR® Sanitary Utility Carts Feature Microgard® Protection

Introducing LIFESTOR® utility carts from Eagle Foodservice Equipment, featuring high-strength polymer shelf panels with MICROGARD® protection. MICROGARD® provides protection against a broad range of bacteria, mold and mildew that can cause stains, odors and product degradation. The antimicrobial protection never washes out — even with repeated dishwasher-cleaning of the polymer shelf sections.

With heavy-duty posts featuring a choice of either non-corrosive stainless steel or EAGLEbrite® zinc with clear epoxy coating, these utility carts provide the ultimate in corrosion-free storage and transport of heavy loads. Easy to assemble by one operator without the use of tools, the carts feature four 5" heavy-duty swivel casters — two with brakes — for easy mobility.

LIFESTOR® utility carts feature three-tier shelving, and are offered with a choice of solid polymer shelving sections, or louvered shelving with ventilation slots to facilitate air circulation. The shelves can be removed effortlessly for dishwasher cleaning or for adjusting shelf height — all without disassembling the cart. Carts stand approximately 40 inches high, and are available in four standard sizes ranging from 18 × 36 inches to 23 × 48 inches. Custom configurations are also available on request.

Eagle's Foodservice Equipment
800.441.8440
Clayton, DE
www.eaglegrp.com

Rust-Oleum Introduces Thermakrete™ – Extreme Concrete Flooring Protection for Harsh Industrial Environments

Rust-Oleum's new ThermaKrete Urethane Concrete Coating provides extreme protection for concrete in the harshest industrial environments. Ideal for the Food and Beverage Industry where concrete floors are subjected to dramatic temperature fluctuations or thermal shock, ThermaKrete seamlessly expands and contracts to resist cracking.

Be sure to mention, "I read about it in *Food Protection Trends*!"

INDUSTRY PRODUCTS

The smooth, long-lasting flooring surface provided by the Rust-Oleum ThermaKrete coating ensures the safety of facility employees. It also provides durability for heavy traffic, resists bacteria contamination and decreases maintenance costs. Available in 3/16" or 1/4", this thick flooring armor shields against thermal shock with temperature fluctuations from -10°F to 240°F. ThermaKrete withstands caustic washdowns, heavy traffic, high impact, abrasion, chemicals and standing water contamination.

Easy to mix and use, ThermaKrete can be applied on an entire facility floor, or for patch repairs, with limited prep time and easy application, minimal downtime and long life. Each 3-component kit cures quickly (in less than 72 hours), even in cold conditions, and requires no primer or sealers. Only routine cleaning is necessary. Rust-Oleum's ThermaKrete reduces overall costs by reducing the largest cost of any flooring application — the labor to apply the coating.

Safe for food and beverage facilities and employees, ThermaKrete is VOC compliant — water-based, solvent-free and low odor. It can be used in USDA facilities based on FSIS Directive 11,000.4 (Rev. 1).

ThermaKrete Concrete Floor Coating from Rust-Oleum is recommended for extreme conditions of

flooring for food, beverage, meat processing, cold storage and heavy industrial manufacturing areas.

Rust-Oleum Corporation

847.367.7700

Vernon Hills, IL

www.rustoleum.com



Jenco International, Inc.

New Series BC Upright Compound Microscopes!

Jenco International has introduced their new BC Series Upright Compound Microscopes. This new series is specifically designed for the demanding research environment.

The modern frame provides enhanced stability for high quality photomicroscopy. The ergonomic single hand focus/stage controls increase workflow while minimizing fatigue.

The true Kohler Illumination features a field diaphragm and a 20 watt, 6 volt halogen bulb with an electronic dimmer.

The BC Series offers binocular and trinocular models with bright field plan, phase plan, phase achromatic and infinity optics.

Supplied as standard are four objectives: 4x, 10x, 40x R and 100x R (oil) and two 10x wide field eyepieces. Other objectives and eyepieces are available.

The large mechanical stage (209 mm x 140 mm) facilitates specimen handling. The robust all metal gear train mechanism will endure years of usage.

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Foundation Fund was established
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"To provide food safety professionals worldwide with a forum
to exchange information on protecting the food supply."



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Advancing Food Safety Worldwide®

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Fax: 515.276.8655
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It is the goal of the Association to grow the Foundation
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- Exhibit Hall Admittance
- Cheese and Wine Reception
- Exhibit Hall Reception (Mon.-Tues.)
- Program and Abstract Book

4 EASY WAYS TO REGISTER

Complete the Attendee Registration Form and submit it to the International Association for Food Protection by:



Online: www.foodprotection.org



Fax: 515.276.8655



Mail: 6200 Aurora Avenue, Suite 200W
Des Moines, IA 50322-2864, USA



Phone: 800.369.6337; 515.276.3344

The early registration deadline is July 12, 2006. After this date, late registration fees are in effect.

REFUND/CANCELLATION POLICY

Registration fees, less a \$50 administration fee and any applicable bank charges, will be refunded for written cancellations received by July 28, 2006. No refunds will be made after July 28, 2006; however, the registration may be transferred to a colleague with written notification. Refunds will be processed after August 23, 2006. Event and tour tickets purchased are nonrefundable.

EXHIBIT HOURS

Sunday, August 13, 2006	7:00 p.m. – 9:00 p.m.
Monday, August 14, 2006	9:30 a.m. – 6:30 p.m.
Tuesday, August 15, 2006	9:30 a.m. – 6:00 p.m.

DAYTIME EVENTS – Lunch included

Saturday, August 12, 2006	8:00 a.m. – 5:00 p.m.
The Best of Lake Louise and Banff	
Sunday, August 13, 2006	10:00 a.m. – 4:00 p.m.
The Complete Calgary Tour	
Monday, August 14, 2006	8:00 a.m. – 4:00 p.m.
Drumheller and the Badlands	
Tuesday, August 15, 2006	10:00 a.m. – 1:30 p.m.
ArtWalk (Lunch not included)	
Wednesday, August 16, 2006	9:45 a.m. – 2:00 p.m.
Yoga and Cooking Class	

EVENING EVENTS

Sunday, August 13, 2006	
Opening Session	6:00 p.m. – 7:00 p.m.
Cheese and Wine Reception	7:00 p.m. – 9:00 p.m.
<i>Sponsored by Kraft Foods North America</i>	
Monday, August 14, 2006	
Exhibit Hall Reception	5:00 p.m. – 6:30 p.m.
<i>Sponsored by DuPont Qualicon</i>	
Tuesday, August 15, 2006	
Exhibit Hall Reception	5:00 p.m. – 6:00 p.m.
<i>NEW – IAFP Foundation Fundraisers</i>	
Murder Mystery Dinner at the Deane House	6:30 p.m. – 10:00 p.m.
Dinner at The Rancho	6:30 p.m. – 10:00 p.m.
Wednesday, August 16, 2006	
Awards Banquet Reception	6:00 p.m. – 7:00 p.m.
Awards Banquet	7:00 p.m. – 9:30 p.m.

POST MEETING ACTIVITY

Outdoor Adventure in Kananaskis	8:30 a.m. – 2:30 p.m.
---------------------------------	-----------------------

GOLF TOURNAMENT

Saturday, August 12, 2006	
Golf Tournament at The Links of GlenEagles	7:30 a.m. – 4:00 p.m.

HOTEL INFORMATION

Hotel reservations can be made online at www.foodprotection.org.





IAFP 2006 Registration Form



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

IAFP occasionally provides Attendees' addresses (excluding phone and E-mail) to vendors and exhibitors supplying products and services for the food safety industry. If you prefer NOT to be included in these lists, please check the box.

PAYMENT MUST BE RECEIVED BY JULY 12, 2006 TO AVOID LATE REGISTRATION FEES

REGISTRATION FEES:	MEMBERS	NONMEMBERS	TOTAL
Registration	\$ 395 (\$ 445 late)	\$ 597 (\$647 late)	_____
Association Student Member	\$ 80 (\$ 90 late)	Not Available	_____
Retired Association Member	\$ 80 (\$ 90 late)	Not Available	_____
One Day Registration* <input type="checkbox"/> Mon. <input type="checkbox"/> Tues. <input type="checkbox"/> Wed.	\$ 215 (\$ 240 late)	\$ 330 (\$355 late)	_____
Spouse/Companion* (Name): _____	\$ 55 (\$ 55 late)	\$ 55 (\$ 55 late)	_____
Children 15 & Over* (Names): _____	\$ 25 (\$ 25 late)	\$ 25 (\$ 25 late)	_____
Children 14 & Under* (Names): _____	FREE	FREE	_____
*Awards Banquet not included			
Additional Awards Banquet Ticket (Wednesday, 8/16)	\$ 50 (\$ 60 late)	\$ 50 (\$ 60 late)	_____
NEW IAFP FOUNDATION FUNDRAISERS:		# OF TICKETS	
Tuesday, 8/15			
Murder Mystery Dinner at the Deane House	\$ 130 (\$140 late)	_____	_____
Dinner at The Rancho	\$ 145 (\$155 late)	_____	_____
DAYTIME EVENTS - Lunch included			
Golf Tournament (Saturday, 8/12)	\$ 135 (\$145 late)	_____	_____
The Best of Lake Louise and Banff (Saturday, 8/12)	\$ 130 (\$140 late)	_____	_____
The Complete Calgary Tour (Sunday, 8/13)	\$ 105 (\$115 late)	_____	_____
Drumheller and the Badlands (Monday, 8/14)	\$ 115 (\$125 late)	_____	_____
Art Walk - Lunch not included (Tuesday, 8/15)	\$ 42 (\$ 52 late)	_____	_____
Yoga and Cooking Class (Wednesday, 8/16)	\$ 90 (\$100 late)	_____	_____
Outdoor Adventure in Kananaskis (Thursday, 8/17)	\$ 82 (\$ 92 late)	_____	_____
Optional: Select one activity per person	Qty.		
<input type="checkbox"/> Biking \$ 93 (\$103 late)	_____		
<input type="checkbox"/> Canoe Ride \$ 56 (\$ 66 late)	_____		
<input type="checkbox"/> Hiking \$ 51 (\$ 61 late)	_____		
<input type="checkbox"/> Horseback Riding \$ 57 (\$ 67 late)	_____		
<input type="checkbox"/> Rafting \$ 61 (\$ 71 late)	_____		

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COMING EVENTS

MARCH

- **1, HACCP Advantage Expo 2006**, Ontario Ministry of Agriculture, Food and Rural Affairs, Guelph, Ontario, Canada. For more information, contact Cynthia Menyhart 519.826.4744; E-mail: cynthia.menyhart@omafra.gov.on.ca.
- **8-10, Food Safety World Conference and Expo**, Washington, D.C. For more information, go to www.foodsafetyworldexpo.com.
- **14-16, HACCP Short Course for Dairy Processing Operations**, Cornell University, Dept. of Food Science and International Dairy Foods Association (IDFA), Wyndham Syracuse Hotel, Syracuse, NY. For more information, contact Steve Murphy at 607.255.2893; E-mail: scm4@cornell.edu.
- **16-18, International Conference on Women and Infectious Diseases: Progress in Science and Action**, Atlanta Marriott Marquis Hotel, Atlanta, GA. For more information, contact Sakina Jaffer at 404.371.5308; E-mail: smjl@cdc.com.
- **16-19, IAFIS 2006 Conference**, Sawgrass Marriott Resort, Ponte Vedra Beach, FL. For more information, go to www.iafis.org.
- **19-22, Annual Conference of the Association for General and Applied Microbiology**, Jena, Germany. For more information, call 49.(0)3641.65.66.42; E-mail: vaam@conventus.de.
- **20-22, Food Extrusion Training Course**, St. Etienne, France. For more information, call 32.(0)1620.4035; E-mail: hilde.keunen@scisoceurope.org.

- **21-22, Product Development: Planning for Longevity in the Marketplace**, Orlando, FL. For more information, call 32.(0)1620.4035; E-mail: hilde.keunen@scisoceurope.org.
- **22-24, Food Safety Summit**, Mandalay Bay Convention Center, Las Vegas, NV. For more information, call 800.746.9646 go to www.foodsafetysummit.com.
- **26-29, Food Microbiology Research Conference XX 2006**, Radisson Hotel Northbrook, Northbrook, IL. For more information, call 847.298.2525 or go to www.radisson.com.fmrc.

APRIL

- **7-12, Conference for Food Protection**, Hyatt on Capitol Square, Columbus, OH. For more information, contact Trevor Hayes at 408.848.2255; E-mail: TWHgilroy@starband.net.
- **12-13, ISO 22000 Food Safety Management System Internal Auditor**, Mississauga, Ontario, Canada. For more information, call Canadian Standards Association at 800.463.6727; E-mail: seminars@csa.ca.
- **28, Tenth Annual Symposium on Industrial and Fermentation Microbiology**, Radisson Center, LaCrosse, WI. For more information, contact Dr. S. N. Rajagopal at 608.785.6976; E-mail: rajagopa.s@uwlax.edu.

MAY

- **9-12, ABB Automation World Users Conference**, Hilton Americas, Houston, TX. For more information, contact Marcia Zemanek at 440.585.6830; E-mail: marcia.zemnek@us.abb.com.

- **12-14, Interbake China 2006**, Guangzhou International Convention & Exhibition Center, Guangzhou, China. For more information, go to www.faircanton.com.
- **22-25, 3-A Sanitary Standards, Inc. 2006 Annual Meeting**, Milwaukee, WI. For more information, go to www.3-a.org.

JULY

- **3-6, SFAM Summer Conference — "Living Together" Polymicrobial Communities**, Apex International Hotel, Edinburgh, United Kingdom. For more information, E-mail: meetings@sfam.org.uk; or go to www.sfam.org.uk.
- **14-21, XXVI International Workshop/Symposium on Rapid Methods and Automation in Microbiology**, Manhattan, KS. For more information, contact Daniel Y.C. Fung at 785.532.1208; E-mail: dfung@ksu.edu.

IAFP UPCOMING MEETINGS

AUGUST 13-16, 2006
Calgary, Alberta, Canada

JULY 8-11, 2007
Lake Buena Vista, Florida

AUGUST 3-6, 2008
Columbus, Ohio

CAREER SERVICES SECTION

CAREER SERVICES SECTION

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Send your job ads to Donna Bahun at dbahun@foodprotection.org or to the Association office: 6200 Aurora Ave., Suite 200W, Des Moines, IA 50322-2864; Phone: 800.369.6337; 515.276.3344; Fax: 515.276.8655.



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LOCATION: SALINAS, CALIFORNIA.

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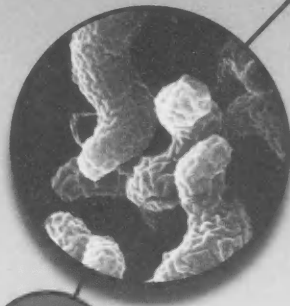
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