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Periodicals

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# Food Protection Trends

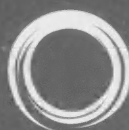
**Science and News** from the International Association for Food Protection

Assuring the Safety of Not-Ready-to-Eat  
(NRTE) Products

Cooking Food Safely with Microwave Ovens



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VOLUME 29, NO. 2

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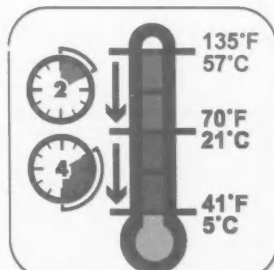
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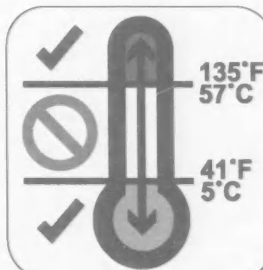
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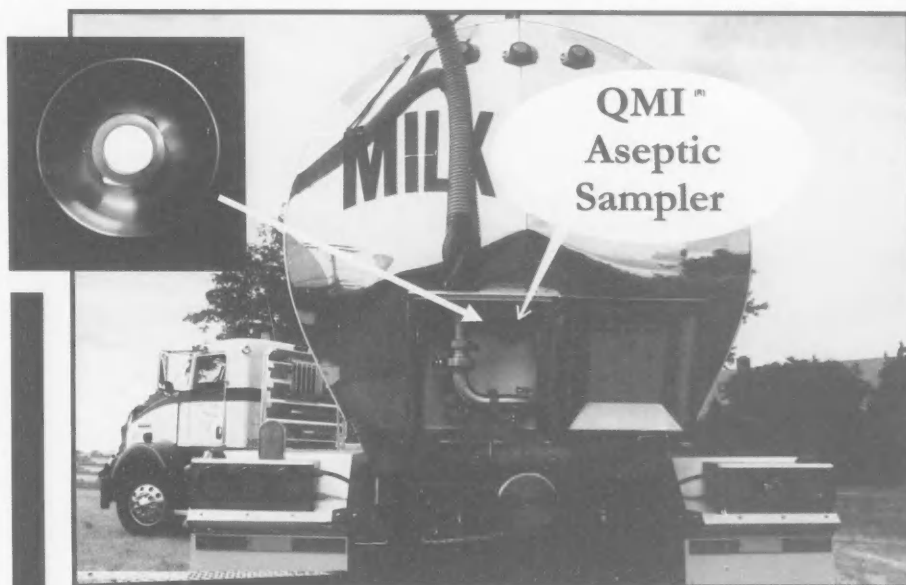
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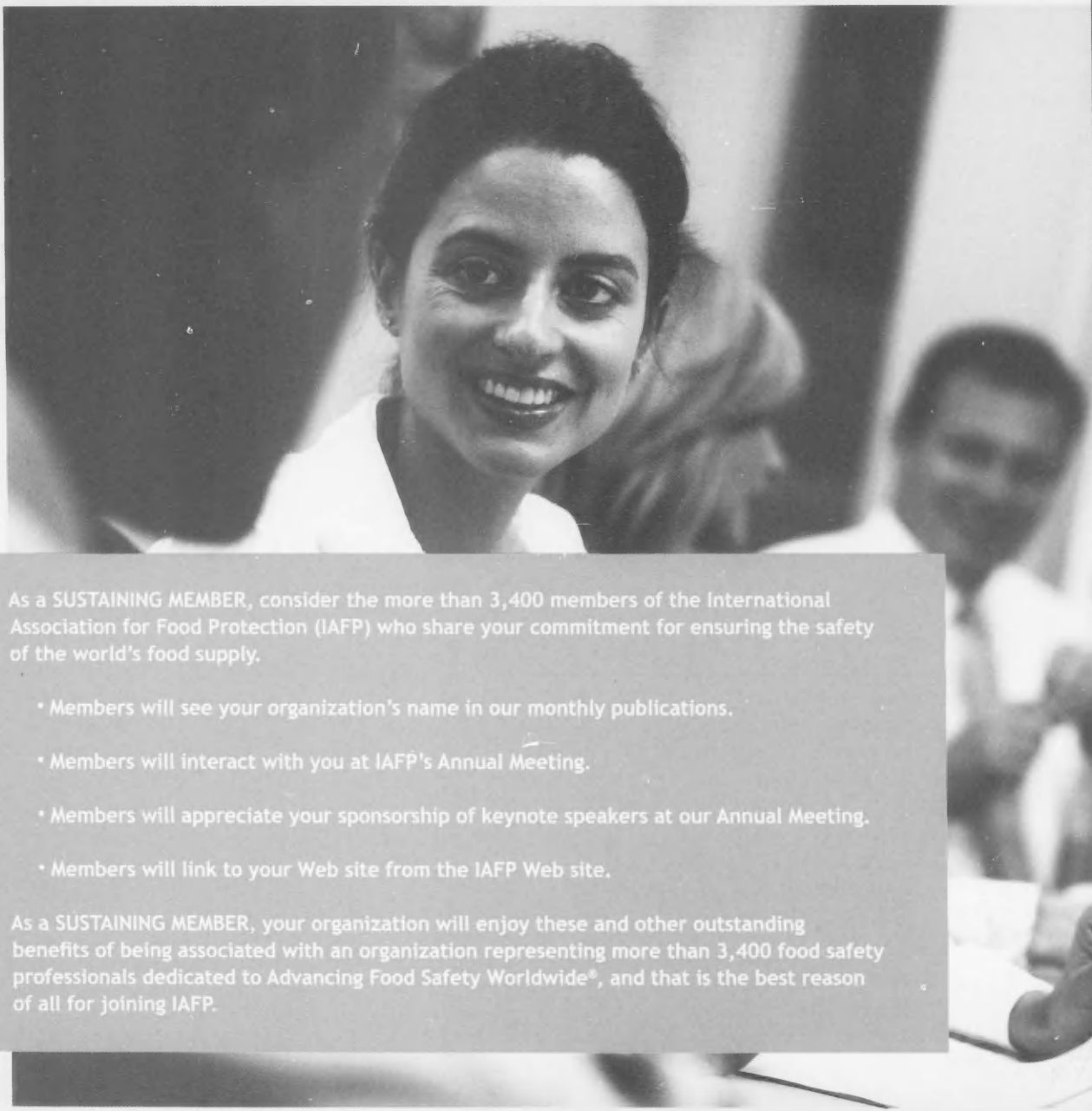


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Rochester, NY; www.wegmans.com

**WTI, Inc.**, Jefferson, GA; www.wtiinc.com

## "PERSPECTIVES" FROM YOUR PRESIDENT

There are many reasons for attending industry-related meetings and joining organizations such as the International Association for Food Protection (IAFP). Participation in organized groups allows us to benefit by learning from the experiences of others, continuing our education through participation in seminars or workshops, and keeping abreast of developments or trends in our industry. Another key reason for involvement with organizations is for networking opportunities. In these times of economic instability, which has resulted in many companies downsizing and many employees being dismissed, networking has never been more important.

Networking is consistently cited as the number one way to get a new job. It has been suggested that 80% of the jobs available never get advertised. This is how you find them and get them! The folks who do the hiring would much rather talk to someone who has been recommended by someone they already employ. It is easier for them because they have your first reference, and it saves them considerable effort in advertising the position and sorting through all the resumes and phone calls.

What is networking? Networking is the art of building alliances, of getting to know people and having people get to know you. It is not contacting everyone you know when you are looking for a new job and asking if they know of any job openings. Networking starts long before a job search, and you probably don't even realize you are doing it. Ultimately, your accomplishments and personality will define you, but there are things that you can consciously do to affect your "brand" or other people's perception of you.



By **STAN BAILEY**  
PRESIDENT

***"Networking is  
the art of building  
alliances, of getting  
to know people  
and having people  
get to know you"***

As you begin to network, it is important to understand who you are and other people's perception of you and to recognize that you can influence this perception. Robin Fisher Roffer, author of *Make a Name for Yourself*, suggests eight steps to help women (should work equally well for men) develop and project their own brands.

1. Identify the primary "product" (service, resource, special ability, etc.) you have to offer others.

2. Identify your core values. What really matters to you?
3. Identify your passions. What things or ideas do you love?
4. Identify your talents. What have you always been recognized for (particularly as a kid)? What do you do better than most other people? What skills do people seem to notice in you?
5. From your hopefully long list of talents and qualities, choose the top five, the ones you do best and enjoy doing the most.
6. Weave the items on all your lists into a statement of your specialty. What are you particularly gifted at delivering?
7. Write a paragraph emphasizing your specialty and your five key talents, weaving in your most important values, passions and skills.
8. Now add a tag line to your brand.

A tag line's shorthand helps other people remember a key point about you and having someone not only remember you, but what is unique about you, is the key to establishing yourself within a network. Once you have developed your tag line it is time to take you and your brand public. Keeping them secret is a sure way to never act on them. The road to career disappointment is littered with lists, dreams and goals never shared with anyone. So get your "brand me" musings out into the light of day. Creating and building your unique brand is an ongoing process. Consider yourself and your career a work in progress, and reach out to get and give as much help as possible as your brand shifts and matures across the expanse of your career.

How does all this advice about networking and building your own brand affect you and me as food microbiologists? I have been actively working in the area of food safety for over 35 years and have had the fortune to know and work with some of the best microbiologists and food scientists in the world. Many of my colleagues have served as mentors and provided advice that has helped to shape me and my career. I believe that two pieces of advice that I received influenced my career more than anything else.

My major professor for my Ph.D. told me something the first day that I talked to him that I have never forgotten and which I think has played a key role in my career and the success that I have had. What he told me relates very much to the discussion above about "establishing your brand". The advice was to find one or two areas where I could establish a reputation for myself as an

expert so that when people thought about this area they would think of me.

I am sure that many of you remember the first professional meeting you attended and like me, you were probably overwhelmed. You met so many new people, many of whom you were familiar with, whether by having read about them or having read their papers. When I was just starting to attend professional meetings, I often traveled with a colleague who was a few years older than I and seemed to know everyone. I asked him how he could know so many people and he told me that he always made a point of introducing himself and then when he got home he would write a short letter (now we would probably use email) to the person telling them it was nice to meet them and a short comment about something they had talked about. By doing this, the person receiving the letter would have to recall whom it was who had sent the letter, and the next

time they met they would be more likely to remember.

Clearly, networking is important whether it is to help us be more effective in our current jobs or when seeking new employment. As food safety professionals, I can think of no better place to network than the International Association for Food Protection. IAFF has about 3,400 food safety professional members from over 60 countries, and each year 1,800 or more of these attend the Annual Meeting. In addition to over 500 technical presentations or posters there are many other opportunities provided at IAFF Annual Meetings where you can network with your colleagues, including 16 Professional Development Groups.

I invite you to join IAFF and meet us in Grapevine, Texas, July 12-15, 2009 for IAFF 2009, the Association's 96th Annual Meeting. I welcome your comments or feedback. Please email me at [stan.bailey@na.biomerieux.com](mailto:stan.bailey@na.biomerieux.com).

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

**The Samuel J. Crumbine Consumer Protection Award for Excellence in Food Protection at the Local Level is seeking submissions for its 2009 program.** Achievement is measured by:

- Sustained improvements and excellence, as documented by specific outcomes and achievements, over the preceding four to six years, as evidenced by continual improvements in the basic components of a comprehensive program;
- 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 participating in forums that foster communication and information exchange among the 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, International Association for Food Protection, National Association of County & City Health Officials, National Environmental Health Association, National Restaurant Association Solutions, NSF International and Underwriters Laboratories, Inc.

For more information on the Crumbine Award program, please go to [www.fpi.org](http://www.fpi.org) or call the Foodservice Packaging Institute at (703) 538-2800. **Deadline for entries is March 13, 2009.**



## “COMMENTARY” FROM THE EXECUTIVE DIRECTOR

This month, we have reached a milestone in IAFP's history. We have now 100 companies and organizations that support IAFP through the Sustaining Membership program! This is no small feat as just four years ago, we only had 67 Sustaining Members; so in that time, we have seen a 50% increase. In addition, we increased our Gold Sustaining Members from three up to seventeen in the same time period.

When you review the listings on page 65 to 67 you will notice numerous companies and organizations who lead food safety efforts around the world. There are many companies operating globally that recognize the difference that IAFP is making by providing food safety information for their personnel in several differing countries. We have also seen a number of companies from outside of North America join IAFP in the Sustaining Member program.

What does this mean for IAFP? It means a lot! The Sustaining Member program provides support, not only to IAFP, but also to our Foundation and the Speaker Travel Support program. Each Sustaining Member's annual dues are split among the three different funding mechanisms. Some portion goes to the IAFP Foundation, a second segment funds our Speaker Travel Support program and the remainder helps the general operations of IAFP.

The Speaker Travel Support program provides funding to offset travel expense for selected speakers who otherwise might not be able



By DAVID W. THARP, CAE  
EXECUTIVE DIRECTOR

***“The leadership  
provided by  
IAFP’s Sustaining  
Members  
is priceless”***

to be with us to present their much needed information. In the eight years this program has been in existence, more than \$75,000 has been expended for more than 140 speakers. This would not be possible without the support of our Sustaining Members!

The IAFP Foundation has also benefitted from the increase in Sustaining Members through

additional funds received. Over the years, the Foundation has now grown to a fund balance of just more than \$600,000. There have been a number of larger contributions over these years, but by and large, the Sustaining Members have been the steady force continuing to provide funding for the many Foundation projects. Those include the Ivan Parkin Lecture and the John H. Silliker Lecture (both at IAFP's Annual Meeting), IAFP's Audiovisual Library of training materials, the Developing Scientists Competition and our Student Travel Scholarships.

I have told all the wonderful things that Sustaining Members do for IAFP, but what about benefits provided to IAFP's Sustaining Members? IAFP provides publicity for our Sustaining Members by printing the company or organization name in each issue of *Food Protection Trends* and the *Journal of Food Protection* along with an online listing linked directly to the company's or organization's Web site. There are also discounts available to those Sustaining Members who exhibit with IAFP at the Annual Meeting. For those companies and organizations who do not regularly exhibit with IAFP, the Board approved doubling the allotted number of Members at each Sustaining Member level, thus providing additional benefits for our supporters.

We are proud of the fine companies and organizations that support IAFP through the Sustaining Membership program. The leadership provided by IAFP's Sustaining Members is priceless. If



your company or organization is not currently an IAFP Sustaining Member, we invite you to consider this option today. Please contact me or anyone at our office for program details. We would be delighted to include your company or organization in our Sustaining Member list.

One last item I want to call your attention to is IAFP's Timely Topics Symposium titled, "Raw Milk Consumption: An Emerging Public Health Threat?" This symposium is designed to look at the scientific basis for not consuming raw milk and how it is directly affecting

public health in North America. Program and registration information is available at the IAFP Web site. We hope you will be with us in Crystal City, Virginia (Washington, D.C.) area on February 17 for an enlightening day of presentations!



International Association for  
**Food Protection®**

**PRESENTS**

**RAW MILK CONSUMPTION:  
AN EMERGING PUBLIC HEALTH THREAT?**

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# Assuring the Safety of Not-Ready-to-Eat (NRTE) Products: Industry Guidelines for Validation of Consumer Cooking Instructions

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## SUMMARY

Not-ready-to-eat (NRTE) prepared food products typically contain one or more components that are uncooked or only partially cooked. Consequently, the ultimate safety of these products depends on their being cooked by the consumer prior to consumption. It is the obligation of the food processor to assure that the cooking instructions provided to the consumer on the label of these products are adequate for their intended purpose.

In recent years, a number of cases of foodborne illness associated with such products have brought increased recognition within the industry about the importance of the cooking instructions provided with these products and growing concern by regulatory agencies about their adequacy. A proactive industry initiative has led to the development and dissemination of substantive guidelines that will help processors validate the safety of their products when their cooking instructions are properly followed by consumers. This guidance document does not dictate exactly how validation must be performed; rather, it discusses the wide range of factors, especially for microwave ovens, that should be considered when validation testing is performed. Broad industry adoption and adherence to the guideline recommendations should help assure the adequacy of labeled cooking instructions for NRTE products and the ongoing safety of this category of convenience foods.

A peer-reviewed article

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## INTRODUCTION

Consumers today enjoy a vast selection of convenient and nutritious foods that can be quickly prepared in the home by consumers. While some ready-to-eat (RTE) meals, entrées and snacks can be safely eaten in the form in which they are purchased, other foods, classified as not-ready-to-eat (NRTE) products, must be cooked by consumers before they are consumed. It is the obligation of the food processor to ensure that the consumer knows that cooking, rather than just heating or warming for palatability, is necessary for these products and that the cooking instructions provided to the consumer are adequate for their intended purpose.

In recent years a number of cases of foodborne illness associated with NRTE products have brought increased recognition by industry of the importance of the cooking instructions for these products and a growing concern by the regulatory agencies about their adequacy (2, 6, 7, 8, 9, 14). A proactive industry initiative by the Grocery Manufacturers Association (GMA) has led to substantive guidelines that will aid processors in validating that the cooking instructions on the label, when properly followed by consumers, will result in safe products. This article highlights GMA's "Guidelines for Validation of Consumer Cooking Instructions for Not-Ready-to-Eat (NRTE) Products" ("the guidelines" or "the guidance document," hereafter) that were finalized in July 2008 (5). The guidance document discusses the wide range of factors, especially for microwave ovens, that should be taken into account when validation testing is performed. Topics addressed in the guidelines include Purpose and Scope; Determining Appropriate Lethality Requirements; Type of Validation Required; Number of Samples to Test; Factors Affecting the Validation Test, including Product and Package Factors and Type of Cooking Device (Microwave Ovens, Conventional and Toaster Ovens, Fryers, Stovetops). For microwave ovens, information is provided on the following subjects: Microwave Oven Wattage, Rotation of Product, Magnetron Power Output, Number of Units Being Cooked at One Time, Cold Spot Determination and Heating Uniformity in Product, Temperature Determination, and Labeling Products for Microwave Cooking. The guidelines also cover Evaluating the Results of the valida-

tion tests. Broad industry adoption and adherence to the guideline recommendations should help assure the continued safety of this category of convenient food products.

Cooking for safety is required for NRTE foods because these products typically contain at least one ingredient for which the processor cannot ensure the elimination of vegetative pathogens, such as *Listeria monocytogenes* and *Salmonella*, during their manufacture. Many NRTE products contain an RTE (or fully cooked) meat or poultry component combined with one or more other ingredients that are uncooked or only partially cooked and that therefore have not received heat treatment adequate to eliminate vegetative pathogens.

Although these NRTE products are not subject to specific lethality requirements as are many RTE products, USDA's Food Safety and Inspection Service (FSIS) has certain explicit expectations for these products, including validation of the cooking instructions provided on product labels (12, 13). The Food and Drug Administration (FDA) currently has no regulations or written policies that specifically address the NRTE products that fall under its jurisdiction. However, FDA fully expects NRTE products to be safe. Manufacturer validation of cooking instructions is a key step in ensuring that products prepared by the consumer according to the manufacturer's preparation instructions are safe to eat.

After several foodborne illness outbreaks linked to undercooked frozen, raw breaded poultry products, FSIS in late 2006 issued a notice (12) instructing NRTE food processors to validate the cooking instructions they provide to consumers. Regulatory interest in these and similar frozen products intensified during the summer of 2007 when frozen NRTE products, such as pot pies and pizzas made with RTE meat or poultry components, were implicated in foodborne illness outbreaks.

Even before the illness outbreaks of 2006 and 2007, GMA had recognized that a protocol for the validation of consumer cooking instructions for NRTE foods would facilitate industry efforts to ensure the adequacy of those instructions and could lessen the potential for new and possibly restrictive regulations for these products. As a result, GMA staff, with valuable assistance from the GMA Consumer Cooking Instruction Valida-

tion Task Force, developed guidance on this issue. For the guidance document to reflect input from, and be relevant to, the broadest audience possible, drafts were circulated to allied trade associations, as well as to FSIS and FDA, for review and comment.

## OVERVIEW OF THE GUIDELINES

These guidelines are intended for manufacturers of FSIS- and FDA-regulated retail NRTE products that, by definition, require a pathogen lethality treatment (cooking) by consumers before being consumed. They are not intended for RTE products that are simply heated or warmed for palatability.

The guidelines recommend that all labeled cooking instructions should be validated to confirm and document that they will provide adequate lethality to destroy any pathogenic organisms of concern that might be present. Cooking instructions should be reassessed and revised if necessary when product or packaging design changes are made that may adversely impact any of the conditions originally validated.

Rather than exhaustively detailing how validation testing should be performed for all methods of preparation and all types of NRTE products, these guidelines highlight the many issues that manufacturers should consider when conducting validation studies. The guidelines emphasize that cooking instruction validation can be performed in many different ways. Thus, it is very important to note that the guidelines are not intended to set a standard that limits or restricts industry's ability to employ other science-based validation methodologies.

These guidelines apply to both frozen and refrigerated NRTE products; however, it is appropriate to note that to date food safety problems for this category of foods have consistently involved frozen products. Consequently, frozen NRTE products, especially those bearing microwave cooking instructions, can be expected to be a focal point for attention by the regulatory agencies.

It is recognized that validation testing based on worst case scenarios for every conceivable variable that could be encountered in cooking NRTE products represents a situation that is highly unlikely to occur in the home. Furthermore, it would almost certainly result in overcooked and

unpalatable finished products that would not be commercially viable. Thus, the guidelines stress that it is up to manufacturers to fully consider all the variables mentioned in the document and then assure that validation testing adequately addresses those variables most meaningful to achieving the required lethality for their products.

### Validation strategies

There are at least two strategies for conducting cooking instruction validation studies. The simplest way to determine that the cooking instructions provide adequate lethality is to identify a target time/temperature combination that has been scientifically determined to be adequate to eliminate the appropriate level of the pathogen of concern (see lethality requirements) and to confirm that the test product reaches the target time/temperature after it has been cooked following the directions on the label. If the target time/temperature associated with the required lethality for the product is attained, then the instructions are validated.

Alternatively, microbiological inactivation studies may be a desirable or necessary cooking instruction validation strategy. The purpose of these studies is to determine whether pathogen(s) of concern intentionally introduced into the product to be tested are inactivated when the product is cooked according to the instructions. Microbial inactivation studies may be most appropriate for those products with a higher risk of microbial contamination (for example, products containing NRTE meat or poultry) or in cases where validation testing of product temperatures alone has shown that the target temperature has not been achieved consistently or has demonstrated wide variability. Additional recommendations on inactivation studies are included in the guidelines (5), as are references to other sources of information (10) pertinent to validation studies.

Justification for the log reduction targeted for microbiological inactivation should be provided. In the absence of regulatory guidelines, a 5-log reduction of the pathogen of concern (often *Salmonella*) has generally been acceptable for most products. Nevertheless, under some circumstances more modest reductions may be scientifically justified as adequate for public health protection. The guidelines suggest that consultation with the relevant

regulatory agency may help manufacturers to anticipate the amount and type of data needed to demonstrate that the selected parameters provide adequate lethality for appropriate pathogens.

### Lethality requirements

Before beginning a validation study, it will be necessary to determine the target lethality value for the specific NRTE product. The guidelines review the various sources of lethality information upon which validation testing can be based, including regulatory guidance, published scientific papers, and product-specific microbiological inactivation studies.

Safe harbor times and temperatures are available for certain products in regulations and/or in regulatory guidance documents such as FDA's Model Food Code (15) and FSIS' Appendix A: Compliance guidelines for meeting lethality performance standards for certain meat and poultry products (11). Many studies published in peer-reviewed scientific journals provide times and temperatures for cooking products to eliminate target pathogens or provide data on the heat resistance of pathogens expressed as D- and z-values. Summary information on such time-temperature recommendations or on heating values that can be used to determine time-temperature combinations adequate to destroy specific pathogens of concern may be obtained from the scientific literature (3, 4). When literature values do not adequately address product parameters, it may be necessary to develop information on the heat resistance of specific pathogens in specific food products.

The target lethality may be different for NRTE products containing NRTE meat or poultry components versus those containing RTE meat or poultry components along with some other uncooked ingredients. In some cases, a lower target lethality may be justified for a product containing RTE meat or poultry because of the types and numbers of pathogens to be inactivated. Lower target lethalties may also be supportable for manufacturers that elect to implement incoming ingredient controls and/or environmental and in-process microbiological control programs. Under these circumstances, firms must continually document adherence to these specified conditions and must be prepared to demonstrate their scientific adequacy if questioned by regulatory agencies.

### Importance of sanitary operating conditions

The guidelines emphasize that failure to control sanitary conditions within NRTE manufacturing establishments can adversely affect the adequacy of otherwise properly validated cooking instructions. Instructions validated to inactivate a specified number of organisms will be inadequate if sanitary conditions within the processing facility allow contamination with pathogens or growth of pathogens to numbers greater than those considered during validation testing. Thus, it is important to assure that the target lethality selected for validation testing takes into consideration the sanitary conditions in the plant. Then, on an ongoing basis, manufacturers must assure that proper attention is paid to sanitation, including verification that sanitary conditions are being maintained.

### Number of samples to test

The Task Force determined that while it would be convenient to set a minimum number of samples that should be tested in a validation study, there is simply too much variation in the range of products and their heating characteristics to permit this. Rather, the guidelines stress that the number of samples to be tested should be sufficient to provide reasonable assurance that the cooking instructions, if followed, will result in a safe product. This number will depend on the food and the method of heating, with fewer replicates needed for methods that provide more uniform heating. The number of samples tested must be sufficient to capture the variability in product heating and determine which factors are most responsible for this variability. More samples are recommended for products with greater variability in key parameters (for example, a product with non-uniform sized pieces of NRTE meat). In addition, the guidelines recommend that multiple (e.g., three separate) lots of product be tested to account for variability among lots.

### Factors affecting the validation test

A variety of product factors can affect the validity of cooking instructions, and all factors pertinent to the cooking method should be accounted for in the

validation study. The details of the validation study depend upon the method of cooking and the product. In many cases, it may be appropriate to consult a statistician to assure that the study fully considers all variables that might significantly affect the adequacy of the final temperature achieved throughout the product during the cooking process.

Each product type (including composition, size, shape, components, distribution, or package configuration) should be tested, unless worst-case conditions can be logically applied to cover multiple product variables. In general, testing should be performed with heavier samples in the lot or with maximum-sized pieces (e.g., ones that exceed the product specification by 1/8" in all dimensions).

The initial temperature of tested product should be the lowest expected at the time of preparation in a typical consumer's home. Thus, frozen products, unless they bear clear instructions that thawing is required prior to cooking, should be in their frozen state (0°F - 10°F) when testing begins.

### Type of cooking device

Cooking directions are often provided to the consumer for a variety of cooking devices, such as microwave ovens, conventional or toaster ovens, and stovetops. Because of the fundamental differences in the way foods heat (i.e., the kinetics of heat transfer) in the various cooking devices, especially in microwave ovens, and the impact of the number of units being cooked at a time, the type of cooking device will certainly affect the design of the validation study. The guidelines provide specific information on validation testing for conventional and toaster ovens, fryers, and stovetops. However, validation testing for microwave ovens warrants the greatest attention in the guidelines.

### Factors to consider for microwave ovens

Products bearing microwave cooking instructions are of particular concern, since non-uniform heating of foods in microwave ovens has been implicated as a key factor in undercooked food products resulting in a number of cases of salmonellosis (7, 8, 9). This non-uniform heating leads to cold spots in the product, which may allow the survival of pathogens such as *Salmonella* potentially present in components of NRTE foods. The guidelines cite microwave oven wattage,

rotation of product, magnetron power output, number of units cooked at one time, cold spot determination and heating uniformity in product as key factors to be considered during validation of microwave cooking instructions.

Determination of the wattage for each oven used is a fundamental step in validation studies involving microwave ovens. In general, cooking instructions should be validated using a number of ovens that span the range of wattages commonly used by consumers. However, validation studies for microwave cooking instructions can be conducted in several different ways, including running tests with the lowest wattage oven only; conducting tests with a range of consumer microwave oven wattages; and performing tests with the most common wattage used by consumers (~1100 watts). Each method is addressed in the guidelines.

The guidelines cover many additional factors to be considered. Ideally, units that do and do not have certain features, such as carousels to rotate product during cooking, should be included in the tests. Any directions provided for manual rotation of the product during cooking should be based on validated test results. Manufacturers should consider the need to provide appropriate instructions on products for which they could reasonably expect consumers to microwave multiple units simultaneously. Examples are provided of various approaches manufacturers can take during validation testing to account for the fact that as the microwave magnetron heats up, the amount of power it generates for cooking decreases (as much as 20% in some cases).

Another critical matter addressed in the guidelines is cold spot determination and product heating uniformity. To assure the safety of NRTE foods cooked in a microwave oven, it is necessary to determine that all portions of the product have reached a given temperature for a minimum period of time adequate for the appropriate log reduction of the pathogen(s) of concern. As previously noted, gaining this assurance can be particularly challenging for foods cooked in microwave ovens because of the likelihood of non-uniform heating. Thermal imaging may be useful in identifying cold spots, as well as hot spots. For safety assurance, the product temperature may need to be measured in multiple places in each sample to detect a cold spot. The importance of proper

calibration of temperature measuring devices used in the validation study is noted in the guidelines.

### Clarity of instructions

In addition to the critical importance of validating the cooking times and/or temperatures, it is also very important that cooking instructions are written so the consumer can easily follow them. One way to help ensure this is to have a method for consumers to provide feedback, and to monitor this feedback for any indication that the cooking instructions are hard to understand or difficult to use, or that when they were followed, the product was still cold or otherwise not well cooked. Such feedback should be used to review the adequacy/clarity of the cooking instructions. The guidelines acknowledge the value of including visual or other cues, where appropriate, with cooking instructions, especially those for microwave ovens, to help consumers recognize when a product has not been adequately cooked for safety and therefore may require additional cooking time. Examples of such cues could include a statement within the instructions informing the consumer that if the bottom of the tray is cold after the prescribed cooking time, then the product should be cooked for additional increments of time until the tray is warm or hot, or a statement to the effect that when the product is properly cooked, it will be steaming.

Although this document deals with the scientific basis for cooking instruction validation, the importance of human factors in cooking instruction communication should not be overlooked. It is critical that the instructions provided to the consumer are clear, complete and well designed. For this reason, this guidance document also refers readers to a complementary document that addresses labeling issues relevant to NRTE food products. This document, "Recommended Guidelines for the Labeling of Microwave Cooking Instructions," was developed by an American Frozen Food Institute working group (1).

The guidelines also contain a table of recommended cooking time and temperatures for various products. In addition, an appendix of generic cooking instruction validation examples is included, along with some approaches to interpretation of results that were provided by GMA members based on their validation protocols. The examples include some approaches



that may not follow all elements of the validation guidelines, but are nonetheless effective for their intended purpose.

These guidelines have been widely distributed and are available at [http://www.gmabrands.com/publications/121894\\_1.pdf](http://www.gmabrands.com/publications/121894_1.pdf). Broad industry adoption and adherence to the guideline recommendations should help assure the continued safety of this category of convenient food products.

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# Cooking Food Safely with Microwave Ovens: Challenges for the Food Industry

JOHN T. ALLAN

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## SUMMARY

Microwave ovens have become ubiquitous in home kitchens across the United States, with over 90 percent of homes having at least one unit. Microwave use is so widespread that it is almost a standard practice for manufacturers to place microwave cooking instructions on their product packaging. In the past two decades, advancements in food formulation, processing and packaging have greatly improved the quality and convenience and widened the selection of microwavable foods available to consumers; however, the microwavable food industry still faces the challenge of ensuring that consumers properly cook not ready-to-eat (NRTE) foods to reduce the risk of undercooked, potentially hazardous food being consumed. In the past year, several important steps have been taken by the industry to help address these challenges, including the development of voluntary industry guidelines on both effective labeling and validation of microwave cooking instructions, and there is yet more progress to be made over the coming years.

## INTRODUCTION

As one can clearly see by walking through the refrigerated and frozen food aisles in any grocery store today, "convenience is king," and one can find a wide variety of choices on display—packaged and microwave-ready. Despite a strong safety record, frozen and refrigerated microwavable foods have had problems associated with cooking instructions over the past few decades. Many in the ready-to-eat (RTE) food industry are likely aware that packaged food is not necessarily pathogen-free and that cooking instructions and safety precautions are provided on these foods for good reason. However, not all consumers know this, and the tools they have at their disposal to help them cook foods properly—their microwave oven and the labeled cooking instructions on the food—may not always work together to meet this objective.

## THE MICROWAVE COOKING DILEMMA

Unlike RTE food products, which are safe to consume in the form in which they are purchased by consumers (e.g., fully-cooked sandwich meats, cured meats, and canned food), not ready-to-eat (NRTE) products (e.g., frozen dinners and raw meat/poultry) often require further cooking by consumers to ensure safety, as they may contain raw or partially-cooked ingredients that could potentially contain pathogens. Most NRTE frozen or refrigerated foods sold

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at retail today are labeled with cooking instructions for both conventional appliances and microwave ovens; therefore, it is important that these instructions are accurate, validated, and understandable. Consumers should be able to follow them easily enough to ensure that the product is cooked sufficiently.

Most conventional cooking methods ensure constant application of heat to foods and are relatively reliable, predictable and easily performed. Microwave cooking, on the other hand, may be more variable, and oven performance can differ within and between brands. It is important for consumers, food product developers, marketing personnel and others involved in the microwavable food industry to understand the factors affecting the cooking performance of microwave ovens. Factors such as the presence/absence of a turntable, the size of the oven cavity, the shape, size and consistency of the food being cooked, and the container holding the food can all affect microwave oven cooking performance.

Microwave cooking variables and the challenges associated with cooking different foods in a particular oven to achieve the right temperature and quality often lead consumers to rely on trial and error. Consumers often look for visual cues that the food is ready to eat (browning, bubbling, boiling, steaming, etc.) and may not rely solely on the label instructions for obtaining the perfectly cooked meal. Some follow the instructions exactly and then consume or serve the product without looking for any confirmation that the food was actually cooked thoroughly. Inherently, the opportunity exists to enhance the consumer's microwave-cooking experience while considering the practical constraints and real-world realities of food processors and microwave manufacturers.

## INDUSTRY RESPONSE

The American Frozen Food Institute (AFFI), the trade association representing the US frozen food industry, is leading the effort to improve consumer understanding concerning proper microwave cooking. Last year, AFFI developed a consumer-friendly brochure containing information on how microwave ovens work, microwave cooking safety, and use of a microwave oven for defrosting

foods (1). Additionally, AFFI established and led a working group that developed recommended guidelines for the labeling of foods with microwave cooking instructions (2). The guidelines serve as a useful tool for food processors in designing product packaging cooking instructions. The Grocery Manufacturers Association (GMA) developed guidelines for validating cooking instructions for microwave and conventional cooking methods (3). These guideline documents are being utilized by members of the industry to help ensure that cooking instructions for microwavable foods are both clear and effective.

The *Recommended Guidelines for the Labeling of Microwave Cooking Instructions*, produced under AFFI's leadership, was created to help food manufacturers develop clear and concise cooking information for consumers. Several examples of messages that should be considered for use on labels—singly or in combination—are provided. These messages are divided into two categories—*Cooking Statements*, which relate directly to cooking instructions, and *Supportive Statements*, which provide additional information or advice to consumers.

### Examples of cooking statements

- "For food safety, cook thoroughly to X°F (internal temperature)."
- "Follow these COOKING instructions carefully." OR, if "food safety" is not mentioned prior to this—"For food safety, follow these COOKING instructions carefully."
- "After the standing time, use a food thermometer to check temperature."

### Examples of supportive statements

- "Stand(ing) time is important for safety and quality." (Can be used as a footnote to a standing time in the instructions.)
- "Check for cold spots and continue cooking, if needed."
- Principal display panel call-outs to be used singly or in combination, as appropriate:
- "Cook thoroughly"

- "Contains raw/uncooked ingredients"
- "Not ready to eat. Cook thoroughly"

Additionally, a section on visual cues is included, which suggests cues to aid consumers in determining if a food is cooked thoroughly or not. Because the power range of home microwaves varies (from < 600 watts to > 1100 watts), and because many consumers may not know the stated wattage of their microwaves—much less the actual wattage being delivered—the inclusion of visual cues to enhance cooking adequacy can be helpful in minimizing the likelihood that undercooked NRTE food products will be consumed.

### Examples of cues for fully-cooked product

- Entrée should be steaming hot when removed from microwave
- Caution: The top crust of adequately cooked entrees will be brown
- Cook until bubbling

### Examples of cues for under-cooked product

- Caution: If bottom of dish is cold after cooking, additional heating is required
- Caution: Stir the meat and sauce before serving; if clumps remain, additional cooking is required

The food industry understands that consumer education and clear and validated food labeling can go only so far in preventing improper cooking of foods. Microwave ovens themselves need to be labeled and designed in such a way that consumers can easily determine the wattage of their particular oven and be able to accurately follow the instructions on any given food product, using the control options provided on the oven. To this end, AFFI plans to work with retailers and manufacturers of microwave ovens to improve the overall consistency in design among the various microwave ovens on the market, especially in relation to wattage labeling. Other design modifications will be considered that may help consumers. For the millions of microwave ovens currently in consum-

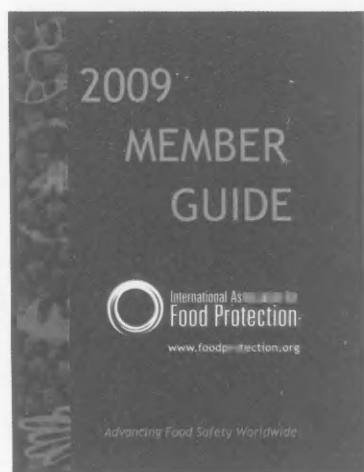
ers' homes, AFFI is working to develop a Web site ([www.microwaveovenfacts.com](http://www.microwaveovenfacts.com)) where consumers can find links to locate the wattages of their oven as well as to locate information regarding microwave cooking and food safety.

Clearly, microwave cooking has come a long way in the past thirty years, and there will no doubt be many innovative improvements in the next thirty. Consumers will continue to look for convenience and quality when choosing frozen or refrigerated products and will continue to expect that safety is "built-in."

It is crucial that food processors, microwave manufacturers, retailers and other stakeholders continue to work together to meet those expectations. AFFI will continue to work with and for the industry to build on the achievements discussed here, and to make microwave cooking easier, safer and more reliable than ever.

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# SPECIAL INTEREST SERIES

## Newly Developed Workshop Series on "Molecular Methods in Food Microbiology"

*Prepared by*

KENDRA NIGHTINGALE,<sup>1\*</sup> SARITA RAENGPRADUB,<sup>2</sup> MARK CARTER<sup>2</sup>  
and MARTIN WIEDMANN<sup>3</sup>

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Colorado State University, Cornell University, and the Silliker Food Science Center have partnered to offer a new series of workshops on nucleic acid-based detection and molecular subtyping methods to characterize foodborne pathogens and spoilage organisms. Unlike many other food microbiology workshops, this new workshop series focuses exclusively on nucleic acid-based approaches to food microbiology and does not cover antibody-based and other rapid methods. To assure that this new workshop covers topics relevant to food industry and regulatory agencies, a workshop advisory committee has been assembled to provide guidance on workshop topics. Members of the advisory committee include Tim Freier (Director, Global Food Safety Technologies, Cargill); Paul Hall (Food Safety Consultant); Randy Huffman (Chief Food Safety Officer, Maple Leaf Foods); Keith Lampel (Microbiology Division, U.S. Food and Drug Administration); Jennifer Lee (Principle Scientist, PepsiCo); Mark Moorman (Senior Director, Food Safety and Chemistry, Kellogg Company); Theo Morille-Hinds (Associate Program Director of Global M & FS, Kraft Foods); Bob Reinhard (Director Food Safety, Sara Lee Food and Beverage); Jenny Scott (Vice President of Science Policy, Food Protection; Grocery Manufacturers Association); and Les Smoot (Director, Nestle Quality Assurance Center).

The first workshop in this new series was held at Colorado State University in Fort Collins, June 23-27, 2008. This workshop was co-organized and co-instructed by Martin Wiedmann, Kendra Nightingale, Mark Carter and Sarita Raengpradub. Attendees

included 16 food industry professionals, five individuals from academic institutions, five scientists from government or public health laboratories, and two representatives of industry trade organizations. The workshop provided in-depth training on nucleic acid-based methods to detect and identify foodborne pathogens and spoilage organisms and was structured to include a one-and-a-half day symposium, which was followed by a three-day, hands-on laboratory session.

Kendra Nightingale initiated the first day of the symposium by delivering a lecture on the fundamentals of molecular biology (i.e., nucleic acids, DNA replication, transcription, translation) and their application to molecular detection. Martin Wiedmann described concepts of microbial taxonomy and implications for molecular detection. Sarita Raengpradub lectured on the fundamentals of polymerase-chain reaction (PCR) and described variations of PCR (i.e., multiplex PCR, nested PCR, real-time PCR and reverse transcriptase PCR). The first day of the symposium concluded with an opening reception and banquet, sponsored by Applied Biosystems, with a keynote address delivered by Keith Lampel, who covered current issues and future challenges pertaining to the application of molecular approaches to track and control foodborne pathogens in the United States food supply.

Mark Carter initiated the second day of the symposium leading a discussion on considerations regarding the steps before nucleic acid-based detection (e.g., sample processing and enrichment) and the assay validation process. Dr. Wiedmann then provided an overview on

evaluating the "ins and outs" of commercially available molecular detection systems, which set the stage for representatives from Applied Biosystems, Bio-Rad, DuPont Qualicon, and Idaho Technologies, who described the technology behind their molecular detection assays. The remainder of the second day of the symposium was composed of several interactive discussions and activities, including a question and answer session with company representatives and instructors on selection of an appropriate molecular detection system, considerations for application of molecular detection systems, and a presentation of case studies that focused on troubleshooting and correct interpretation of results. Dr. Nightingale described the fundamentals of primer/probe design, which was followed by a hands-on primer design activity. That evening, workshop participants and instructors took a trip to Estes Park, CO to enjoy a scenic drive through Roosevelt National Forest, followed by dinner set in the Rocky Mountains.

One of the major objectives of the hands-on laboratory session was to guide participants through the process of designing a custom PCR assay. The first day of the laboratory session began with an introduction to DNA sequence databases followed by a one-on-one activity where instructors assisted participants to identify a suitable target for development of a custom PCR assay. Participants designed and ordered primers for their custom assay, which were received on the second day of the workshop. Instructors assisted participants with developing protocols (i.e., master mix formulations and thermal cycling conditions) for their individually designed PCR assays. Participants set up and ran custom PCR reactions followed by analysis of PCR products, including a troubleshooting discussion session led by Dr. Wiedmann.

In addition to designing their own PCR assays, participants also used an established PCR protocol to amplify a *Listeria*-specific gene, followed by analysis

and purification of PCR products and submission of purified PCR products for DNA sequencing. Instructors showed participants how to analyze their sequence results using DNA software analysis tools in order to identify the *Listeria* spp. whose product was amplified by PCR. Furthermore, participants set-up reactions and analyzed unknown samples using the commercially available BAX® *Listeria monocytogenes* detection system and the TaqMan® PCR assay to detect *Escherichia coli* O157:H7. The laboratory session also included extensive discussion sessions on interpretation of results from commercially available molecular detection systems, including how to deal with scenarios where atypical results, such as intermediate positives and shifted peaks resulting from the melt-curve analysis. At the end of the workshop, all participants were given opportunities for one-on-one discussions with instructors to address specific issues of interest.

This workshop will be offered at Colorado State University annually with rotating topics. Specifically, the 2009 workshop, which will be held August 3-7, will focus on nucleic acid-based sub-typing and characterization of food-associated microorganisms. In addition, this new workshop series will be offered at international venues. The first international "Molecular Methods in Food Microbiology Symposium and Workshop Series" will take place at Mahidol University in Bangkok, Thailand, March 30-April 3, 2009, and will focus on nucleic acid-based detection of foodborne pathogens and spoilage organisms. Please contact Kendra Nightingale (kendra.nightingale@colostate.edu) or visit our webpage (<http://ansci.colostate.edu/content/view/701/105/>) for additional information on upcoming workshops.

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## 2009-2010 *Secretary Election*

**T**he following page contains biographical information for the 2009-2010 Secretary Candidates. This information is provided to help you make your selection of the next IAFP Secretary.

Members with valid E-mail addresses will receive election notices and a unique personal identification number via E-mail from IAFP's election service provider. Members without E-mail addresses, or invalid E-mail addresses, will be sent their unique personal identification number via postal service. Voting will take place on a Web site hosted by Survey & Ballot Systems (SBS), an independent, external organization who is conducting the IAFP election. Safeguards are in place to insure each Member votes only once.

The election Web site will be open from January 28 to March 17. Election results will be reported directly from SBS to the IAFP Teller who will report directly to President Stan Bailey. Watch for the election results on the IAFP Web site in April and also in the April *IAFP Report* and 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; 515.276.3344 or E-mail [dtharp@foodprotection.org](mailto:dtharp@foodprotection.org).



MARK A. MOORMAN



KATHERINE M.J. SWANSON



## DR. MARK A. MOORMAN

Battle Creek, Michigan

**D**r. Mark A. Moorman is the Senior Director of Food Safety and Food Chemistry for Kellogg Company located in Battle Creek, Michigan, with responsibilities for the safety of the global portfolio of Kellogg products. His responsibilities involve leading teams developing food safety and chemistry programs and providing technical expertise.

Dr. Moorman has 20 years of industry experience in microbiology and food safety. Beginning his career as a chemistry supervisor at Silliker Laboratories in Illinois, he was responsible for developing a microbial metabolites laboratory that analyzed food and ingredient samples for the presence of bacterial or fungal metabolites and/or toxins. Subsequent positions as laboratory director in California and then technical director in Illinois afforded many opportunities to investigate microbiological quality and safety of foods in a wide range of industries. In these positions, Dr. Moorman learned the importance of laboratory quality programs and the science of analytical testing. Through investigative and auditing work as technical director, he learned the breadth of quality and safety programs needed to assure safe and wholesome foods. After nearly 10 years at Silliker Laboratories, Dr. Moorman had the privilege to join Kellogg Company as a manager of microbiology.

Throughout his career, Dr. Moorman has provided scientific leadership by developing programs that prevent hazards in foods including allergens and pathogenic microorganisms. Dr. Moorman has been active serving in leadership roles in technical associations serving the food industry and their consumers. Dr. Moorman is a member of the Board of Directors for Food Allergy Research and Resource Program (FARRP) and is a frequent speaker at their food industry workshops, serves on the International Life Sciences (ILSI) Food Microbiology Committee and serves as Chairman of the Grocery Manufacturers Association (GMA) Microbiological Safety Committee. He is also past Chairman of the American Frozen Foods Institute (AFFI) Microbiology Committee.

Since 1994, Dr. Moorman has been a proud and active member of IAFP and has served as Chairman of the Food Hygiene and Sanitation Professional Development Group (PDG) and worked to form and ultimately serve as Chairman of the Food Chemical Hazards and Food Allergy PDG.

Dr. Moorman earned his undergraduate degree in Microbiology and his M.S. and Ph.D. degrees in Food Science from Michigan State University. He had the honor of receiving the 2006 Outstanding Alumni Award from the Department of Food Science and Human Nutrition at Michigan State University.

Rarely does a career materialize without the gift of wise counsel, support and friendship of individuals willing to turn back and lend a hand to the next generation. For the past 15 years, Dr. Moorman has had the honor of being mentored by Dr. John Silliker, a pioneer in the field of food microbiology. The IAFP Board provides the venue for Dr. Moorman to support the association, its membership and offer a hand to the next generation of food safety professionals.

## DR. KATHERINE M.J. SWANSON

St. Paul, Minnesota

**D**r. Katherine M.J. Swanson is Vice President of Food Safety at Ecolab Inc., where she identifies control strategies for emerging food safety concerns and assists customers with high level food safety issues. Prior to joining Ecolab in 2004, Dr. Swanson was Director of Global Product Safety at General Mills, responsible for microbiology, thermal process, toxicology, food allergen, and non-food premium support worldwide. As Director of Microbiology & Food Safety for The Pillsbury Company, Dr. Swanson restaged their world-class HACCP program to meet regulatory requirements around the world. She also developed food allergen training for R&D and operations, managed electronic specification systems, oversaw food quality audits, and developed corporate product quality management systems. Earlier in her Pillsbury career, Dr. Swanson conducted microbiological research on fresh and frozen vegetables, bakery products, canned foods, fish, and pizza. Prior to joining Pillsbury, Dr. Swanson was a senior microbiologist at 3M, where she developed food applications for innovative microbiological test methods. She was also an Assistant Professor of Food Microbiology at Cornell University.

With a long history of appointments on influential committees, Dr. Swanson has made significant contributions to food safety. She is a member of the International Commission on Microbiological Specifications for Foods (ICMSF), and chairs their editorial committee. As a seven-year member of the National Advisory Committee on Microbiological Criteria for Foods (NACMCF), Dr. Swanson contributed to reports on HACCP principles, Redefinition of Pasteurization, Safety-Based Shelf-Life Labeling, Fresh Produce, Sprouted Seeds, Evaluation of NSF Standard 75, Codex Pasteurized Milk Products, and others. Dr. Swanson is a Fellow of the Institute of Food Technologists (IFT) and completed a three-year term on the IFT Board of Directors in 2008. She served on the IFT Panel that addressed redefinition of Potentially Hazardous Foods, which shaped changes in the Food Code. Dr. Swanson also served on the Food and Drug Administration's Science Advisory Board, the Conference for Food Protection's Council III, and currently serves on the National Academy of Science's Standing Committee for the Review of Food Safety and Defense Risk Assessments, Analyses, and Data. Dr. Swanson has published and presented on food safety management, microbial ecology of vegetable and cereal products, norovirus, *Bacillus cereus*, and *Listeria monocytogenes*, and in the last five years alone has delivered over 50 invited presentations around the world.

Since joining in 1980, Dr. Swanson has enthusiastically served IAFP. She was on the *Journal of Food Protection* Editorial Board for eleven years (1988-99) and the *Food Protection Trends* Editorial Board for three years (2005-07). She was also an active member of the Organizing Committee for the very successful 2008 IAFP Latin America Symposium on Food Safety held in Campinas, Brazil. Dr. Swanson was a past jury member for the Black Pearl Award and has presented numerous papers at IAFP Annual Meetings.

Dr. Swanson received her B.S. degree in Dietetics from the University of Delaware, and her M.S. and Ph.D. degrees in Food Science from the University of Minnesota. She has received numerous awards, including the 2003 NFPA (now GMA) Food Safety Award and the 2008 National Center for Food Safety and Technology Food Safety Award.

## ABSTRACTS

Lisbon, Portugal  
19-21 November 2008

### OPENING SESSION: Food Safety in the European Union

#### Key Note Lecture: Food Safety in Portugal

Laurentina Pedroso, Faculty of Veterinary Medicine, Universidade Lusófona de Humanidades e Tecnologias, Av. do Campo Grande, 376, 1749-024 Lisboa, Portugal

Zoonoses are diseases or infections that are transmissible from animals to humans. The infection can be caused by the direct contact from animals, or due to the ingestion of contaminated food which can occur at many different stages of the food chain farm-to-fork; thus, it may be controlled in different ways and at various stages of the chain. The diseases caused through consumption of contaminated foodstuffs may result in a wide range of symptoms, depending on the pathogenic agent which also determines the severity of the consequences which range from mild symptoms to death. The regulatory framework for monitoring and controlling foodborne diseases is described in EU legislation Directive 2003/99/EC. Since 2005, the Animal Diseases Transmissible to Humans (Zoonoses) Unit of the European Food Safety Authority, in collaboration with the European Centre for Disease Prevention and Control (ECDC), has been entrusted to prepare yearly summary reports on trends and sources of zoonoses, zoonotic agents, antimicrobial resistance, and foodborne outbreaks in the European Union, which is validated by Member States and published by EFSA. According to Directive 2003/99/EC the Member States should report annually on a mandatory basis, the results on the monitoring of Brucellosis, Campylobacteriosis, Echinococcosis, Listeriosis, Salmonellosis, Trichinellosis, Tuberculosis, Verotoxigenic *Escherichia coli* and antimicrobial resistance; on a mandatory basis the results of epidemiological investigations of foodborne outbreaks, and, according to the epidemiological situation, the results on monitoring of viral, parasitic and bacterial zoonoses. The last available report was published in December 2007, and includes the most recent data available, from year 2006. In 2006, twenty-four Member States submitted information on the occurrence of zoonoses, zoonotic agents, antimicrobial resistance and foodborne outbreaks. Further information on zoonoses cases in humans was acquired from the ECDC. The information available covers 17 diseases.

The EFSA-ECDC last annual report on zoonoses indicates that these diseases affect over 350,000 people in the European Union every year in the Member States that provide information. *Campylobacter* is still the most frequently reported animal infection transmissible to humans. Over 175,000 people in the EU suffered from *Campylobacter* infections in 2006 (46 cases per 100,000 people). There were no reports of human Campylobacteriosis from Portugal. Resistance of *Campylobacter* bacteria to ciprofloxacin, in both humans and animal, is of increasing concern in the EU and some studies suggest that this may also be the case in Portugal. Salmonellosis remains the second most frequently reported human zoonotic disease across the EU with 160,649 people infected in 2006 (35 cases per 100,000). The number of confirmed human Salmonellosis reported in Portugal were 387 which corresponds to 3.7 cases per 100,000 people, a number considerably lower than the average in the other EU Member States; this may be due to underreporting of cases. *Salmonella* Enteritidis and *Salmonella* Typhimurium were the most frequently reported agents. The number of human listeriosis cases was up by 8.6% in the EU, from 1,427 cases in 2005 to 1,583 in 2006. No confirmed cases of human listeriosis were reported from Portugal.

Portugal has a human population of around 10 million people but every year, as one of the main tourism destinations in Europe, receives more than double its population in visitors. This may have implications in human health with cases being acquired in one country and reported as imported cases in another country. The Health Protection Scotland in a 2008 surveillance report presented information on the surveillance system with information on outbreaks of infectious intestinal disease believed to have been acquired abroad. In 2007, information was circulated concerning 73 reported outbreaks of infectious intestinal disease in persons returning to Scotland from abroad. Turkey was the most frequently reported country, associated with 13 outbreaks, Tunisia was associated with 10 outbreaks, and Portugal was linked to four outbreaks. These 73 outbreaks were an increase of five (7%) over 2006 when 68 overseas outbreaks were reported.

The general causes for outbreaks in Portugal are similar to the reported in other EU countries and are mainly associated with deficiencies in food preparation, cooling and reheating, and food handling leading to cross contamination. Training the people that handle food is a major but important task that should lead to a decrease in the incidence of foodborne disease.

The data provided by Portugal according to EU legislation framework, Directive 2003/99/EC, for monitoring and controlling foodborne diseases in the EU may be underestimates due to problems arising from limitation in the connection and communication among the many agencies that are important in terms of food safety and regulatory controls. In Portugal the Food and Economic Safety Authority (ASAE), a criminal police institution, is the national administrative authority overseeing food safety. The Health Authorities (DGS) are also involved as they license industrial establishments, including drawing up of plans regarding installation or alteration projects. It is also their responsibility to intervene in the licensing of restaurants (or similar outlets) and other food supply establishments, assure conditions of health and hygiene, and perform sanitary surveillance of the quality of water for human consumption and its bottling. The DGS intervenes directly at the level of evaluation of National Guides to Good Hygiene Practices and at the level of labelling and control of pesticide residues, nitrites, patulin, and others. The National Veterinary Authority (DGV) is involved in animal sites, concerning controls at the level of animal production and slaughtering among others.

It is possible that, as in Europe, the cases of foodborne diseases in Portugal are under-reported. Efforts during the last years on both, compliance with the EU legislation on Hygiene and Safety improved the general knowledge about these matters among the persons who handle food and the consumers. Efforts and investments by the industry (including the tourism industry) regarding the issues concerning installations, equipment and training in food hygiene may also result in a continuous improvement of the safety of the food we produce and eat in Portugal.

### Food Safety in the European Union: Trends in Foodborne Pathogens

FRANK BOELAERT, European Food Safety Authority, Largo N. Palli 5/A, I-43100 Parma, Italy

The European Community system for monitoring and collection of information on zoonotic agents in foodstuffs and animals is based on the Zoonoses Directive 2003/99/EC, which obligates the European Union (EU) Member States to collect relevant and where applicable comparable data of zoonoses, zoonotic agents, antimicrobial resistance and foodborne outbreaks. The Member States (MSs) transmit to the European Commission, every year, a report covering the data collected. The European Food Safety Authority (EFSA) is assigned the tasks of examining the data collected and publishing the Community Summary Report. This Report is prepared in collaboration with the European Centre for Disease Prevention and Control (ECDC) and EFSA's Zoonoses Collaboration Centre (ZCC, in the Technical University of Denmark).

Another system for collecting zoonoses data at the Community level is the EU-wide baseline surveys, which concept has only recently been launched in accordance with Directive 2003/99/EC. The European Commission coordinates these surveys and the Decision/Regulation laying down the fully harmonised survey protocols oblige all MSs to conduct the surveys. The duration of the surveys is typically one year, and the results are analysed by EFSA. So far, baseline surveys have been performed for *Salmonella* in poultry and pig populations, and the ongoing and forthcoming surveys concern *Salmonella*, *Campylobacter* and *Listeria monocytogenes* in foods as well as methicillin-resistant *S. aureus* (MRSA) in pigs.

### Food Safety Challenges to New EU Member States

DIANA BANATI, Central Food Research Institute (KEKI), Herman Otto ut 15 1537 Budapest, Hungary

No Abstract

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## SESSION 2: The Thin Line between Microbiological Quality and Safety

Microbiological Quality versus Safety – Industry Point of View

Timothy Jackson, Nestlé SA, Nestec Food Safety, Ave. 55, Vevey, CH-1800, Switzerland

The microbiological quality and microbiological safety of foods intimately connected. Microbiological quality may relate to product spoilage or potential for spoilage, or to the hygienic status of the product. In the later case, the microbiological quality of a product may provide an indication of whether conditions exist during the product that could also impact product safety. While not a direct indicator of safety, spoilage can also provide an effective alarm that the product is not suitable for consumption. Efforts to suppress spoilage to extend product shelf life, often introduce new concerns in microbial safety that must be addressed during product development and managed during production.

### *Bacillus*

PER EINAR GRANUM, Norwegian School of Veterinary Science, Dept. of Food Safety and Infection Biology, P.O. Box 8146 Dep., N-0033 Oslo; Norway

The genus *Bacillus* encompasses a great diversity of species broadly defined as aerobic, Gram positive, spore-forming rods. Due to secretion of several different enzymes, *Bacillus* species are widely used in the fermentation industry and in production of the majority of microbial industrial enzymes worldwide. Due to their ability to produce spores *Bacillus*

species are of both public health and economic concern in the food processing industry. *B. cereus* is well-established as a significant cause of foodborne illness in humans. The possible contribution of other *Bacillus* species than *B. cereus* in food poisoning has, however, not been fully established.

The *Bacillus cereus* group consists of five different closely related species (excluding *B. anthracis*), and at least two of those species can cause food poisoning. *B. cereus* is widespread in nature, and frequently isolated from soil and growing plants. From its natural environment it is easily spread to foods, where it may cause an emetic or a diarrhoeal type of food-associated illness that is becoming increasingly important in the industrialized world. The emetic disease is a food intoxication caused by cereulide, a small ring-formed dodecadepsipeptide. The diarrhoeal syndrome of *B. cereus* is an infection caused by vegetative cells, ingested as viable cells or spores, thought to produce protein enterotoxins in the small intestine. Three pore-forming cytotoxins have been associated with diarrhoeal disease: Hemolysin BL (Hbl), Non-haemolytic enterotoxin (Nhe) and Cytotoxin K.

Three other species: *Bacillus subtilis*, *B. licheniformis* and *B. pumilus* have also been involved in food poisoning. Duration and range of symptoms are similar to that caused by *B. cereus*, however the incubation period and symptoms vary between and within species suggesting that other toxins than the well known *B. cereus* enterotoxins are involved. Similar small ring formed peptides with fatty acid tails have been shown to be produced by about 5% of strains of these species. These peptides are also toxic to several different cell types and are most probably the reason for the food poisoning symptoms caused by these strains.

### *Clostridium*

MIKE PECK, Institute of Food Research, Norwich Research Park, Colney, Norwich, NR4 7UA, UK

The two most significant foodborne pathogenic clostridia are *Clostridium perfringens* and *Clostridium botulinum*. Both are Gram-positive endospore-forming anaerobes. *Clostridium perfringens* is a frequent cause of foodborne disease in many countries. For example, it is the second most common cause of both illness and associated death in England and Wales (84,081 cases of diarrhoea and 89 deaths estimated in 2000), while in the USA it is estimated to be the fourth most frequently identified cause of bacterial-associated foodborne illness (248,500 cases of diarrhoea per year). *C. perfringens* is associated with food poisoning when cooked foods are not cooled correctly, permitting spore germination and subsequent rapid multiplication of emerged vegetative cells between 40°C and 50°C to an infectious dose. The presence of large numbers of vegetative cells in the gut and associated production of enterotoxin can lead to illness. *Clostridium botulinum* is responsible for foodborne botulism, an intoxication in which the bacterium grows and forms a highly potent neurotoxin in food. Botulinum neurotoxin is the most potent substance known (as little as 30–100 ng can be fatal), and consumption of pre-formed botulinum can lead to botulism, a severe (but rare) disease with a high fatality rate. The ability to form botulinum neurotoxin is restricted to *C. botulinum* and some strains of *C. baratii* and *C. butyricum*. *C. botulinum* is not a homogeneous species, but a collection of four physiologically and genetically distinct bacteria, with the name "*C. botulinum*" retained to emphasise the importance of neurotoxin formation. There are seven major botulinum neurotoxins (types A to G).

### *Staphylococcus*

CYRIL SMYTH, Dept. of Microbiology, Moyne Institute of Preventive Medicine, Trinity College Dublin, University of Dublin, Dublin 2, Ireland

Staphylococcal food poisoning (SFP) is a foodborne toxinosis caused by heat-stable, protease-resistant enterotoxins released during growth of *S. aureus* on food. Affected persons experience severe nausea, projectile vomiting, convulsive retching, abdominal cramps and sometimes diarrhoea, usually within 2–8 hours of ingesting the contaminated food. Food with high protein content that requires considerable handling during preparation or merely adequate heating afterwards is commonly incriminated. Some staphylococcal food poisoning outbreaks have involved very large numbers of people – 14,870 cases (low fat milk, Osaka, Japan, 2000), ~4,000 cases (chicken–roast beef–rice, Minas Gerais, Brazil, 1998), 1,364 cases (deboned chicken salad, Texas, USA, 1992), 862 cases (grilled salmon, Shiga Prefecture, Japan, 2005), and 485 cases (éclairs, Thailand, 1990). To date, 20 staphylococcal enterotoxins (SEs) and enterotoxin-like proteins (SEIs) have been described. In addition, three SEs and four SEIs have variant isoforms. Estimates of the dose of enterotoxin required to induce emesis vary from 20–100 ng to micrograms. Progress in understanding the mechanism of action of enterotoxins has been made in recent years. SEA has been demonstrated to induce 5-hydroxytryptamine (5-HT) release in the intestine, rather than in brain, and the 5-HT<sub>3</sub> receptors on vagal afferent neurons are essential for SEA-stimulated emesis. The role of strains possessing newer SE or SEI genotypes in SFP needs evaluation, given their frequent isolation from nasal carriers. The acceptance of animal models other than monkeys would aid such evaluation. The use of reverse transcriptase PCR to assay expression of SE and SEI genes could provide an effective means of assessing levels of enterotoxin production.



## SESSION 3: Microbial Hazards: Recently Emerged Pathogens

### *Listeria monocytogenes*

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*Listeria monocytogenes* is a human foodborne pathogen that has a remarkable ability to colonize food processing environments and the processing environment is often the immediate source of product contamination. Disease is typically caused by food products in which the organism has grown to high numbers and that are consumed by immunocompromised individuals. Control of the organism relies on minimizing product contamination and preventing growth in relevant food products. We have found that a particular molecular subtype may colonize independent fish processing plants over many years. We have investigated factors that may influence the remarkable persistence ability of *L. monocytogenes* including attachment to inert surfaces, tolerance to disinfection and tolerance to drying. Strains of the particular persistent subtypes do not differ systematically from pre-sumed non-persistent subtypes, however, most strains of *L. monocytogenes* are remarkably tolerant to drying and survive for months if protected by organic material or NaCl. The particular persistent subtypes which are likely contaminants of food products are less invasive in a number of mammalian cell line models. This may be explained by mutations in genes encoding proteins (ActA and IntA) that are important for cell invasion. In an animal model (pregnant guinea pig), the particular persistent strains are highly efficient in crossing the placental barrier, however, it is not known if the placental crossing in guinea pigs is representative of the human pregnant women. Indeed, these strains do not in a PFGE analyses cluster with isolates from clinical cases. However, these particular persistent strains should be regarded as virulent and efficient cleaning and sanitizing regimes should be used to control the processing plant contamination.

### *Enterobacter sakazakii*

CAROL IVERSEN, Centre for Food Safety, Veterinary Science Building, University College Dublin, Belfield, Dublin 4, Ireland

*Enterobacter sakazakii* is an opportunistic pathogen that can cause meningitis, necrotising enterocolitis, and bacteraemia infants. It was first designated as a species in 1980 by Farmer et al. and several outbreaks in NICUs have been linked to contaminated powdered infant formula. The organism is therefore of concern to infant food manufacturers as well as clinical microbiologists and food safety regulators. In 2008 the taxonomy of *E. sakazakii* was updated using a polyphasic approach based on extensive genomic and phenotypic evaluations. This resulted in the description of five novel species and the proposal that these be incorporated into a new genus, *Cronobacter*, which is cointoxic with *E. sakazakii*. The isolation of *Cronobacter* is complicated by the existence of closely related species, *Enterobacter pulveris*, *E. helveticus* and *E. turicensis*. These species share similar characteristics to *Cronobacter* and occur in the same ecological niches including infant foods. However, no health risk has been attributed to these organisms. Several culture media as well as molecular assays have been proposed and the development of an EN ISO horizontal standard for detection of *Cronobacter* is currently ongoing; the AOAC/FDA are also in the process of validating methods for detection of this genus. Molecular typing methods such as PFGE, RAPD, rep-PCR, ribotyping and MLVA can be applied to trace contamination and monitor infant food processing facilities. Although *Cronobacter* have been primarily associated with infections in infants, several recent reports have highlighted the risk posed in immunocompromised adults, particularly the elderly. Symptoms described in the patients include pneumoniae, sepsis, foot ulcers, wound infections, osteomyelitis and splenic abscesses.

### TSEs: The Changing Picture

DANNY MATTHEWS, Veterinary Laboratories Agency (Retired), New Haw, Addlestone, Surrey, KT15 3NB, United Kingdom

BSE has dominated global headlines since 1996, influenced more by uncertainty and fears of the unknown than by hard facts. The political drivers to such misrepresentation of data continue, but in most countries affected by BSE the tide has turned. It is clear that measures put in place to prevent infection of cattle have been effective in most affected countries, while in others prevalence is so low that the detection of trends is difficult. Thirty-one countries are now categorised as "controlled" risk, in accordance with OIE rules for trade.

Where next? As recognised by the TSE Road Map published by the European Commission, the aim is to reduce, and potentially withdraw, prohibitively expensive protective measures. Withdrawal of measures is not easy, even though the risk reduction afforded is small. The process will therefore be slow, involving scientific consultation and open debate with politicians and consumer representatives. Whether they lead to total removal of protective measures remains in doubt, but many are now superfluous.

What of other TSEs, particularly scrapie in small ruminants and chronic wasting disease in cervids? Do they represent a risk to consumers and are rigorous measures to protect consumers justified? Where a disease occurs naturally in the wild, as with CWD, can science deliver means of controlling or eradicating disease?

So far there is no evidence that scrapie or CWD represent a risk to consumers. More than 20 years after the discovery of BSE, the debate about "absence of evidence" and "evidence of absence" continues, but drivers to apply BSE-type controls to small ruminants and cervids are muted. In some respects they present much bigger challenges than BSE.



## **Vero/Shiga Toxin Producing *Escherichia coli*: What Serotypes are Pathogenic?**

ALFREDO CAPRIOLI, Istituto Superiore di Sanità, Viale Regina Elena 299, 00161, Rome, Italy

Shiga toxin-producing *Escherichia coli* (STEC) are foodborne pathogens causing severe human infections. Although STEC may belong to a variety of serogroups, STEC O157 is a major cause of human disease but also other serogroups, e.g., O26, O111, O103 and O145, are frequently associated with severe human disease and are referred to as enterohemorrhagic *E. coli* (EHEC). EHEC cause attaching and effacing lesion (*eae*) on the intestinal mucosa and are characterized by a low infectious dose, requiring very sensitive methods for food testing. A standardized method based on immuno-magnetic enrichment is available for STEC O157, while for serogroups other than O157 the issue is still under debate. A possible approach aims at the detection of any STEC in the food sample by testing enrichment cultures for toxin production, and/or presence of *stx* genes. The STEC strains will be then characterized. An advantage is the identification of STEC belonging to any serogroup. A drawback is that the presence of low-pathogenic STEC will complicate the detection of EHEC, likely present in lower concentration, requiring the examination of large number of samples. An alternative strategy is directly targeted to the restricted number of EHEC serogroups. This approach is mainly based on the use of PCR to assess the presence of *stx*, *eae*, and serogroup-associated genes. It has the advantage to be very sensitive and to allow a direct discrimination between samples containing low pathogenic STEC (positive for *stx* only) and samples likely contaminated by EHEC. In this respect, the additional presence of *eae* and serogroup-related genes will predict the level of risk for human health associated with the food sample.

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## **SESSION 4: Risk Assessment and Risk Management – Part I**

### **Impact of Distributions of Microorganisms on Food Safety Management Criteria**

KEITH JEWELL, Campden & Chorleywood Food Research Association, Chipping Campden GL55 6LD Gloucestershire, UK

The physical distribution of microorganisms in food influences the effectiveness of detecting them by sampling (e.g., for lot acceptance, process control). The frequency distributions chosen to represent microorganism distributions are fundamental to the correct assessment of sampling plans and Microbiological Criteria. Discuss the physical (spatial) distributions that might occur in food. Consider their effects on the resulting frequency distributions and outline the criteria that might be considered when choosing frequency distributions to portray them. Illustrate the effects of that choice on the prediction of sampling plan performance.

### **Risk Assessment Approaches to Setting Thermal Processes in Food Manufacturing**

PHILIP RICHARDSON, Campden & Chorleywood Food Research Association, Head Food Manufacturing Technologies Dept., Chipping Campden, GL55 6LD Gloucestershire, UK

Thermal treatments are at the heart of many food preservation strategies. These may involve the application of heat to inactivate target organisms. Alternatively, the use of chilled temperatures is another form of heat treatment that requires careful management of risk.

All validated thermal processes require the assessment of the risks associated with raw materials, the thermal process and onward distribution to assure the safety of products to the consumer.

This risk assessment is the basis of HACCP-driven QA strategies in food manufacturing operations.

This paper describes approaches to the management of risk associated with raw materials for use in thermal processes and also considers the approaches that would be necessary to tailor processes to specific target microorganisms in an attempt to reduce any negative impact on product quality through over processing.

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## **SESSION 5: Risk Assessment and Risk Management – Part II**

### **Global Food Safety Management Standards**

CATHERINE FRANCOIS, CIES – The Food Business Forum, Food Safety Programmes, 7, rue de Madrid, 75008 Paris, France

Consumer confidence in food bought around the world has dropped significantly over the last year or so, and managing food safety consistently in the global marketplace has become the major challenge in today's world for all stakeholders in the supply chain. Even though food has always been a global business, supply chains are becoming increasingly longer and more complex, as consumers become more demanding and food safety can no longer be managed within national boundaries. The Global Food Safety Initiative is one of the solutions that has been developed to address this issue by the food business, to ensure food is as safe as possible for consumers.

### **Comparison between Different Standards**

LINDA JACKSON, Von Holy Consulting CC, P.O. Box 48651, Roosevelt Park 2129, South Africa

Global trade of food including raw material, processed and fresh produce is increasing and with it the risk of exporting or importing food safety hazards. This risk can be dependent on the challenges of trading in different legal

frameworks where food safety legislation may not be equivalent and of variable standards. Independent third party audits of food safety management systems are thus essential in providing confidence to the purchaser.

A range of food safety management system audit standards exist. Their goal is obviously the same thing – safe food. Although these standards may be recognised as equivalent or credible by the purchaser, it is plausible that the standards may not necessarily provide the same audit outcomes.

This presentation examines three widely used food safety management system audit standards. The standards are compared with respect to content and audit requirements. Selected criteria from the standards have been practically audited during the same supplier audit and differences were identified. These will be discussed in more detail with respect to the impact of these differences on the effectiveness of the food safety management system.

Other differences may exist regarding audit methodology, auditor competence requirements and audit conclusions. This presentation explores whether the differences are significant in selecting the audit standard. Could a supplier select an "easier" audit or would the selection of audit standard be based more on cost and/or market acceptability.

### **Auditor Consistency and Comparability**

DAVID LLOYD, University of Wales Institute, Cardiff, Llandaff Campus, Western Ave., Cardiff, South Wales CF5 2YB, UK

The growth in global food markets coupled with recent food incidents such as the melamine contamination of milk and infant powder formulas have highlighted the need for reassurances in international food safety. Variability in national legislation between countries has led to an increase reliance on international third party certification of food safety management systems.

Even when undertaking a heavily prescribed audit such as BRC/IFS the auditor variability is a key factor and this is likely to be even more critical when auditing standards such as ISO 22000 which allows greater auditor "freedom". Research undertaken at UWIC has investigated variations in auditor performance and inter-auditor variability.

The research focused on auditors who regularly audit against the BRC Global Standard for Food Safety and covers a period from March 2005 to October 2008.

The research will be discussed within the content of two standard significant reviews and revisions of the standard and the effect of these changes on auditor performance.

The results for 100 BRC audits were evaluated for issue 3 and 4 in an 8 month period from March to October 2005. Only auditors with 5 full BRC audits either side of the Issue change were included in the analysis of results. This represented an audit time of 132 (1,056 hours).

The standard revision between Issue 3 and Issue 4 produced an increase in the number of defined clauses of 20%. The change in standard from Issue 4 to 5 in July 2008 created another 20% increase. The effect of these changes to the standard and increased training prior to its introduction impacted significantly on the levels of non-conformances raised. The results from the study conducted during the change from Issue 4 to 5, and comparison to Issue 3 to 4, will be discussed.

Results from the 2008 study will also focus on the percentage of non-conformances raised against new clauses which are likely to have received greater emphasis during auditor re-training.

An analysis of the most widely raised non-conformances per auditor will be presented and a comparative study of these clauses between the two studies for each auditor discussed. Results of personal interviews with the auditors to establish any trends in personal audit development or changes to industry practice which may have effected these results will be discussed.

The history of audits for specific companies was analysed and assessment of different auditors "performance" over a period of four-year period assessed through interviews with company technical representatives.

Auditor variability in delivery against Issue 4 of the BRC standard was also covered in the research. The analysis encompassed audits from Europe, US, and Asia which showed significant differences in the levels of non-conformances raised during the period of analysis. Potential reasons for this variability in auditor findings will be discussed.

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## **SESSION 6: Risk Communication**

### **Novel Approaches to Risk Communication in an Electronic Age**

ANTHONY FLOOD, International Food Information Council, 1100 Connecticut Ave. NW, Suite 430, Washington, D.C. 20036, USA

This session will explore the role and impact of the media on consumer perceptions about food safety and risk communications and recognize the emerging trends in media communications. Consumer research indicates that most consumers get their food safety information from the media, but globally more than one billion people are online, with 185 million of those in the United States. Research has shown that journalists, government officials, consumers and analysts defining key issues start online and that the internet influences food safety and nutrition opinion leaders more than any other medium. Food safety educators and students use the internet to search for information not readily available. Six percent of people online read blogs regularly, with 30% having read one on occasion and 10% posting to them. Although these are relatively small numbers, the number of social networking spaces and blogs continue to grow exponentially. According to Edison Research, the Internet has now taken over television as "the most cool and exciting medium" which means, to effectively communicate to target audiences, messaging strategies must be tailored to the online viewer. To date, many activist groups have capitalized on this new media format, often with misinformation which creates consumer confusion and potential negative opinions towards food safety related issues. This information is often spread "virally",

reaching unprecedented levels thus compounding negative consumer perceptions about food related issues. In order to effectively communicate and reach target audiences in this medium, new and innovative techniques must be employed. The proposed panel will share real-world examples of information dissemination.

### Lessons in Outbreak Communication: A Consumer Perspective

ARNOUT FISCHER, Wageningen University, Social-Sciences, Marketing and Consumer Behaviour, Hollandseweg 1, 6706 KN, Wageningen, The Netherlands

Consumer risk perceptions is not necessarily the same as an economic weighing of risks and benefits. Consumers tend to be risk averse, tend to estimate catastrophic, unnatural or involuntary risks as larger, while personal lifestyle risks tend to be underestimated. When perceiving risks consumers may include "illogical" arguments such as a fairness (for example demanding lower risks for vulnerable population groups), animal welfare and integrity of nature. Failure to integrate such psychological elements in risk communication by governments may lead to diminished trust, and neglecting the message.

In the case of outbreaks, standard risk communication has to be temporarily replaced by crisis communication. While consumers accept mistakes during a crisis situation, they demand transparent, professional and quick assessment and communication that can only follow from thorough pro-active development of communication during a crisis. Crisis follow up should provide additional information to provide context for the information provided during the crisis.

Several cases will be discussed to illustrate consumer information needs and wants and how risk management practices have dealt with these. Poultry contamination with *Campylobacter* will be compared to *Salmonella* contamination; comparing expert with consumer perspective. The risk management practices in the outbreaks of Foot and Mouth Disease and BSE will be discussed from a consumer perspective.

### EFSA's Role in Risk Communication in Europe

KAREN TALBOT, European Food Safety Authority, Largo N. Palli, 5/A I-43100 Parma, Italy

This presentation will introduce EFSA's communications work within the context of the Authority's overall mandate covering both risk assessment and risk communications, underpinned by EFSA's key values: *openness and transparency; excellence in science; independence; and responsiveness.*

The purpose of EFSA's risk communications activities - *to provide appropriate, consistent, accurate and timely communications on food safety issues, to all stakeholders and the public at large, based on the Authority's risk assessment and scientific expertise* - will be explained and illustrated.

The importance of understanding consumer perception and bridging the gap between science and the consumer will be explored. As will the importance for EFSA of working coherently within a European food safety system with key partners. The related opportunities and challenges of risk communications in a system where EFSA provides independent scientific advice and there is a separation of risk assessment and risk management will also be addressed.

Case histories will be used to illustrate EFSA's approach to risk communications. One example will be animal cloning, which highlights the challenges of high profile scientific uncertainty and the importance of public/stakeholder engagement. It also raises the challenges of separating EFSA's independent scientific work from both wider ethical/societal issues and the work of risk managers, particularly when under intense media and stakeholder scrutiny.

This and other examples will be used to illustrate how EFSA works to deliver appropriate, consistent, accurate and timely communications based on the best available scientific advice. The presentation itself will hopefully simply provide the basis for a two-way exchange of ideas and experience.

### Real Example of Incident: A Consumer Point-of-View

CAROLINE SMITH DEWAAL, Center for Science in the Public Interest, 1875 Connecticut Ave. NW, Suite 300, Washington, D.C. 20009-5728, USA

Foodborne illness outbreaks make media headlines no matter where they occur, whether in the United States, Europe, or Asia. Yet the effectiveness of the messages issued by government agencies, industries, consumer associations and the media itself is seldom reviewed.

Within the risk analysis framework adopted by the World Health Organization and the Food and Agriculture Organization of the United Nations, risk communication is on equal footing with both risk assessment and risk management, yet it has gotten much less attention. For most countries, risk communication is an essential food safety tool, especially when preventative control systems are lacking or ineffective. Government agencies utilize product recall notices and consumer alerts frequently, and much more study to increase their effectiveness is warranted.

In the US, repeated outbreaks and recalls have contributed to declining consumer confidence in the food supply, much as the BSE outbreak did for European consumers over a decade ago. This paper will illustrate the risk communication challenges related to a recent US meat recall, with discussion of recent outbreaks linked to canned foods, produce and dairy products. It will present an overview of consumers' point-of-view of food recalls, awareness and attitudes toward food safety, and the role of consumer organizations in distributing food safety information and in protecting consumers from foodborne illnesses. Ultimately, greater expertise in risk communication within governments, industries and consumer associations is needed both to trigger appropriate consumer responses and to protect industries from overly broad messages.

## Real Example of Incident: Industry Point-of-View

DARREN BLASS, Jack in the Box, 9330 Balboa Ave., San Diego, CA 92123, USA

Jack in the Box® restaurants is one of the nation's largest quick-service chains, with more than 2,100 company and franchised restaurants in the United States. In 1993, Jack in the Box experienced an *E. coli* outbreak that sickened hundreds of people. Tragically, four children died. The outbreak damaged the company's reputation among consumers, its standing in the business community, and embroiled the company in numerous lengthy and costly legal battles.

With tough lessons learned, the company rebuilt the Jack in the Box brand largely through aggressive efforts to improve the restaurant industry's food-safety practices and procedures. The company introduced a Hazard Analysis Critical Control Points (HACCP) system for managing food quality and safety that encompasses farm-to-fork procedures for safe food handling and preparation in every restaurant. Today, the company's food safety program is recognized as one of the most comprehensive in the restaurant industry. In 2004, the company was awarded the IAFP's prestigious Black Pearl Award as well as the Food Safety Leadership Award from NSF International, a nonprofit organization also committed to food safety.

Darren Blass, director of quality assurance and product safety for Jack in the Box Inc., will discuss the chain's award-winning food-safety program, its success in rebuilding the Jack in the Box brand, and steps the company has taken to protect its guests and improve food safety and quality throughout the foodservice industry.

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## SESSION 7: Impact of Changing Climate and Changing Demographics on Food Safety

### Climate Change and the Challenge of New Pathogens

MARION WOOLDRIDGE, Centre for Epidemiology & Risk Analysis, Veterinary Laboratories Agency Addlestone, Surrey KT15 3NB, UK

#### Climate change and its potential effects on the environment

Predictions of climate change arising from the emission of greenhouse gases include not only increased global temperatures, but also more extreme weather events such as heavy rainfall with flooding, drought and heat waves (Beniston and Diaz 2004; Hulme et al. 2002). Climate change may impact directly or indirectly on pathogens, and to varying degrees through a multitude of factors (Gale et al. 2008) including land use and farming practice, wildlife, vectors, and environmental conditions, such as increased surface water run-off and warmer-water bodies which may become stagnant. Some human factors (such as habitat change to increase biofuel production) may be in direct response to climate change. During periods of drought, the risk of escalation of a low level conflict increases (Giles 2007). Military action, although not likely in the EU, could increase the prevalence and distribution of livestock diseases in other parts of the world, which in turn would increase the risk of pathogen release into the EU. As an example of the complexity of interactions, the worldwide decline in amphibians due to habitat loss, infection by a chytridiomycete fungus and climate change, may enable mosquitoes to increase in abundance (Mokany and Shine 2003).

Three types of potential pathogen change are considered here. These are:

- Increasing prevalence of pathogens already present;
- Incursion (and persistence) of exotic pathogens in new areas; and
- Mutations in the pathogen which might change host range and susceptibility, and/or the ability to adapt to new environmental niches.

#### Possible increase in prevalence of pathogens already present

Endemic pathogens which may increase in prevalence due to changing climate include the protozoan *Toxoplasma gondii*, the spore-forming bacteria such as *Clostridium botulinum* and *Bacillus anthracis*, and the liver fluke trematode, *Fasciola hepatica* (Baylis and Githeko 2006). Increased flooding allows longer survival of *T. gondii* oocysts on pasture and favours the intermediate lymnaeid snail hosts for liver fluke. Flooding may disturb bacterial spores buried in soil. The disease botulism is an intoxication caused generally by the ingestion of the toxin in food/feeds. For cattle, for example, this requires growth of the bacteria under anaerobic conditions in the feed silage, with the production of toxin. Botulism outbreaks in wild birds in GB in 1975 occurred in areas of shallow water and the unusually hot summer that year may have provided a suitable temperature for growth of *C. botulinum* (Lloyd et al. 1976). The prevalence of diseases caused by faecal-oral pathogens may also be increased (Gale et al. 2008). For example, flooding increases the risk of sewage and animal slurries' spreading onto adjacent land and fields, thus increasing the environmental loading.

Climate change may result in an increase in cases of paralytic shellfish poisoning. Shellfish concentrate viral pathogens. With increasing precipitation giving nutrient laden run-off and warming, shellfish in Arctic seas may be exposed to higher quantities of viral pathogens from sewage discharges. The bacterial pathogen, *Vibrio parahaemolyticus*, is associated with fish and shellfish and causes gastroenteritis with outbreaks associated with average seawater temperatures above 15°C. Paz et al. (2007) have reported a link between high water temperatures and an outbreak of *Vibrio vulnificus* infection among fish market workers in Israel in 1996, and this infection can cause severe sepsis with mortality rates of around 40%. While some endemic diseases may increase through climate change, others may decrease. One suggested scenario is that the prevalence of tick-borne encephalitis virus (TBEV) in humans will decrease in central Europe due to a breaking of the temporal synchrony required for tick-to-tick transmission (Rogers and Randolph 2006).



## Possible incursion (and persistence) of exotic pathogens into new areas

Exotic pathogens may be released into new locations regularly through a variety of routes. These release events may not necessarily be directly related to climate, but once in a new area, climate-related changes may promote the transmission and establishment of the pathogen.

### Potential routes of entry to EU for exotic pathogens

Potential routes of entry for an exotic pathogen include infected wildlife, livestock, pets or persons entering from a region where the disease is endemic, import of contaminated meat and meat products, and import of germplasms. In the case of vector-borne diseases, pathogens may also be released into a new region through movement of infected vectors. Migrant birds are a common, but inadequate, explanation for the introduction of ticks infected with exotic pathogens; for example Randolph and Ergonul (2008) argue against birds introducing Crimean-Congo haemorrhagic fever virus (CCHFV) into Turkey. Many arboviruses are transmitted by flying insects. Examples include mosquitoes and biting midges which serve as vectors for Rift Valley fever virus (RVFV) and bluetongue virus (BTV), respectively. Thus, BTV-infected *Culicoides* midges could be blown from mainland Europe into GB (Gloster et al. 2007). The completion of the trans-Saharan road will heighten the risk of introduction of RVFV north of the Sahara into southern Europe (Reiter 2008). RVFV was detected outside Africa for the first time in the Arabian peninsula in September 2000; it is estimated that seven million animals are exported to Saudi Arabia every year from Africa during the pilgrimage seasons (Reiter 2008).

Global transport and movement of goods and people have increased significantly over the last 20 years, and may have underpinned the emergence of Chikungunya virus (CHIKV) in Italy for the first time (Reiter 2008). The mosquito vector for this virus, *Aedes albopictus*, established in Southern Europe after its eggs were introduced in consignments of car tyres imported from Asia (Reiter 2008). A traveller returning to Italy from India, where he had been infected, introduced CHIKV triggering a small outbreak. Air transportation of flowers from sub-Saharan Africa could be another source of introduction of BTV-infected midges into northern Europe.

### Factors through which climate change may affect incursion and establishment of new pathogens

Climate change may affect both the range of a vector and its interaction with the pathogen. In the case of BTV, the traditional vector *Culicoides imicola* has extended its range northwards from Africa into southern Europe, promoting incursions of BTV serotypes 1, 2, 4, 9 and 16 (Purse et al. 2005) and also African horse sickness virus (AHSV). In northern Europe, however, midges of the *C. obsoletus* complex have become new vectors for the transmission of BTV, namely serotype 8 (Mehlhorn et al. 2007). The higher temperatures appear to have increased the competence of the vectors to transmit the disease. Milder winters may also allow over-wintering of latently-infected midges in the case of AHSV (Mellor and Hamblin 2004). Global warming is associated with warmer nights (Beniston and Diaz 2004) which increases midge flight activity and hence livestock exposure to infected midges.

Current midge-borne diseases, although causing severe disease in livestock, are not generally zoonotic. While the evidence is strong that climate change has affected midge-borne diseases of livestock, there is more controversy over the impact of climate change on tick-borne diseases (Randolph 2008). There is evidence that ticks are not only expanding their range northwards in countries such as Germany and moving to higher altitudes in the Czech Republic, but also are now active through the winter months (Suss 2008) in Germany. Many tick-borne diseases are zoonotic and furthermore may be transmitted to humans through contact with body fluids during butchering of infected livestock. Examples include CCHFV and an emerging flavivirus called Alkhurma haemorrhagic fever virus (AHFV) which was only discovered in 1995 in Saudi Arabia (Charrel et al. 2007). AHFV has been found in *Ornithodoros savignyi* ticks which are associated with camels (Charrel et al. 2007) and are widespread in the Middle East. *O. sonrai* is an example of a tick which has expanded in range in response to the drought in sub-Saharan Africa (Trape et al. 1996). It serves as a vector for African swine fever virus (ASFV) in Senegal. Tick-borne transmission of ASFV in southern Iberia through the tick *O. erraticus* promoted persistence of the disease and prolonged its eradication. *Ornithodoros* ticks require dry conditions and desertification through climate change could promote expansion of their range.

Mosquito-borne diseases include RVFV, West Nile virus (WNV), CHIKV and alphaviruses of the equine encephalitis virus group. It is important to note that climatic factors may be less important than, or interact with, other factors such as habitat change, globalised movement, farming practice and human living conditions in the transmission of some mosquito-borne diseases, for example malaria and CHIKV (Reiter 2008), although Martin et al. (2008) suggest that extreme weather events might create the necessary conditions for RVFV to expand its geographical range northwards and cross the Mediterranean Sea. Outbreaks of RVFV in sub-Saharan Africa are associated with prolonged drought followed by heavy rainfall which produces mosquito breeding sites (Baylis and Githeko 2006). WNV has spread rapidly across the New World after its introduction in 1999 infecting birds and horses. During the economic downturn in 2008, an increase in WNV cases in humans has been reported in California due to stagnant swimming pools which provide a mosquito breeding site. While WNV and Eastern equine encephalitis virus cannot be transmitted to humans from body fluids of horses, butchering of RVFV-infected livestock is a route of transmission to humans.

Wildlife is important both as a source of disease reservoirs and as hosts for ticks. Many arboviruses require a continual source of immunologically naïve vertebrate hosts. For example, hares may play an important role in the transmission of CCHFV and social changes in Turkey between 1995 and 2001 allowed hare abundance to increase (Randolph and Ergonul 2008). The interaction between wildlife, humans and livestock is important in the emergence of new pathogens and may be affected by climate change. An example from outside the EU, although not directly related to climate change, is the emergence of Nipah virus in Malaysia through encroachment of pig farming into fruit bat habitats. Transmission to humans occurs through contact with body fluids of infected pigs and via raw date palm sap (Luby et al. 2006). Climate change may affect the range, abundance, movement and behaviour of wildlife. Deer and badgers are increasing in GB, perhaps aided



by milder winters, although habitat is also an important factor. Climate change may impact on wild bird movement and abundance. Thus, with milder winters in central Europe, for example, wintering wildfowl may be less likely to migrate into the UK, reducing the risk of release of viruses such as avian influenza virus. Some insectivorous, long-distance migrant birds may decline in abundance due to loss of synchrony between food supply and migration date (Both et al. 2006).

#### **Mutations in the pathogen which change the host range and ability to adapt to new niches**

Many of the emerging viruses discussed here have RNA genomes. RNA viruses mutate rapidly because there is no proofreading activity during RNA replication. This gives genetic drift, and the ability of the virus to adapt to new niches. Furthermore, some of these viruses are segmented, i.e. have two or more RNA segments, which can be re-assorted during cross-infection giving genetic shift. Such segmented viruses include CCHFV, RVFV, BTV and AHSV. In the case of Venezuelan equine encephalitis virus in Mexico, a single amino acid substitution in the envelope glycoprotein has enabled adaptation of the virus to a new mosquito vector, *Ochlerotatus taeniorhynchus*, which established after habitat change, namely deforestation (Brault et al. 2004). Another example is a single mutation in CHIKV that promotes infection in the mosquito *Ae. albopictus* over the recognized vector, *Ae. aegypti* (Tsetsarkin et al. 2007). This mutation increases the potential for CHIKV to extend its range into Europe and the Americas, where *Ae. albopictus* has established over the past 20 years (Medlock et al. 2006).

#### **Global Water and Related Food Safety for Industry and Consumers**

CHARLES GERBA, University of Arizona, Program in Microbiology, Bldg. #90, Tucson, AZ 85721-0038, USA

The importance of water quality has usually been overlooked in terms of its importance to food safety. It is not only essential in the growth of crops, but also in their processing. The microbial quality of this water is important in ensuring that contamination of produce does not occur during these events. Sewage contaminated irrigation water has long been associated with disease transmission. As a result the use of untreated sewage is forbidden in developed countries. However, nearly 70% of the irrigated cropland in the world is in developing countries where use of sewage and sewage contaminated waters is widespread. Because of the lack of standards and monitoring requirements the occurrence of enteric pathogens in irrigation water used for produce production not directly influenced by sewage discharges is largely unknown. Recent studies suggest that human pathogens occur in irrigation waters and may originate from many sources including wildlife, irrigation return flows, and storm water drainage. A better understanding of the ecology of pathogens in irrigation systems is needed as well as standards for the use of these waters for produce production. Such standards could be specific depending upon the irrigation method (drip, spray, flood) and crop dependent (pepper, melon, lettuce). Finally, microbial standards of process water used in washing and cooling need to be developed to control contamination.

#### **Animal-borne Viruses of Interest to the Food Industry**

MARION WOOLDRIDGE, Veterinary Laboratories Agency, Addlestone, Surrey KT15 3NB, UK

A number of viruses pathogenic to food animals have made headline news in Europe in the last few years, in particular highly pathogenic avian influenza (HPAI), bluetongue (BT), and foot and mouth disease (FMD). However, these are not the only viral infections present or potentially present in European livestock. Others include classical swine fever (CSF), African swine fever (ASF), and swine vesicular disease (SVD), all present in Europe; Newcastle disease (ND), a bird disease with sporadic outbreaks in Europe; and Rift Valley fever (RVF), not currently in Europe, but a vector-borne disease the range of which may well expand due to climate change.

Not all of the pathogens responsible are zoonotic – that is, cause disease in humans – but there are other ways in which these pathogens can affect the food industry; for example an outbreak may cause trade to be disrupted, or infected animals may be culled, leading to shortages of certain foods. Or there may be confusion, perhaps generated by media reports, which leads people to believe that the pathogen is zoonotic when it is not, and thus not buy the product.

The presentation will distinguish between those pathogens considered to be zoonotic and those not, and consider possible food-associated transmission routes (where relevant) to humans and pets. The current geographical range will also be described, and the potential effects on this range due to climate change, trading patterns, and illegal movement of animals or their products, particularly where such effects might increase the risks within Europe. Finally, current or potential safeguards will be considered.

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### **SESSION 8: Hot Topics in Food Safety**

#### **The Pros and Cons of Using Cloned Animals as Sources of Meat and Dairy Products: EU Versus US Perspective**

DAVID CARLANDER, European Food Safety Authority, Scientific Committee and Advisory Forum Unit, Largo N. Palli 5a, 43100 Parma, Italy

In January 2008, the US FDA published their final risk assessment on animal cloning and in July the same year European Food Safety Authority (EFSA) published their opinion. The EFSA opinion assessed the food safety, animal health, animal welfare and environmental implications of animal clones, obtained through somatic cell nucleus transfer (SCNT) technique, of their progeny and of the products obtained from those animals. The two risk assessments reach similar conclusions but their scopes are somewhat different as EFSA were also asked to also address animal welfare.

There are health and welfare implications for a cohort of animals involved in cloning and morbidity and mortality are higher for clones than in sexually reproduced animals. For cattle and pigs, food safety concerns are considered unlikely. No clear evidence has emerged to suggest any differences between food products from clones or their offspring, in terms of food safety, compared to products from conventionally bred animals. The presentation will focus on the EFSA opinion, discuss uncertainties and recommendations and put the outcome in perspective with the FDA assessment.

### **Molecular Microbiology of Foodborne Pathogens: Detection, Typing and Tracking**

JIM MCLAUCHLIN, Regional Microbiology Network, Health Protection Agency, 7th Floor, Holborn Gate, 330 High Holborn, London WC1V 7PP, UK

Molecular biology was defined by J Monod as the "recognition that the essential properties of living beings could be understood in terms of macromolecules" and this is now more usually used to refer to the structure (sequence) and function of macromolecules, especially to DNA sequence. In the late 20<sup>th</sup> Century, molecular biological techniques became increasingly available to characterise microbial pathogens, including those transmitted via contaminated food or water. Advances in molecular biological techniques allowed the development of more rapid, robust, portable, internationally comparable techniques which allowed unprecedented information for both detection and typing of pathogens, as well as providing data on their potential to cause disease. With these techniques, it is now possible to internationally track pathogens, and allows the identification of outbreaks and sources of contamination as well as global interventions. Examples of the use of data generated by molecular biological techniques will be given which have helped to control infections due to *Salmonella enterica*, *Listeria monocytogenes*, *Clostridium perfringens*, *Clostridium botulinum* and *Cryptosporidium*. All those involved with the food chain should be aware of the application of molecular microbiology to public health protection.

### **The Management of Risks Associated with Fresh Produce**

SARAH CAHILL, Food & Agriculture Organization of the United Nations, Viale Delle Terme Di Caracalla, Rome 00153, Italy

Fresh produce are an important component of a healthy diet and there is an international move to increase their consumption. From 1980 to 2004, the global production per annum of fruit and vegetables grew by 94% and their production and consumption are expected to continue to rise. At the same time concern about the safety of fresh produce is increasing. These commodities have been attributed as vehicles for the transmission of microbial foodborne disease and problems linked with pathogens in fresh produce have been reported in a number of countries worldwide, some of which are ongoing.

The health, economic and trade implications of some of these microbial contamination events have been enormous and brought the safety of fresh produce to the top of both national and international agendas. The Codex Alimentarius Commission has responded by developing specific commodity based risk management guidance and national authorities are reviewing and updating their existing programs to address these risks. FAO and WHO are working with internationally experts to provide advice and guidance in his area. However, so far it is clear that there is no unique and simple solution to managing the risks associated with microbiological hazards in fresh produce. While technological advances can contribute to the solution, this problem has required managers to go back a look at how and where we grow fresh produce as well as what we do with them post harvest. Managing the risks associated with a product that is grown in a natural and vulnerable environment, much of it for raw consumption is a challenge which requires a multisectoral and multidisciplinary approach.

### **Risk Assessment for Food Allergens: Developments, Issues and Implications**

RENE CREVEL, Unilever, SEAC, Colworth Science Park, Sharnbrook, MK44 1LQ, UK

Over the last two decades, IgE-mediated food allergy has been recognised as an important public health issue, affecting up to 4% of the population. Mandatory declaration of common allergenic ingredients has improved the protection of allergic individuals. However, the inadvertent presence of allergenic substances represents a serious risk because of the possibly severe consequences of exposure to very small amounts of allergen. Complete elimination of allergenic residues is often impracticable and limited to a few specific allergens. Allergen control must therefore start from a thorough assessment of the risk associated with residual allergenic material in order to define the measures to be taken. Increasing amounts of data on individual thresholds of reactivity have opened the way to statistical dose-distribution modelling approaches to characterise the risk from defined amounts of allergen. These approaches have provided a firmer basis for sound, evidence-based decision-making in relation to risk management. They also offer the basis for an informed debate about how to minimise risk, leading to the definition of regulatory or management thresholds which would help both allergic patients and industry. Combined with data on the distribution of allergenic residues in products, they can also be used to generate quantitative estimates of risk and evaluate risk reduction measures. However consensus is still lacking on how to interpret this new knowledge in the overall risk assessment context. A key issue remains how to validate the prediction models, drawing conclusions from studies in clinic patients that can be generalised to the whole allergic population.

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# ***How the Audiovisual Library Serves IAFP Members***

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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.

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- (1) Members simply fill out an order form (see page 112 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](http://www.foodprotection.org).
- (2) Material from the Audiovisual Library is checked out for a maximum of two weeks (three weeks outside of North America) so that all Members can benefit from its use.
- (3) Requests are limited to five videos at a time.

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

- (1) As the IAFP Membership continues to grow, so does the need for additional committee members and materials for the Library. The Audiovisual Committee meets at the IAFP Annual Meeting to discuss the status of the Audiovisual Library and ways to improve the service. New Members are sought to add fresh insight and ideas.
- (2) Donations of audiovisual materials are always needed and appreciated. Tapes in foreign languages (including, but not limited to Spanish, French, Chinese [Mandarin/Cantonese]), are especially desired for International Members who wish to view tapes in their native language.
- (3) Members may also make a financial contribution to the Foundation Fund. The Foundation Fund sponsors worthy causes that enrich the Association. Revenue from the Foundation Fund supports the IAFP Audiovisual Library. Call Lisa Hovey, Assistant Director or Lani McDonald, 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** – (Two 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** – (42 minutes). 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). Indoor air pollution is in many ways a self-induced problem...which makes it no easier to solve. Painting and other home improvements have introduced pollutants, thermal insulation and other energy-saving and water-proofing devices have trapped the pollutants inside. The result is that air pollution inside a modern home can be worse than inside a chemical plant. (Films for the Humanities & Sciences, Inc.) (Reviewed 1998)
- 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** – (13 minutes). 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 enforcement tools-

mixed funding, De Minimis settlements and the new nonbinding preliminary allocations of responsibility (NBARs) are explained.

- E3210 Tape 4 – Emergency Preparedness & Community Right-to-Know** – (48 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. (LVVB 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)
- F2012 Control of *Listeria monocytogenes* in Retail Establishments** – (45 minutes). English and Spanish) (DVD) – Retail establishments play a key role in the control of *Listeria monocytogenes* in foods they sell. In this program, you will learn the sources and factors that contribute to *Listeria monocytogenes* in the retail environment. This dvd will also explore



the design, implementation and maintenance of a *Listeria monocytogenes* control program. (Penn State University-2006)

- F2013 Control of *Listeria monocytogenes* in Small Meat and Poultry Establishments** – (26 minutes). (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** – (16 minutes). 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** – (English) – (DVD) (20 minutes). 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)
- F2017 Building a Better Burger – Improving Food Safety in the Food Supply Chain** – (29 minutes). From ground beef to spinach to adulterated ingredients, the food industry has seen the huge downside of supply chain safety and quality failures. In addition to audits, many processors now mandate that suppliers implement Statistical Process Control (SPC) programs. Since 2003, the USDA National School Lunch Program ground beef purchasing has demonstrated the success of process-based supply chain management. This video demonstrates how the program has improved quality while reducing safety risks to show the way to get the food safety job done right. (Northwest Analytical, Inc.-2007)
- 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)
- F2025 "The Special of the Day: The Eggceptional Egg"** – (DVD – 10 minutes). This DVD has been developed to train foodservice workers on today's standards for the expert care, handling, and preparation of "The incredible edible egg™". (American Egg Board-2007)
- 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) – (15 minutes). 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 min-utes). 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.

**F2101 Tape 2 – Food Safety for Food Service: HACCP – (10 minutes).** This video takes the mystery out of HACCP for your employees, and explains the importance of HACCP procedures in their work. Employees will come away feeling confident, knowing how to make HACCP work. The seven steps of HACCP and how HACCP is used in foodservice are some of the topics discussed.

**F2102 Tape 3 – Food Safety for Food Service: Personal Hygiene – (10 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.

**F2103 Tape 4 – Food Safety for Food Service: Time and Temperature Controls – (10 minutes).** This video examines storage and handling of raw and cooked ingredients, and explains how to ensure their safety. Employees learn how to spot potential problems and what to do when they find them. Topics include: correct thermometer use, cooling, thawing and heating procedures, food storage procedures, holding temperature requirements, and handling leftovers.

**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 woman contracts can affect her unborn child whose immune system is too immature to fight back. The video follows four pregnant women as they learn about food safety and preventing foodborne illness. (US 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, unsanitized tools and equipment. Employees need specific knowledge and practical training to avoid microbial cross contamination in plants. This video aids in that training. (Silliker Laboratories–2000)
- F2140 GMP Basics: Employee Hygiene Practices** – (20 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 GMPs.

- 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.

- F2168 HACCP Advantage – Good Manufacturing Practices** – (English and Spanish) – (DVD) (40 minutes). The HACCP Advantage is based on HACCP principles and was developed by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMARFA). HACCP Advantage was designed to be a practical, cost-effective and preventative food safety system for all nonfederally registered food processing facilities, regardless of size, commodity or volume processed. OMARFA has developed a 3-step approach to food safety management that makes it easier for small and medium-sized food processors to adopt a HACCP food safety program that meets their requirements. These three components – GMP Advantage, HACCP Advantage and HACCP Advantage Plus+ – collectively encompass all the elements of the original HACCP Advantage program as well as new elements to meet the evolving needs of modern food safety systems. (OMARFA–2006)
- 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)
- 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) – (90 minutes). 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 may 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. (Chipsbooks 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)
- F2321 All Hands On Deck** – (12 minutes) Germ Tells All. A Benedict Arnold of the germ world comes clean by teaching the audience to "think like a germ" when it comes to hand washing. The reasons for hand washing are outlined and proper technique is demonstrated along with suggestions for avoiding immediate recontamination before even leaving the rest room. Interesting, informative, humorous and appropriate for virtually any age group. (Brevis Corporation—2005)
- F2322 The Why, The When and The How Video** – (5 minutes) An excellent tool for motivating good hand hygiene behavior with existing and new employees. Fast paced. Three modules train the why, when, and how of hand washing. (Brevis Corporation—2005)
- 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/fofo/hrds/STATE/RETAIL/manual.htm](http://www.fsis.usda.gov/fofo/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 FightBAC® 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 dayAlliance 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)
- F2342 Seafood HACCP Internet Training Course** – (Interactive DVD) This CD contains the on-line equivalent material found in the Seafood HACCP Alliance Internet Training course (<http://seafoodhaccp.cornell.edu>). 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.

## **Worker Health and Hygiene Program for the Produce Industry**

**F2505 Manager Guide to Worker Health and Hygiene: Your Company's Success May Depend on It!** (English) – (18 minutes). Covers the importance of foodborne illness as related to the produce industry and provides practical hands-on information of managers/operators on teaching health and hygiene to the workers in their operations (University of Florida/IFAS–2006)

**F2506 Worker Health and Hygiene: Your Job Depends On It!** (English and Spanish) – (11 minutes). Covers the importance of personal health and hygiene and simple hands-on information on foodborne illness and how produce handlers could spread disease if proper personal hygiene is not practiced. Also provides stepwise handwashing procedures for produce handlers in any situation (University of Florida/IFAS–2006)

**F2600 Food Industry Security Awareness: The First Line of Defense** – (24 minutes) (Video and DVD). This video reinforces the importance of security awareness in all phases of product handling, from receiving ingredients to processing and shipping. With this program, you can have an immediate impact on plant security with very little time or resources, all while helping maximize the effectiveness of your overall security investment. Everything you need to turn your biggest security challenge into your biggest security asset is covered. (J. J. Keller–2006)

## **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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- ☐ D1010 The Bulk Milk Hauler: Protocol & Procedures
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- ☐ D1050 Food Safety: Dairy Details
- ☐ D1060 Frozen Dairy Products
- ☐ D1080 High-Temperature, Short-Time Pasteurizer
- ☐ D1090 Managing Milking Quality
- ☐ D1100 Mastitis Prevention and Control
- ☐ D1105 Milk Hauling Training
- ☐ D1120 Milk Processing Plant Inspection Procedures
- ☐ D1130 Pasteurizer: Design and Regulation
- ☐ D1140 Pasteurizer: Operation
- ☐ D1180 10 Points to Dairy Quality

## ENVIRONMENTAL

- ☐ E3031 Allergy Beware
- ☐ E3040 Asbestos Awareness
- ☐ E3055 Effective Handwashing - Preventing Cross Contamination in the Food Service Industry
- ☐ E3125 Good Pest Exclusion Practices
- ☐ E3128 Integrated Pest Management (IPM)
- ☐ E3131 Key Pests of the Food Industry
- ☐ E3133 Physical Pest Management Practices
- ☐ E3235 Regulatory and Good Manufacturing Practices
- ☐ E3236 Rodent Control Strategies
- ☐ E3240 Sink a Germ
- ☐ E3245 Wash Your Hands
- ☐ 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
- ☐ F2011 Available Post Harvest Processing Technologies for Oysters
- ☐ F2012 Control of *Listeria monocytogenes* in Retail Establishments
- ☐ F2013 Control of *Listeria monocytogenes* in Small Meat and Poultry Establishments
- ☐ F2014 Controlling Food Allergens in the Plant
- ☐ F2015 Controlling *Listeria*: A Team Approach
- ☐ F2016 Bloodborne Pathogens: What Employees Must
- ☐ F2017 Building a Better Burger - Improving Food Safety in the Food Supply Chain
- ☐ F2021 Egg Production
- ☐ F2025 The Special of the Day: The Exceptional Egg
- ☐ F2030 "Egg Games" Foodservice Egg Handling & Safety
- ☐ 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 Microbiological Control
- ☐ F2050 Food Safe-Food Smart - HACCP and Its Application to the Food Industry (Part 1 & 2)
- ☐ F2060 Food Safe Series I (4 videos)
- ☐ F2070 Food Safe Series II (4 videos)
- ☐ F2080 Food Safe Series III (4 videos)
- ☐ F2081 Food Safety Begins on the Farm
- ☐ F2090 Food Safety: An Educational Video for Institutional Food Service Workers
- ☐ F2095 Food Safety for Food Service Series I
- ☐ F2095 Now You're Cooking
- ☐ F2100 Tape 1 - Food Safety for Food Service: Cross Contamination
- ☐ F2101 Tape 2 - Food Safety for Food Service: HACCP
- ☐ F2102 Tape 3 - Food Safety for Food Service: Personal Hygiene
- ☐ F2103 Tape 4 - Food Safety for Food Service: Time and Temperature Controls Food Safety for Food Service Series II
- ☐ F2104 Tape 1 - Basic Microbiology and Foodborne Illness
- ☐ F2105 Tape 2 - Handling Knives, Cuts, and Burns
- ☐ F2106 Tape 3 - Working Safely to Prevent Injury
- ☐ F2107 Tape 4 - Sanitation
- ☐ F2110 Food Safety is No Mystery
- ☐ F2111 Controlling *Salmonella*: Strategies That Work
- ☐ F2121 Food Safety the HACCP Way Food Safety Zone Video Series
- ☐ F2125 Tape 1 - Food Safety Zone: Basic Microbiology
- ☐ F2126 Tape 2 - Food Safety Zone: Cross Contamination
- ☐ F2127 Tape 3 - Food Safety Zone: Personal Hygiene
- ☐ F2128 Tape 4 - Food Safety Zone: Sanitation
- ☐ F2129 Food Technology: Irradiation
- ☐ F2130 Food Safety: You Make the Difference

- ☐ F2131 Fruits, Vegetables, and Food Safety: Health and Hygiene on the Farm
- ☐ F2133 Food Safety First
- ☐ F2134 Food Safety: Fish and Shellfish Safety
- ☐ F2136 GLP Basics: Safety in the Food Micro Lab
- ☐ F2137 GMP Basics: Avoiding Microbial Cross-Contamination
- ☐ F2140 GMP Basics: Employee Hygiene Practices
- ☐ F2143 GMP Basics: Guidelines for Maintenance Personnel
- ☐ F2147 GMP Basics: Process Control Practices
- ☐ F2148 GMP - GSP Employee
- ☐ F2150 GMP: Personal Hygiene and Practices in Food Manufacturing
- ☐ F2151 GMP Food Safety Video Series
- ☐ F2151 Tape 1 - Definitions
- ☐ F2152 Tape 2 - Personnel and Personnel Facilities
- ☐ F2153 Tape 3 - Building and Facilities
- ☐ F2154 Tape 4 - Equipment and Utensils
- ☐ F2155 Tape 5 - Production and Process Controls
- ☐ F2160 GMP: Sources and Control of Contamination during Processing
- ☐ F2161 GMPs for Food Plant Employees
- ☐ F2161 Tape 1 - Definitions
- ☐ F2162 Tape 2 - Personnel and Personnel Practices
- ☐ F2163 Tape 3 - Building and Facilities
- ☐ F2164 Tape 4 - Equipment and Utensils
- ☐ F2165 Tape 5 - Production/Process Controls
- ☐ F2168 HACCP Advantage - Good Manufacturing Practices
- ☐ F2169 HACCP: Training for Employees - USDA Awareness
- ☐ F2170 The Heart of HACCP
- ☐ F2172 HACCP: Training for Managers
- ☐ F2173 Inside HACCP: Principles, Practices and Results
- ☐ F2180 HACCP: Safe Food Handling Techniques
- ☐ F2191 Microbial Food Safety: Awareness to Action
- ☐ F2220 Proper Handling of Peracetic Acid
- ☐ F2230 Purely Coincidental
- ☐ F2250 On the Line
- ☐ F2260 100 Degrees of Doom...The Time and Temperature Capers
- ☐ F2265 A Day in the Deli: Service, Selection, and Good Safety
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- ☐ F2271 Preventing Foodborne Illness
- ☐ F2280 Principles of Warehouse Sanitation
- ☐ F2290 Product Safety and Shelf Life
- ☐ F2320 Safe Handwashing
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- ☐ F2322 The Why, The When, and The How Video
- ☐ F2325 Safe Practices for Sausage Production
- ☐ F2340 Sanitizing for Safety
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- ☐ F2350 ServSafe Steps to Food Safety
- ☐ F2350-1 Step One: Starting Out 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: Good Practices, Bad Practices - You Make the Call
- ☐ F2391 Understanding Foodborne Pathogens
- ☐ F2430 Smart Sanitation: Principles and Practices for Effectively Cleaning Your Food Plant
- ☐ F2440 Cleaning 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 Safer Processing of Sprouts Fast Track Restaurant Video Kit
- ☐ F2500 Tape 1 - Food Safety Essentials
- ☐ F2501 Tape 2 - Receiving and Storage
- ☐ F2502 Tape 3 - Service
- ☐ F2503 Tape 4 - Food Production
- ☐ F2504 Tape 5 - Warewashing
- ☐ F2505 Worker Health and Hygiene Program for the Produce Industry
- ☐ F2505 Manager Guide to Worker Health and Hygiene Your Company's Success May Depend on It!
- ☐ F2506 Worker Health and Hygiene: Your Job Depends on It!
- ☐ F2600 Food Industry Security Awareness: The First Line of Defense

## OTHER

- ☐ M4030 Ice: The Forgotten Food
- ☐ M4050 Personal Hygiene and Sanitation for Food Processing Employees
- ☐ M4060 Psychiatric Aspects of Product Tampering
- ☐ M4070 Tampering: The Issue Examined





# Thank You from the Ohio Association of Food and Environmental Sanitarians!

To everyone who donated items and their time to the Local Arrangements for IAFP 2008, August 3-6, 2008 in Columbus, Ohio.

Thank you to those who donated items for the Welcome Bags and Welcome Table.

3M Microbiology

Chemstar

Dawes Arboretum

Franklin Park Conservatory

Giant Eagle

Gojo Industries, Inc.

Hanna Instruments

The Kroger Company

Meijer

Michigan State University

Nestle USA Candy

Ohio Select

Orchem Corporation

Orkin, Inc.

Partnership for Food Safety

T. Marzetti Company

Weber Scientific

Wendy's

Thank you to these companies and organizations whose employees volunteered time.

Coshocton City Health Dept.

Columbus Public Health

Darke County Health Dept.

Delaware County Health Dept.

Dodd Consulting, Inc.

Fast Cars and Golf.com

Food Safety Plus

Giant Eagle

Gojo Industries, Inc.

Jackson County Health Dept.

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Marion County Health Dept.

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Meijer

Merry Maids

Montgomery County Health Dept.

Ohio Department of Agriculture

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The Ohio State University

Orchem Corporation

Summitt County Health Dept.

Tuscarawas Health Dept.

Union County Health Dept.

Vinton County Health Dept.

Wayne County Health Dept.

Wood County Health Dept.

And a big THANK YOU to the staff at the IAFP headquarters.



# NEW MEMBERS

## AUSTRALIA

**Richard J. Hannay**  
Rimcorp  
Townsville, Queensland

## BRAZIL

**Jose Pinto**  
FMVZ – UNESP  
Botucatu, São Paulo

## CANADA

**Hany Anany**  
University of Guelph  
Guelph, Ontario

**Tina Brillinger**  
MediaEdge Communications, Inc.  
Toronto, Ontario

**Shu Chen**  
University of Guelph  
Guelph, Ontario

**Nyall I. Hislop**  
Alberta Health Services  
Edmonton, Alberta

**Andre Laflamme**  
Niagara Region Public Health Dept.  
Thorold, Ontario

**Malliga M. Nagarajan**  
Canadian Food Inspection Agency  
Saint-Hyacinthe, Quebec

**Erica Nussbaumer**  
New Food Classics  
Saskatoon, Saskatchewan

**Ron Pecchioli**  
RONCO  
Concord, Ontario

**Ranjana Sharma**  
Agriculture and Agri-Food Canada  
Lethbridge, Alberta

## CHINA

**Yongning Wu**  
Chinese Center for Disease Control  
and Prevention  
Beijing

## FRANCE

**Marie-Pierre Copin**  
Laboratoires 3M Sante  
Cergy

**Choreh Farrokhi**  
CNIEL  
Paris, Cedex

**Catherine Francois**  
CIES  
Paris, Cedex

## REPUBLIC OF GEORGIA

**Liza Jorbenadze**  
Ministry of Agriculture of Georgia  
Tbilisi

## IRELAND

**Ursula A. Gonzales Barron**  
University College Dublin  
Dublin

**Arlene L. Gibbons**  
PepsiCo International  
Cork

## ITALY

**Bartolomeo Griglio**  
Local Health Unit to 5 Chieri (TO)  
Carignano, Torino

## MEXICO

**Sofia M. Arvizu-Medrano**  
Universidad Autonoma  
De Queretaro  
Queretaro, Queretaro

**Julio Parra Flores**  
Universidad Autonoma  
De Queretaro  
Queretaro, Queretaro

## SOUTH AFRICA

**Bulelwa Sihawu**  
DuPont De Nemours International S.A.  
Centurion, Gauteng

## TAIWAN

**Jiunn-Horng Lin**  
Animal Technology Institute Taiwan  
Miaoli

## TURKEY

**Ayşe H. Baysal**  
Izmir Institute of Technology  
Izmir

## UNITED KINGDOM

**Ian James**  
Alaska Food Diagnostics  
Salisbury, Wiltshire

**Jim McLaughlin**  
Health Protection Agency  
London

## UNITED STATES

### CALIFORNIA

**Jia-Long Liu**  
USDA  
West Covina

**Celesin Munimbazi**  
Corona

**John E. Urban**  
United States Public Health Service/FDA  
San Diego

**Colista Yates**  
Dineequity, Inc.  
Glendale

### FLORIDA

**Ronald Kritzler**  
Sky Plus Investment  
Miami

### GEORGIA

**Jennifer L. Cannon**  
University of Georgia  
Griffin



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## NEW MEMBERS

### ILLINOIS

**Joe Delaney**  
Prairie Farms Dairy  
Carlinville

**Tami D. Gharst**  
Key Laboratory Services  
Decatur

**Elisabeth J. Miller**  
US Smokeless Tobacco Co.  
Franklin Park

**Stephanie Wilkins**  
Silliker, Inc.  
Homewood

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Swiss Valley Farms Co.  
Monona

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**Sandra M. Tallent**  
US-FDA  
College Park

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Public Protection Specialists, LLC  
Avon

### MINNESOTA

**Adam T. Johnson**  
Supervalu  
Eden Prairie

**Randall S. Singer**  
University of Minnesota  
St. Paul

### NEBRASKA

**Zoucha Jaime**  
Zenith Consulting  
Lincoln

### NEW JERSEY

**Michelle Jacobs**  
SGS Consumer Testing Services  
Fairfield

**Kristina Mack**  
New Leaf Training  
Phillipsburg

**Rob Parrish**  
SGS North America  
Fairfield

### NEW YORK

**Angela Benton**  
Jetro/Restaurant Depot  
College Point

### NORTH DAKOTA

**John E. Ringsrud**  
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Lakota

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**Phoebe N. McCowan**  
US Smokeless Tobacco Co.  
Nashville

### TEXAS

**Paulette M. Platko**  
TEEX  
College Station

**Donna Wyatt**  
Bnbkennel  
Princeton

### WASHINGTON

**Kimberly D. Fry**  
Nutraceutix  
Redmond

### WEST VIRGINIA

**Amie J. Minor**  
West Virginia Dept. of Agriculture  
Charleston

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## NEW SILVER SUSTAINING MEMBER

### **AIV Microbiology and Food Safety Consultants, LLC**

Paul A. Hall  
Hawthorn Woods, Illinois

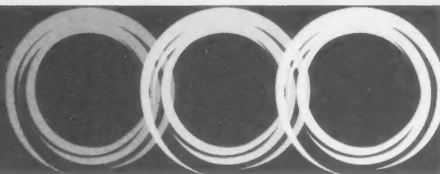
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## NEW SUSTAINING MEMBER

### **Sodexo**

Brian K. Turner  
Downers Grove, Illinois

# WHAT'S HAPPENING IN FOOD SAFETY



## 2009 Crumbine Award Guidelines Released

**T**he Foodservice Packaging Institute (FPI) has released the guidelines for the 2009 Samuel J. Crumbine Award for Excellence in Food Protection at the Local Level, which annually recognizes excellence in food protection services by local environmental health jurisdictions in the United States and Canada.

Named for one of America's most renowned health officers and health educators – Samuel J. Crumbine, M.D. (1862–1954) – the award has elevated the importance of food protection programs within government departments and agencies and has inspired excellence in the planning and delivery of those services.

Entries for the Crumbine Award competition are limited to US and Canadian local environmental health jurisdictions (county, district, city, town or township) that provide food protection services to their communities under authority of a statute or ordinance. The US Uniformed Services and US Indian Health Service area programs are also invited to compete, if they are not monitored by a state, county or city health unit. Past winners may apply five years after receiving the award.

The guidelines are the basis for all Crumbine Award applications and must be followed in order to be considered for the award. The basic award criteria, by which achievement is measured, are:

- Sustained improvements and excellence, as documented by specific outcomes and achievements, over the preceding four to six years,

as evidenced by continual improvements in the basic components of a comprehensive program;

- Innovative and effective use of program methods and problem solving to identify and reduce risk factors that are known to cause food-borne illness;
- Demonstrated improvements in planning, managing and evaluating a comprehensive program; and
- Targeted outreach; forming partnerships; and participating in forums that foster communication and information exchange among the regulators, industry and consumer representatives.

The winner of the award is selected by an independent panel of food protection practitioners who are qualified by education and experience to discern excellence in a program of food and beverage sanitation. They represent various interests, including leading public health and environmental health associations, past Crumbine Award winners, consumer advocates and the food industry. The jury makes its award selection each spring in a judging process administered by FPI. The application deadline for the award is March 13, 2009.

The Crumbine Award is supported by the Conference for Food Protection in cooperation with the American Academy of Sanitarians, American Public Health Association, Association of Food & Drug Officials, Foodservice Packaging Institute, International Association for Food Protection, International Food Safety Council, National Association of County and City Health Officials,

National Environmental Health Association, NSF International and Underwriters Laboratories, Inc.

## Silliker–Utah Receives NIH Grant to Research the Bioavailability of Allicin in Garlic Products

**S**illiker, Inc. – Utah has received a \$599,500 grant from the National Institutes of Health / National Center for Complementary and Alternative Medicine (NIH/NCCAM) to conduct a study on the allicin bioavailability of garlic products.

Under the direction of Research Director Larry Lawson, Ph.D., the study will evaluate the human bioavailability of allicin from a variety of commonly consumed powder supplements and garlic foods. Allicin is the main pharmacologically active compound of garlic and provides the greatest reputed health benefits.

Based on in vitro data, allicin bioavailability from most garlic supplements has been predicted to be very low (3–15%) as compared to raw garlic (100%). But without a validated method for measuring allicin bioavailability, it is difficult to reach real conclusions. This obstacle was removed in 2005 when Dr. Lawson successfully developed an assay for measuring allicin bioavailability. Currently, the Orem, UT, facility is the only laboratory in the world employing this highly complex method.

The NIH/NCCAM grant covers a minimum two-year period. When completed, the study will provide clinical researchers with: (1) An understanding of what type of supplements should be used in a clinical trial and in what form it should



be consumed; (2) How results can be extrapolated to crushed raw garlic, all of which are necessary to establish whether or not garlic or garlic supplements can have a health benefit. It will also provide supplement manufacturers with a correct standard for the design and evaluation of garlic supplements.

Since 1991, Silliker-Utah, formerly known as Plant Bioactives Research Institute, has been a pioneer in the analysis of dietary supplements using validated methods. Over the past four years, the laboratory has received two NIH grants to explore the mechanisms of potential benefit from garlic.

### **Summit Industrial Products Becomes the First Company in North America to Earn ISO 21469 Certification**

**N**SF has announced that KL Texas, L.P. (dba Summit Industrial Products), a worldwide leader in synthetic lubricant technology, is the first company in North America to receive Certification to ISO 21469: Safety of Machinery - Lubricants with Incidental Product Contact - Hygiene requirements.

According to a recent article in Machinery Lubrication, it is estimated that a significant proportion (60 percent or greater) of US food and beverage companies are not using incidental food-contact lubricants. This is important as only lubricants with incidental food contact may be safely used on machinery used for producing, manufacturing, packing, processing, preparing, treating, packaging, transporting, or holding food.

"Obtaining Certification to ISO 21469 is important to Summit because our customers in the

food industry want assurance that the products they buy meet strict quality and safety standards," said Summit President Fred Pate. "We believe by working with NSF to achieve independent certification, we not only improve the quality of our products, we also improve the confidence of our customers."

ISO 21469 specifies hygiene requirements for the formulation, manufacture, use and handling of lubricants, which may come into contact with products during manufacturing or processing. The international standard applies to lubricants intended for use in food production, as well as cosmetic, pharmaceutical and animal feed industries.

"Certification to ISO 21469 by an independent, third party provides lubricant manufacturers with a means to obtain international acceptance for their products," said Sarah Krol, NSF Business Unit Manager. "By obtaining certification, Summit is emphasizing their overall commitment to safety."

To receive ISO 21469 Certification, Summit fulfilled all NSF Certification requirements. These include the following:

Formulation/label review – which ensures that certified products are formulated with approved ingredients and that product labels are true and accurate.

Risk assessment – ensures that the manufacturer has identified and evaluated the relevant hazards associated with the manufacture and use of the certified product.

Production facility audits – confirm that all certification requirements are met and that quality assurance and quality control procedures are followed.

Annual testing – sampling and retesting are conducted on an ongoing basis to verify the integrity of the product composition.

Summit's dedication to quality and to the environment is further demonstrated by its ISO 9001:2000 Quality Management Systems registration, ISO 14001:2004 Environmental Management Systems registration, and OHSAS 18001:2007 Occupational Health and Safety Management Systems registration. Summit's products have been registered by NSF's Nonfood Registration Program since 2004. Summit also has Kosher and Halal certification for many of their food grade products.

Summit's lubricants will bear the NSF Certification Mark [http://www.nsf.org/business/newsroom/press\\_releases/images/ISO%2021469.jpg](http://www.nsf.org/business/newsroom/press_releases/images/ISO%2021469.jpg) on their labels to demonstrate compliance to ISO 21469. Summit's certification is also listed on NSF's Web site [http://www.nsf.org/Certified/ISO\\_21469/Listings.asp?Company=N06532&Standard=ISO21469](http://www.nsf.org/Certified/ISO_21469/Listings.asp?Company=N06532&Standard=ISO21469).

For more information about NSF's ANSI-accredited ISO 21469 Certification Program, please contact Sarah Krol, Business Unit Manager, NSF's Nonfood Compounds Registration Program, at [nonfood@nsf.org](mailto:nonfood@nsf.org) or 734. 827.6841. NSF International is currently the only organization offering American National Standards Institute (ANSI)-accredited ISO 21469 Certification.

### **GMA Appoints Pamela G. Bailey President and CEO**

**D**ouglas R. Conant, president and CEO of Campbell Soup Company, and chairman of the board of the Grocery Manufacturers Association (GMA), has announced the appointment of Pamela G. Bailey, president and CEO of the Personal Care Products Council (PCPC), as the association's new president and CEO.





Ms. Bailey has served as president and CEO of PCPC since 2005, where she utilized strategic and organizational leadership to redefining the direction of the association, enacted the industry's first-ever Consumer Commitment Code and enhanced the association's advocacy and communications capabilities. PCPC is the leading trade association representing the \$250 billion global cosmetic and personal care products industry. Its member companies manufacture a diverse range of products, including sunscreen, toothpaste, shampoo, moisturizer, lipstick and fragrances.

Prior to joining PCPC, Ms. Bailey served as president and CEO of the Advanced Medical Technology Association (AdvaMed), where she helped achieve significant FDA and Medicare payment reform. In 2002, Ms. Bailey and AdvaMed were named "A Lobby Leader of the Year" by Legal Times. In addition, she was the founding CEO and president of the Healthcare Leadership Council, a CEO-led organization tasked with reforming America's health care policies.

Ms. Bailey has extensive experience in the public sector, having served in the Reagan White House as head of the Office of Communications Planning and also as special assistant to the President and deputy director in the Office of Public Affairs. In addition, she has served as the assistant secretary of public affairs at the United States Department of Health and Human Services, and also served as an advisor to Presidents Ford and Nixon.

Pam Bailey is a trustee of Franklin and Marshall College, and is a member of the board of directors of Greatbatch, Inc. and also of MedCath, Inc. She is also a former director of Albertson's, Inc.

In a joint statement, Rick Wolford of Del Monte and Billy Cyr of

Sunny Delight, co-chairs of the GMA Executive Search Committee, said, "Given the legislative, regulatory and economic challenges facing our industry, GMA needs a leader like Pam Bailey to bring the industry together to advocate common sense public policy and regulatory solutions, as well as collaborate more closely with our retail trading partners. We welcome her and look forward to working with her to fulfill GMA's mission on behalf of the consumer packaged goods industry."

Pam Bailey succeeds GMA Interim President and CEO C. Manly Molpus, and will assume her new duties in January.

## 3-A SSI Announces 2009 Officers

The 3-A Sanitary Standards, Inc. (3-A SSI) Board of Directors has named Dan Meyer (American Dairy Products Institute) chair and elected other officers for 2009. Allen Sayler (International Dairy Foods Association) was elected vice chair; Lou Beaudette (Admix, Inc.) was elected treasurer, and Ronald Schmidt (Food Science & Human Nutrition, University of Florida) was named secretary.

Other members of the 3-A SSI Board of Directors include Kenneth Anderson (Harold Wainess & Associates), Lee Blakely (Saputo Cheese and Protein LLC), Warren S. Clark, Jr. (3-A Symbol Administrative Council, Inc.), Paul Gold (Pfizer Global Manufacturing Services), Larry Hanson, (Johnsonville Sausage, LLC), Robert F. Hennes (chief, FDA/CFSAN-Milk Safety Branch), David Jamison, (associate deputy administrator, Dairy Programs, USDA Agricultural Marketing), Greg Marconnet (Kraft Foods, Inc.), Stephen Schlegel (Food Processing Suppliers Association) and F. Tracy Schonrock (3-A Steering Committee).

## Rodale Institute's Jeff Moyer Elected to Chair USDA National Organic Standards Board

Jeff Moyer, farm director of the Rodale Institute, has been elected as the 2009 chair of US Department of Agriculture's National Organic Standards Board (NOSB). The board elected Moyer at its meeting in Washington, D.C., elevating him from the 2008 vice-chair role. His five-year board term began three years ago.

"This is a critical time for the organic movement and industry as forces try to dilute its hard-fought integrity with marketing terms such as 'sustainable' and 'natural,'" said Moyer, who has worked at Rodale Institute for more than 33 years. "It's critical that we protect the standards and also continue to educate the public about the value of the 'USDA Organic' seal."

Tim LaSalle, CEO of the Rodale Institute, emphasized the importance of organic as a solution to many of the key issues of our time, including global warming, human health challenges and worldwide hunger. "Organic agriculture provides critical human and ecological health benefits, so any erosion in standards is to steal from not only our own health but that of our children. We are pleased to know Jeff Moyer will lead this important board in assuring that the standards are maintained."

The NOSB is the US organic community's high-profile and all-volunteer advisory body to the National Organic Program (NOP), which sets USDA organic policy as part of the Agricultural Marketing Service. The board receives robust levels of comment from a broad range of constituent organic groups and individuals at and between its multi-day meetings held several times per year.



The NOSB is the USDA's only advisory group with statutory power mandating its advisory involvement. It functions under the Federal Advisory Committee Act, requiring it to have a high level of interaction and transparency. The board provides guidance on developing standards for substances and practices to be used in certified organic production, handling and processing.

"I value Jeff's wealth of experience in organic agriculture and regulation. Furthermore I believe Jeff's unique leadership skills, along with his management and technical background, are what the Board requires to continue providing effective and timely results for the benefit of the organic community," said Rigoberto Delgado, who stepped down as NOSB chair on Jan. 20, 2009. "I am pleased to say that Jeff's work with the Board has reflected his strong commitment to the principles and integrity of organic agriculture, and mirrors the values of the organization which he represents, the Rodale Institute."

Mr. Moyer manages the 333-acre Rodale Institute research farm. He has refined the farm's cover cropping and crop-rotation systems, and was instrumental in developing its no-till roller/crimper, a tool which makes possible organic no-till crop farming.

He has helped countless farmers make the transition from conventional, chemical-based farming to organic or biologically sustainable methods. Throughout his national and international agricultural leadership, Moyer has brought a practical farmer's perspective and approach to developing the future of organic agriculture.

He holds a farmer/grower seat on the board, and sits on the crops, livestock, materials and executive committees. He also worked with the aquaculture group which issued the NOSB's first proposed rules for fish production at last week's session. The current board is comprised of four farmers/growers, two handlers/processors, one retailer, one scientist, three consumer/public interest advocates, three environmentalists and one USDA accredited certifying agent (who sits on various committees).

Preparing to lead the board as it grapples with a new round of important issues from creating guidance documents on biodiversity, to the definitions of what is considered "agricultural" or "non-agricultural" as substances for food handling or processing Mr. Moyer affirmed what he said after that first year: "We do our best to protect the integrity of the organic industry but still allow for the expansion of the fullest range of products as organic continues to go mainstream."

## PIAB Announces New Chief Executive Officer

PIAB has appointed Per-Erik Lindquist to the position of CEO as the company continues its worldwide expansion and ongoing capture of new market segments. With more than two decades of experience at global companies in related industries, Mr. Lindquist will be a valuable asset as PIAB continues to assert its presence in an increasingly automated industrial world.

Over the past years, PIAB has seen steady growth in demand for its vacuum handling and conveying

products from global manufacturers and OEMs in the graphic, pharmaceutical, packaging, food and beverage, automotive and other automation-intensive industries. "Since PIAB has grown significantly and conquered new markets in such a short period of time, we chose to expand the depth of knowledge and experience of our management team by adding another talented professional," said Jacob Tell, Deputy CEO, PIAB.

"Mr. Lindquist brings a host of new ideas and relevant industry experience to the team that we believe will energize our entire organization." Mr. Lindquist acquired 20 years of experience at Scania, a leading truck manufacturer where he served as group vice president. Previously, he spent four years at Alfa-Laval, a manufacturer of cooling, heating and separation processing equipment, where he demonstrated leadership as an executive vice president.

"It is an honor to join PIAB, with its leading technology and the global presence to serve customers around the world," said Mr. Lindquist. "I am excited to lead a company with a truly revolutionary technology that helps customers across so many different industries and countries save energy and gain productivity with innovative solutions."

On October 1, Mr. Lindquist officially entered his position as CEO. At that time, former CEO Jacob Tell assumed the role of Deputy CEO to focus on managing PIAB's continued growth through mergers and acquisitions and dynamic pursuit of new markets.

# INDUSTRY PRODUCTS



Arizona Instrument LLC

## Computrac® MAX® 4000 Moisture/Solids Analyzer from Arizona Instrument

Arizona Instrument has announced the release of the newest addition to its line of moisture and solids analyzers, the Computrac® MAX® 4000. The Computrac® MAX® 4000 builds on the successes of its predecessor, the Computrac® MAX® 2000, with a more user-friendly interface and a slew of additional features designed to offer the end user faster throughput, greater control of testing conditions, and more comprehensive test data.

The Computrac® MAX® 4000 features a full-color screen that displays separate graphs for rate of moisture evolution and total moisture evolution. It also features a full ten digit alpha-numeric keypad for entering sample information.

The MAX® 4000 facilitates faster throughput via a forced air cooling system that allows the instrument to cool from test temperature to idle temperature 25% faster than previous models. The MAX® 4000 also features a Temperature Ramp Rate Control option which allows the user to control

the rate at which the instrument heats from idle to test temperature. There are also a number of new options for test-ending criteria which offer the user greater flexibility and control.

The MAX® 4000 also features a web server option that allows test results to be downloaded, and test parameters to be uploaded via a local intranet. Using the new USB port, test results can also be captured directly from an instrument using an external flash memory device. The USB port can also interface directly with a barcode reader, a printer, or a nitrogen control module.

The Parameter Expert option of the MAX® 4000 assists the end user in the development of repeatable, sample-specific test parameters. Just start the Parameter Expert program and follow the on-screen prompts, and after a few tests the instrument will return an optimal parameter set for the sample.

Arizona Instrument designs, manufactures and markets Computrac® precision moisture analysis instruments and Jerome® toxic gas detectors used in quality control, industrial process control, and environmental monitoring applications. The company provides complete customer service including on-site service and calibration. In addition, AZI will test samples for feasibility, provide free trials and 24-hour technical support. A local company with worldwide distribution, Arizona Instrument has been partnering with manufacturers and consultants for more than 20 years.

**Arizona Instrument LLC**

800.290.1414

Chandler, AZ

[www.azic.com](http://www.azic.com)

## Hardy Diagnostics CVM Transport Media and Flocked Swabs

Hardy Diagnostics has put together a "Dynamic-Duo" CVM Transport Media and Flocked Swabs for the collection and transport of chlamydia, viruses, or mycoplasma.

Hardy Diagnostics CVM Transport Media is provided in plastic centrifuge tubes and is used for the collection and transport of clinical specimens for the recovery of chlamydia, viruses, and mycoplasma; more specifically, agents including: Herpes Simplex Type I, Herpes Simplex Type II, Cytomegalovirus (CMV), Influenzae A, Influenzae B, Respiratory Syncytial Virus (RSV), Echovirus, Adenovirus, *Chlamydia trachomatis*, *Chlamydia pneumoniae*, *Mycoplasma hominis*, *Mycoplasma pneumoniae* and *Ureaplasma urealyticum*. Specimens may be transported at room temperature for up to 48 hours.

The Hardy CVM kits are now supplied with the new nylon flocked swabs. Diagnostic sensitivity of test procedures can vary depending on the number of cells and free organisms released by the transport swab. Based on recent studies, samples collected with nylon flocked swabs yielded more epithelial cells than those collected using traditional rayon or dacron swabs, thus providing better sensitivity for a more accurate diagnosis. Flocked swabs are compatible with rapid antigen kits, DFA, culture, and PCR.

Hardy Diagnostics offers the "Dynamic-Duo" CVM-Flocked Swab Kits in three kit formats. Nasopharyngeal, Male STD, and Female STD; each of these kits have a flocked swab specifically designed for optimal performance for each body site.

**Hardy Diagnostics**

800.266.2222

Santa Maria, CA

[www.hardydiagnostics.com](http://www.hardydiagnostics.com)

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## INDUSTRY PRODUCTS

### Thermo Fisher Scientific Launches Program to Meet Melamine Detection Challenges

**T**hermo Fisher Scientific, Inc., has announced it has launched a program focused on assisting government and commercial food testing laboratories in the development and implementation of methods for the analysis of melamine in food products imported from China. This new program comes in response to the recent alert issued by the US Food and Drug Administration (FDA).

The US FDA Import Alert #99-30 sets forth guidelines requiring the "Detention without physical examination of all milk products, milk derived ingredients and finished food products containing milk from China due to the presence of melamine and/or melamine analogs." This alert is expected to put new pressures on food producers and retailers and increase demand for timely testing by commercial laboratories. The alert includes specific guidelines for product testing as well as requirements that need to be met before a detained product can be released.

"Thermo Fisher Scientific is able to provide a complete testing solution – including sample preparation, instrumentation, consumables and methods support – necessary to enable a laboratory to perform the sample analysis according to FDA alert requirements," said Marc N. Casper, chief operating officer of Thermo Fisher Scientific. "We're leveraging the knowledge of our food safety experts and our extensive portfolio of technologies and services to develop new testing methods that increase sample throughput and

ensure that melamine testing is both rapid and thorough."

Melamine, an inexpensive industrial chemical used primarily in the manufacture of plastics, and cyanuric acid, a byproduct of melamine, have been linked to food contamination primarily in milk-based products and food additives. Melamine is added to increase the perceived protein content of milk products. Humans and animals cannot metabolize melamine and cyanuric acid, which can eventually crystallize in the kidneys, resulting in a variety of illnesses; melamine contamination has also been linked to several deaths in China. While the current FDA alert is focused on milk and milk-based products, melamine has also been found in pet foods, eggs and produce.

"We anticipate a significant increase in demand for testing following the FDA alert on milk-based products imported from China," said Dr. Stuart Cram, who is leading the Food Safety Program within Thermo Fisher Scientific. "To help our customers handle this expected increase in volume, we're consulting with testing labs and offering methods and technology support. We will also develop melamine analysis courses that we'll offer at our training centers worldwide and at customer sites. These actions should help our customers improve their sample throughput, which is paramount given the expected volume of product affected by the alert."

Thermo Fisher Scientific has developed a testing method based on a Thermo Scientific liquid chromatography tandem mass spectrometry (TSQ Quantum LC-MS/MS) system. This method is currently being used as a reference by the labs under the Administration of Quality Supervision, Inspection and Quarantine (AQSIQ) in China to develop an LC-

MS/MS method for the detection of melamine in milk and infant formula.

In addition to the LC-MS/MS solution, Thermo Fisher Scientific can provide screening and confirmation techniques based on its Thermo Scientific gas chromatography/mass spectrometry (GC/MS) technologies. The company's ITQ™ Series quadrupole ion trap GC/MS, or its TSQ Quantum triple quadrupole GC/MS with highly selective reaction monitoring (H-SRM), can perform quick and accurate analysis of melamine in complex samples such as milk and baby formula. Thermo Fisher's comprehensive offerings also include a range of sample collection, sample preparation and data management products. Completing the workflow solution is a broad portfolio

**Thermo Fisher Scientific, Inc.**  
800.532.4752  
San Jose, CA  
[www.thermo.com/foodsafety](http://www.thermo.com/foodsafety)

### Charm Sciences, Inc. has Released the First Lateral Flow Quantitative Test for T-2 and HT-2 Toxins

**F**or use in the grain industry, the new ROSA® (Rapid One Step Assay) follows the same format that other Charm Mycotoxin tests use, as follows: Add the sample extract to the ROSA T2-HT2 test strip, incubate and count in the ROSA-M reader. Results are available in two ranges: 0–250 ppb, and 0–2.5 ppm.

The Charm ROSA T2-HT2 provides a long-sought tool to rapidly and accurately detect T-2 and HT-2 toxins that adversely affect animal and human health. T-2 and HT-2 are trichothecene toxins generated by several *Fusarium* species (e.g., *F. sporothrichoides*) in corn, wheat,

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## INDUSTRY PRODUCTS

barley, rye and oats. These toxins are known to cause feed refusal, edema, vomiting, immunosuppression and gastrointestinal inflammation in animals, and alimentary toxic aleukia in humans.

In addition to the ROSA T2-HT2 test, the following ROSA mycotoxin tests are available.

- 3-min quantitative test for aflatoxin in corn
- 3-min qualitative test for DON in wheat and barley
- 10-min quantitative tests for aflatoxin, DON, fumonisin, ochratoxin and zearalenone in multiple commodities.

**Charm Sciences, Inc.**  
978.687.9200  
Lawrence, MA  
www.charm.com



Torrey Pines Scientific, Inc.

### New HPLC Column Chiller/Heater from Torrey Pines Scientific, Inc.

**T**orrey Pines Scientific, Inc. announces its new EchoTherm™ HPLC Column Chiller/Heater Model CO50.

This new unit has a temperature range from 4.0°C to 100.0°C readable and settable to 0.1°C. The

PID temperature control software regulates temperatures to  $\pm 0.2^\circ\text{C}$ , even at ambient.

The Peltier-based CO50 has 5-program memories with 10 steps per program and the ability to repeat any program from 1 to 99 times automatically.

This unit is ideal for chiral and biomedical chromatography where below ambient temperatures help preserve bioactivity. It can be used for stabilizing column temperatures from day to day at or near room temperatures for repeatable results.

Temperature accuracy and stability are excellent, and there is a stable temperature indicator lamp on the front panel of the unit that lights when the target temperature is stable.

The unit can hold columns up to 30 cm long by 1/4" or 3/8" diameter in mounting clips provided. Larger diameter columns can be used by removing the column clips that hold the smaller columns.

The CO50 features RS232 I/O port for controlling the unit by a chromatograph, for programming gradients, and for data collection. Also included are an injection counter, 30-day timer with user settable Auto-Off, and a chamber drain for spills.

The unit comes with a bench-top universal power supply for use anywhere in the world, 3-wire AC line cord for the country of use, twelve-month warranty and instruction manual. The Model CO50 is UL, CSA, and CE compliant.

**Torrey Pines Scientific, Inc.**  
866.573.9104  
San Marcos, CA  
www.torreyпинesscientific.com

### Steritech Launches First SQF and BRC Compliant Pest Prevention Program

**A**nticipating an industry trend towards the adoption of globally recognized standards for food safety and quality, Steritech has tailored its Zero Tolerance Pest Prevention® Program standards to be Safe Quality Food (SQF) and British Retail Consortium (BRC) compliant. This move, the first in the industry, will help primary producers, manufacturers and distributors comply with rigorous new third party audit standards.

"Often overlooked, pest prevention plays a surprisingly important role in the governance, risk and compliance strategies for companies connected in any way to the supply chain," says Steritech CEO Mark Jarvis. "Partnering with a company that has intimate knowledge of the standards and specifically the requirements around pesticide use, documentation, reporting and remedial action is a clear advantage."

In recent years, rapid globalization of the food supply has led to the proliferation of food safety standards and certification schemes. Even under the Global Food Safety Initiative (GFSI) there are three accepted standards: Dutch HACCP, SQF and BRC. Steritech's Zero Tolerance Pest Prevention Program has been benchmarked against these standards, providing the highest possible levels of protection against structure infesting pests. In addition, Steritech's sophisticated technology platform provides unprecedented visibility over important pest control data.

**The Steritech Group, Inc.**  
704.544.1900  
Charlotte, NC  
www.steritech.com

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





Mettler-Toledo Safeline

### X-ray Inspection System for Packaged Products from Mettler-Toledo Safeline

**M**ettler-Toledo Safeline introduces AdvanChek – a revolutionary, cost-effective x-ray contaminant inspection system for packaged products. AdvanChek brings the easy operation and reliability inherent in Safeline metal detectors to x-ray inspection.

AdvanChek is economical yet delivers Mettler-Toledo Safeline's hallmark qualities of high sensitivity, accuracy, and reliability. Using unique low energy x-ray technology, the AdvanChek x-ray inspection system reliably detects and rejects many contaminants including metal, stone, glass, and bone.

With a sophisticated, user-intuitive color touch screen interface, the system requires minimal training – operators will be comfortable operating AdvanChek in less than 30 minutes due to its unique automatic set-up feature. AdvanChek's modular design has three main modules that are quickly replaceable ensuring maximum uptime.

The AdvanChek x-ray system's small and flexible footprint enables easy integration into any production line. Washdown protected enclosure is built to NEMA 12 specifications and is upgradeable to NEMA 4X suitable for high pressure, hot, caustic washdown environments. All material handling and reject systems are custom designed and manufactured in-house specific to each application.

Easy to operate, flexible design, modular construction and improved reliability ensure low start up costs and the lowest lifetime costs of any x-ray system on the market.

**Mettler-Toledo Safeline**

800.447.4439

Tampa, FL

[www.mt.com/safelineus](http://www.mt.com/safelineus)

### BAX® System 24E Assays Certified by AFNOR from DuPont Qualicon

**T**wo new PCR assays from DuPont Qualicon have received AFNOR certification as alternative methods for detecting *Listeria* and *Listeria monocytogenes*. These BAX® system 24E assays, developed in collaboration with Oxoid, Ltd., use optimized enrichment media to provide next-day test results from food and environmental samples.

AFNOR Certification is an internationally recognized European system that validates food testing methods according to the EN ISO 16140 protocol. The AFNOR VALIDATION mark certifies that a multi-phase validation study by

approved expert laboratories demonstrated equivalent results between the alternative test method and the traditional standardized method. This certification meets all the requirements of European regulation 2073/2005 relating to microbiological criteria applicable to food.

"Our goal is to help food companies improve their productivity and profitability with fast, accurate diagnostic tests," said Doris Engesser-Sudlow, EMEA business leader for DuPont Qualicon. "The AFNOR VALIDATION mark provides another level of highly credible assurance that they can use the BAX® system for quick, convenient and reliable results."

Food processing companies around the world rely on the BAX® system to detect pathogens or other organisms in raw ingredients, finished products and environmental samples. The automated system uses leading-edge technology, including polymerase chain reaction (PCR) assays, tableted reagents and optimized media, to detect *Salmonella*, *Listeria*, *Listeria monocytogenes*, *E. coli* O157:H7, *Enterobacter sakazakii*, *Campylobacter*, *Staphylococcus aureus* and yeast and mold. With certifications and regulatory approvals in the Americas, Asia and Europe, the BAX® system is recognized globally as the most advanced pathogen testing system available to food companies.

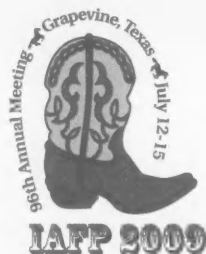
**DuPont Qualicon**

302.695.5300

Wilmington, DE

[www.qualicon.com](http://www.qualicon.com)

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



# IAFP 2009 NETWORKING OPPORTUNITIES

## IAFP FUNCTIONS

### WELCOME RECEPTION

Saturday, July 11 • 5:00 p.m. – 6:30 p.m.

Reunite with colleagues from around the world as you socialize and prepare for the leading food safety conference. Everyone is invited!

### COMMITTEE MEETINGS

Saturday, July 11 • 3:00 p.m. – 4:30 p.m.

Sunday, July 12 • 7:00 a.m. – 5:00 p.m.

Committees and Professional Development Groups (PDGs) plan, develop and institute many of the Association's projects, including workshops, publications, and educational sessions. Share your expertise by volunteering to serve on committees or PDGs. Everyone is invited to attend.

### STUDENT LUNCHEON

Sunday, July 12 • 12:00 p.m. – 1:30 p.m.

*Sponsored by Texas A&M University, Center for Food Safety*

The mission of the Student PDG is to provide students of food safety with a platform to enrich their experience as Members of IAFP. Sign up for the luncheon to help start building your professional network.

### EDITORIAL BOARD RECEPTION

Sunday, July 12 • 4:30 p.m. – 5:30 p.m.

Editorial Board Members are invited to this reception to be recognized for their service during the year.

### OPENING SESSION AND IVAN PARKIN LECTURE

Sunday, July 12 • 6:00 p.m. – 7:00 p.m.

Join us to kick off IAFP 2009 at the Opening Session. Listen to the prestigious Ivan Parkin Lecture delivered by Dr. Paul A. Hall.

### CHEESE AND WINE RECEPTION

Sunday, July 12 • 7:00 p.m. – 9:00 p.m.

*Sponsored by Kraft Foods*

An IAFP tradition for attendees and guests. The reception begins in the Exhibit Hall immediately following the Ivan Parkin Lecture on Sunday evening.

### IAFP JOB FAIR

Sunday, July 12 through Wednesday, July 15

Employers, take advantage of the opportunity to recruit the top food scientists in the world! Post your job announcements and interview candidates.

### COMMITTEE AND PDG CHAIRPERSON BREAKFAST

Monday, July 13 • 7:00 a.m. – 9:00 a.m.

Chairpersons and Vice Chairpersons are invited to attend this breakfast to report on the activities of your committee.

### EXHIBIT HALL LUNCH

Monday, July 13 • 12:00 p.m. – 1:00 p.m.

*Sponsored by JohnsonDiversey*

Tuesday, July 14 • 12:00 p.m. – 1:00 p.m.

*Sponsored by SGS North America*

Stop in the Exhibit Hall for lunch and networking on Monday and Tuesday.

### EXHIBIT HALL RECEPTIONS

Monday, July 13 • 5:00 p.m. – 6:00 p.m.

*Sponsored by DuPont Qualicon*

Tuesday, July 14 • 5:00 p.m. – 6:00 p.m.

Join your colleagues in the Exhibit Hall to see the most up-to-date trends in food safety techniques and equipment. Take advantage of these great networking opportunities.

### PRESIDENT'S RECEPTION

Monday, July 13 • 6:00 p.m. – 7:00 p.m.

*Sponsored by Fisher Scientific*

This by-invitation event is held each year to honor those who have contributed to the Association during the year.

### BUSINESS MEETING

Tuesday, July 14 • 12:15 p.m. – 1:00 p.m.

You are encouraged to attend the Business Meeting to keep informed of the actions of YOUR Association.

### JOHN H. SILLIKER LECTURE

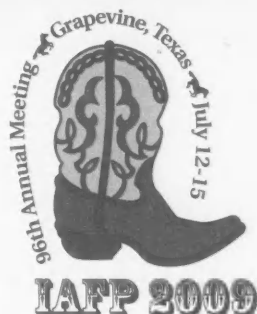
Wednesday, July 15 • 4:00 p.m. – 4:45 p.m.

The John H. Silliker Lecture will be delivered by Dr. Patrick Wall.

### AWARDS RECEPTION AND BANQUET

Wednesday, July 15 • 6:00 p.m. – 9:30 p.m.

Bring IAFP 2009 to a close at the Awards Banquet. Award recipients will be recognized for their outstanding achievements and the gavel will be passed from Dr. Stan Bailey to Incoming President Vickie Lewandowski.



# IAFP 2009 GENERAL INFORMATION

## REGISTRATION INCLUDES

Register to attend the world's leading food safety conference.

Full Registration includes:

- Program and Abstract Book
- Welcome Reception
- Ivan Parkin Lecture
- Cheese and Wine Reception
- Technical Sessions
- Poster Presentations
- Symposia
- Exhibit Hall Admittance
- Exhibit Hall Lunch (Mon. & Tues.)
- Exhibit Hall Reception (Mon. & Tues.)
- John H. Silliker Lecture
- Awards Banquet

## PRESENTATION HOURS

<b>Sunday, July 12</b>	
Opening Session	6:00 p.m. – 7:30 p.m.
<b>Monday, July 13</b>	
Symposia & Technical Sessions	8:30 a.m. – 5:00 p.m.
<b>Tuesday, July 14</b>	
Symposia & Technical Sessions	8:30 a.m. – 5:00 p.m.
<b>Wednesday, July 15</b>	
Symposia & Technical Sessions	8:30 a.m. – 3:30 p.m.
Closing Session	4:00 p.m. – 4:45 p.m.

## GOLF TOURNAMENT

<b>Saturday, July 11</b>	
Golf Tournament at Tour 18	6:00 a.m. – 2:00 p.m.
Join your friends and colleagues for an exciting round of golf before IAFP 2009.	

## DAYTIME EVENTS

<b>Saturday, July 11</b>	9:00 a.m. – 3:00 p.m.
JFK and Dallas City Tour	
<b>Sunday, July 12</b>	10:00 a.m. – 3:00 p.m.
Grapevine Historical Tour (Lunch included)	
<b>Monday, July 13</b>	12:00 p.m. – 5:00 p.m.
Fort Worth Stockyards Tour (Lunch included)	
<b>Tuesday, July 14</b>	10:00 a.m. – 3:00 p.m.
Fort Worth Arts Tour (Lunch included)	

## EVENING EVENTS

<b>Sunday, July 12</b>	
Opening Session	6:00 p.m. – 7:30 p.m.
Cheese and Wine Reception	7:30 p.m. – 9:30 p.m.
Sponsored by Kraft Foods	
<b>Monday, July 13</b>	
Exhibit Hall Reception	5:00 p.m. – 6:00 p.m.
Sponsored by DuPont Qualicon	

**Monday Night Social –**  
Texas Fun on the Ranch

6:30 p.m. – 10:00 p.m.

## Tuesday, July 14

Exhibit Hall Reception	5:00 p.m. – 6:00 p.m.
<b>IAFP Foundation Fundraiser</b>	6:30 p.m. – 9:30 p.m.

## Wednesday, July 15

Awards Banquet Reception	6:00 p.m. – 7:00 p.m.
Awards Banquet	7:00 p.m. – 9:30 p.m.

## SPECIAL EVENTS

### Saturday, July 11

NIFSI Project Directors Meeting	11:00 a.m. – 5:00 p.m.
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### Tuesday, July 14

Texas A&M Breakfast	7:00 a.m. – 8:30 a.m.
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### Tuesday, July 14

NFPA Alumni and Friends Reception	6:00 p.m. – 8:00 p.m.
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## REGISTER ONLINE

Register online at [www.foodprotection.org](http://www.foodprotection.org)

## EXHIBIT HOURS

<b>Sunday, July 12</b>	7:30 p.m. – 9:30 p.m.
<b>Monday, July 13</b>	10:00 a.m. – 6:00 p.m.
<b>Tuesday, July 14</b>	10:00 a.m. – 6:00 p.m.

## HOTEL INFORMATION

Hotel reservations can be made online at [www.foodprotection.org](http://www.foodprotection.org).

The IAFP Annual Meeting Sessions, Exhibits and Events will take place or depart from the Gaylord Texan Resort.

Gaylord Texan Resort \$169.00 per night

## CANCELLATION POLICY

Registration fees, less a \$50 administration fee and any applicable bank charges, will be refunded for written cancellations received by June 26, 2009. No refunds will be made after June 26, 2009; however, the registration may be transferred to a colleague with written notification. Refunds will be processed after July 20, 2009.

Event and extra tickets purchased are nonrefundable.



**International Association for  
Food Protection.**

6200 Aurora Avenue, Suite 300W  
Des Moines, IA 50322-2864, USA  
Phone: +1 800.369.6337 • +1 515.276.3344  
Fax: +1 515.276.8655  
E-mail: [info@foodprotection.org](mailto:info@foodprotection.org)  
Web site: [www.foodprotection.org](http://www.foodprotection.org)



# IAFP 2009 REGISTRATION FORM

## 3 Ways to Register

**ONLINE**  
www.foodprotection.org

**FAX**  
+1 515.276.8655

**MAIL**  
6200 Aurora Ave., Suite 200W  
Des Moines, IA 50322-2864, USA

Member Number: \_\_\_\_\_

First name (as it will appear on your badge)		Last name	
Employer		Title	
Mailing Address (Please specify: <input type="checkbox"/> Home <input type="checkbox"/> Work)			
City	State/Province	Country	Postal/Zip Code
Telephone	Fax	E-mail	

☐ 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 JUNE 9, 2009 TO AVOID LATE REGISTRATION FEES

REGISTRATION FEES	MEMBERS	NONMEMBERS	TOTAL
Registration	\$ 430 (\$ 480 late)	\$ 650 (\$ 700 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.	\$ 230 (\$ 255 late)	\$ 360 (\$ 385 late)	_____
Spouse/Companion* (Name): _____	\$ 60 (\$ 60 late)	\$ 60 (\$ 60 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, 7/15	\$ 55 (\$ 65 late)	\$ 55 (\$ 65 late)	_____
Student Luncheon - Sunday, 7/12	\$ 10 (\$ 15 late)		_____
<b>DAYTIME EVENTS</b>		<b># OF TICKETS</b>	
Golf Tournament at Tour 18 - Saturday, 7/11	\$ 145 (\$ 155 late)	_____	_____
JFK and Dallas City Tour - Saturday, 7/11	\$ 58 (\$ 63 late)	_____	_____
Grapevine Historical Tour - Sunday, 7/12 (Lunch included)	\$ 83 (\$ 88 late)	_____	_____
Fort Worth Stockyards Tour - Monday, 7/13 (Lunch included)	\$ 84 (\$ 89 late)	_____	_____
Fort Worth Arts Tour - Tuesday, 7/14 (Lunch included)	\$ 85 (\$ 90 late)	_____	_____
<b>EVENING EVENTS</b>			
Monday Night Social - Texas Fun on the Ranch - Monday, 7/13	\$ 45 (\$ 55 late)	_____	_____
IAFP Foundation Fundraiser - Tuesday, 7/14	\$ TBD	_____	_____
<b>SPECIAL EVENTS</b>			
NIFSI Project Directors Meeting - Saturday, 7/11	\$ 80 (\$ 90 late)	_____	_____
Texas A&M Breakfast - Tuesday, 7/14	\$ 10 (\$ 20 late)	_____	_____
NFPA Alumni and Friends Reception - Tuesday, 7/14	\$ 35 (\$ 45 late)	_____	_____
<b>ABSTRACTS</b>			
Annual Meeting Abstracts (citabile publication to be mailed Sept. 1)	\$ 30	\$ 30	_____

Payment Options: ☐ VISA ☐ Master Card ☐ American Express ☐ Discover

TOTAL AMOUNT ENCLOSED \$ \_\_\_\_\_ US FUNDS ON US BANK

☐ Check Enclosed

Refunds subject to cancellation policy

CREDIT CARD # \_\_\_\_\_

**JOIN TODAY AND SAVE!!!**

(Attach a completed Membership application)

CARD ID # \_\_\_\_\_ EXP. DATE \_\_\_\_\_

SIGNATURE \_\_\_\_\_

**EXHIBITORS DO NOT USE THIS FORM**

\* Visa, Mastercard and Discover: See 3-digit Card ID number on the back of the card after account number.  
American Express: See 4-digit, non-embossed number printed above your account number on the face of your card.

☐ Check box if you are a technical, poster, or symposium speaker.



# COMING EVENTS

## MARCH

- **2-3, 9th Annual ASQ Lean Six Sigma Conference**, Phoenix, AZ. For more information, call 800.248.1946 or go to [www.asq.org](http://www.asq.org).
- **4-5, Implementing SQF 2000 Systems**, Eagan, MN. For more information, E-mail [foodsafety@ecolab.com](mailto:foodsafety@ecolab.com).
- **10-13, HTST Workshop**, Murfreesboro, TN. For more information, call Randolph Associates at 205.595.6455; E-mail [henry.randolph@raiconsult.com](mailto:henry.randolph@raiconsult.com).
- **11-12, Sustainability Workshop**, Westin City Center, Dallas, TX. For more information, call Kellie Bland at 202.220.3557 or go to [www.idfa.org](http://www.idfa.org).
- **17-18, Food Plant GMP/Sanitation Workshop**, San Antonio, TX. For more information, call AIB International at 800.633.5137; or go to [www.aibonline.org](http://www.aibonline.org).
- **18-20, Idaho Environmental Health Association Annual Education Conference**, Boise State University, Boise, ID. For more information, contact Bob Erickson at 208.788.4335; E-mail: [berickson@phd5.idaho.gov](mailto:berickson@phd5.idaho.gov) or visit [www.idahoenvironmentalhealth.org](http://www.idahoenvironmentalhealth.org).
- **23-24, Introduction to HACCP**, Eagan, MN. For more information, E-mail [foodsafety@ecolab.com](mailto:foodsafety@ecolab.com).
- **24-25, IDFA's Milk Procurement Workshop**, Crowne Plaza O'Hare, Rosemont, IL. For more information, call Kellie Bland at 202.220.3557 or go to [www.idfa.org](http://www.idfa.org).
- **25, Advanced Artisan Cheese Making Workshop**, University of Idaho, Food Science and Toxicology Dept., Gooding, ID. For more information, contact Paula Peterman at 208.364.6188; E-mail: [paulap@uidaho.edu](mailto:paulap@uidaho.edu).
- **31-April 1, NIAA's 2009 Annual Meeting**, Louisville, KY. For more information, call 270.782.9798 or go to [www.animalagriculture.org](http://www.animalagriculture.org).

## APRIL

- **1-3, Missouri Milk, Food and Environmental Health Association Annual Educational Conference**, Stoney Creek Inn, Columbia, MO. For more information, contact Gala Miller at 573.659.0706; E-mail: [galaj@socket.net](mailto:galaj@socket.net) or go to [www.mmfeha.org](http://www.mmfeha.org).
- **2-3, Conference on Food Safety and Public Health Frontier: Minimizing Antibiotic Resistance Transmission through the Food Chain**, Embassy Suites - Crystal City - National Airport, Washington, D.C. For more information, call 703.979.9799 go E-mail [Wang.707@osu.edu](mailto:Wang.707@osu.edu); [John.Sofos@ColoState.edu](mailto:John.Sofos@ColoState.edu); or [Thad.Stanton@ars.usda.gov](mailto:Thad.Stanton@ars.usda.gov).
- **8-9, Implementing SQF 2000 Systems**, Eagan, MN. For more information, E-mail [foodsafety@ecolab.com](mailto:foodsafety@ecolab.com).
- **17-22, 2009 NCIMS Conference**, Caribe Royale, Orlando, FL. For more information, contact Marlena Bordson at 217.762.2656; E-mail [ncims.bordson@gmail.com](mailto:ncims.bordson@gmail.com).
- **22, SfAM Spring Meeting**, Aston University, Birmingham, UK. For more information, go to [www.sfam.org.uk/spring\\_meetings.php](http://www.sfam.org.uk/spring_meetings.php).
- **26-28, 2009 ADPI/ABI Annual Conference**, Hyatt Regency, Chicago, IL. For more information, go to [www.adpi.org/Events/tabid/83/Default.aspx](http://www.adpi.org/Events/tabid/83/Default.aspx).
- **27-29, 2009 Food Safety Summit**, Washington, D.C. Convention Center, Washington, D.C. For more information, go to [www.foodsafetysummit.com](http://www.foodsafetysummit.com).
- **28-30, 2009 TAPPI PLACE Flexible Packaging Summit**, Columbus, OH. For more information, call 800.332.8686 or go to [www.tappi.org/09placesummit](http://www.tappi.org/09placesummit).
- **31-April 2, Cultured Dairy Products and Milk Technology Symposium**, St. Louis, MO. For more information, call Kellie Bland at 202.220.3557 or go to [www.idfa.org](http://www.idfa.org).

## MAY

- **2-4, IDFA Spring Board Meeting**, The Wigwam Golf Resort and Spa, Phoenix, AZ. For more information, call Kellie Bland at 202.220.3557 or go to [www.idfa.org](http://www.idfa.org).
- **4-6, Food Marketing Institute Future Connect Conference**, Hyatt Regency, Dallas, TX. For more information, go to [www.fmifutureconnect.com](http://www.fmifutureconnect.com).
- **5-7, Sanitation Workshop**, Randolph Associates, Inc., Birmingham, AL. For more information, call 205.595.6455; E-mail: [henry.randolph@raiconsult.com](mailto:henry.randolph@raiconsult.com).
- **5-8, 2009 APHL Annual Meeting**, Egan Civic and Convention Center, Anchorage, AK. For more information, contact Terry Reamer at 240.485.2776 or E-mail: [terry.reamer@aphl.org](mailto:terry.reamer@aphl.org).
- **6, Metropolitan Association for Food Protection Spring Seminar**, Rutgers University, Cook College Campus Center, New Brunswick, NJ. For more information, contact Carol Schwar at 908.475.7960; E-mail: [cschwar@co.warren.nj.us](mailto:cschwar@co.warren.nj.us) or visit [www.metrofoodprotection.org](http://www.metrofoodprotection.org).
- **10-13, VTEC 2009 7th International Symposium on Shiga Toxin (Verocytotoxin) Producing Escherichia coli Infections**, Centro Cultural Borges, Buenos Aires, Argentina. For more information, go to [www.vtec2009.com.ar/](http://www.vtec2009.com.ar/).
- **12-13, Dairy Cost Accounting Workshop**, Hyatt Rosemont, Rosemont, IL. For more information, call Kellie Bland at 202.220.3557 or go to [www.idfa.org](http://www.idfa.org).
- **13-14, Pennsylvania Association of Milk, Food and Environmental Sanitarians Meeting**, Nittany Lion Inn, State College, PA. For more information, contact Gene Frey at 717.397.0719; E-mail: [erfrey@landolakes.com](mailto:erfrey@landolakes.com).
- **18-22, 2009 3-A SSI Education Meeting and Annual Meeting**, Milwaukee Airport Hotel and Convention Center, Milwaukee, WI. For more information, call 703.790.0295 or go to [www.3-a.org](http://www.3-a.org).



# COMING EVENTS

- **25-27, Brazil Association for Food Protection Annual Meeting**, Conselho Regional de Química, São Paulo, Brazil. For more information, visit [www.abrappa.org](http://www.abrappa.org).

## JUNE

- **2-3, Principles of Inspecting and Auditing Food Plants Workshop**, San Antonio, TX. For more information, call AIB International at 800.633.5137; or go to [www.aibonline.org](http://www.aibonline.org).
- **3-6, HACCP Workshop for Packaging Suppliers Workshop**, Louisville, KY. For more information, call AIB International at 800.633.5137; or go to [www.aibonline.org](http://www.aibonline.org).

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## JULY

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## In Memory

*Samuel A. Palumbo*  
*Naperville, Illinois*

We extend our deepest sympathy to the family of Sam Palumbo who recently passed away. IAFP will always have sincere gratitude for his contribution to the Association and the profession. Dr. Palumbo has been a member of IAFP since 1991. In January 2008, Dr. Palumbo received the IAFP Lifetime Achievement Award. He has served on the IAFP Nominating Committee (2001-2004) and was currently serving on the editorial board of the *Journal of Food Protection*.

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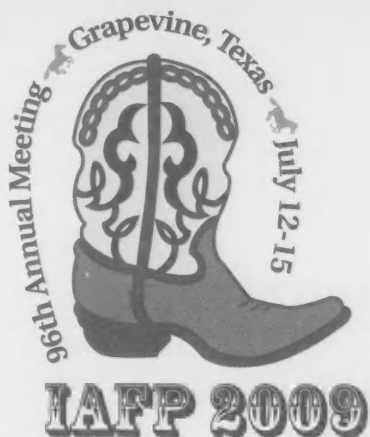
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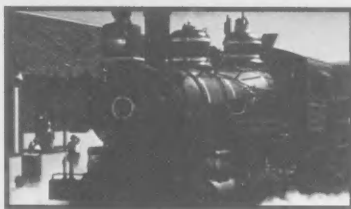
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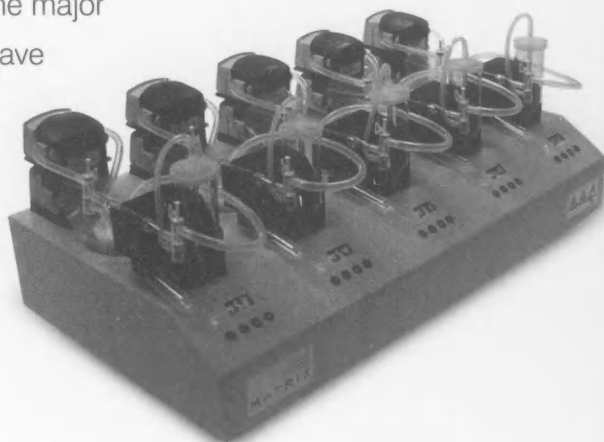
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