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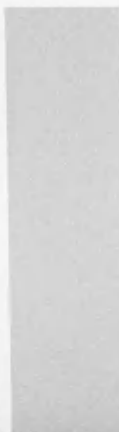


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FOOD PROTECTION TRENDS

VOLUME 30, NO. 3

ARTICLES

- 160 Retort Cooling Water Bacteriological Load and Possible Mitigation Strategies for Microbial Buildup in Cooling Water**
Richard Podolak, Warren Stone and Darryl G. Black
- 168 *Listeria monocytogenes* Biofilm Formation on Silver Ion Impregnated Cutting Boards**
Mark E. Berrang, Joseph F. Frank and Richard J. Meinersmann

ASSOCIATION NEWS

- 153** Sustaining Members
156 Vickie's View from Your President
158 Commentary from the Executive Director
174 New Members

DEPARTMENTS

- 176** What's Happening in Food Safety
180 Industry Products
189 Coming Events
192 Advertising Index

EXTRAS

- 172** 2010–2011 Secretary Election
- IAFP 2010**
- 184** Activities
185 General Information
186 Registration Form
- 193** *Journal of Food Protection* Table of Contents
194 Audiovisual Library Order Form
195 Booklet Order Form
196 Membership Application

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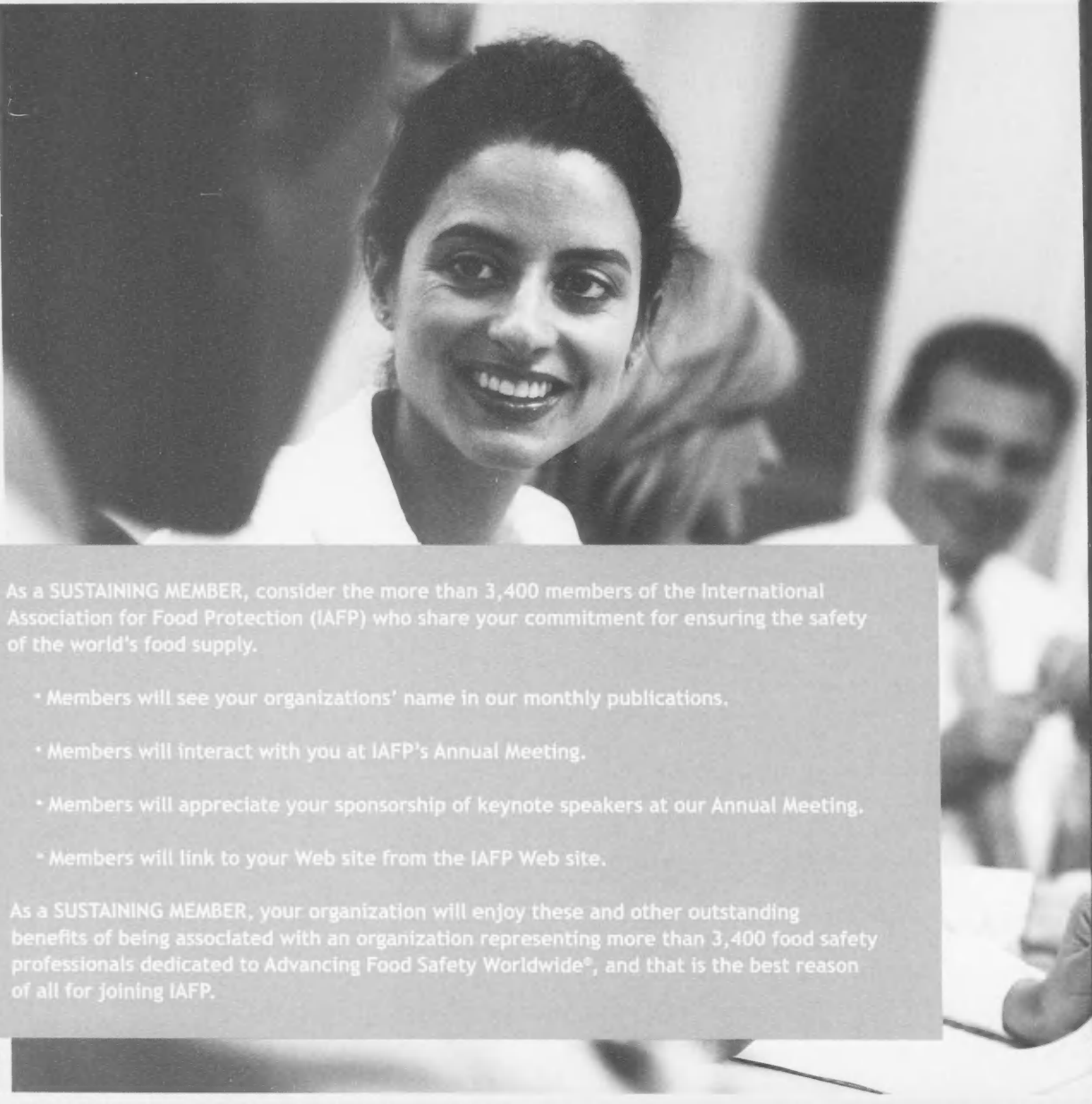


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“VICKIE’S VIEW” FROM YOUR PRESIDENT

Greetings to all! Here in the United States we are in the middle of the winter season. Each year, winter in the Midwest seems to get colder, snowier, and longer! It seems to me that a great way to stay productive and motivated during these wintry, slower-paced months is to increase your participation in the activities of the organizations that you support.

Happily, about this time of year, there are usually subtle hints of the spring to come, many of which come in the form of requests for volunteers and for committee participation. There are so many spring events just around the corner, such as school concerts, end-of-the-school-year celebrations, and baseball sign-up, spring and summer professional meetings; the list goes on and on. Most of these events do not just happen without planning, so we form committees (and sometimes, sub-committees!) to talk about who, what, when and how to make it all happen. As an IAFP member, you have an opportunity to boost your professional metabolism by becoming more involved with our association’s committees, activities and events.

“But Vickie,” you say, “I am involved with IAFP. I’m a member!” Well, the incredibly successful business icon and philanthropist Bill Gates has been quoted as saying, “Great organizations demand a high level of commitment by the people involved.” In a subtle way, he distinguishes “involvement” from “commitment.” Here is a less subtle distinction: “The difference between involvement and commitment is like an eggs-and-bacon breakfast: the chicken was ‘involved,’ the pig was ‘committed.’” I invite you to take my quiz below to find out what type of IAFP member you are: egg or bacon,



By **VICKIE LEWANDOWSKI**
PRESIDENT

**“The current
and future success
of IAFP depends
on our Members’
involvement
and commitment”**

involved or committed? Or, are you the hashbrowns on the plate, not actively involved in member activities, the couch potato (pardon the pun!) of our metaphorical breakfast?

Do You Participate in a PDG? IAFP currently has 16 committees called Professional Development Groups (PDGs), which are open to all association members who wish to join. The PDGs are forums for food safety professionals with common interests in specific aspects of food safety to discuss, inform and serve IAFP in organizing symposia, preparing

white papers, and initiating other scientific and educational outreach activities. The PDGs run the gamut of food safety special interest topics, as illustrated by the current list of active committees:

- Applied Laboratory Methods
- Beverage
- Dairy Quality and Safety
- Food Chemical Hazards and Food Allergy
- Food Hygiene and Sanitation
- Food Law
- Food Safety Education
- Fruit and Vegetable Safety and Quality
- International Food Protection Issues
- Meat and Poultry Safety and Quality
- Microbial Modeling and Risk Analysis
- Retail Food Safety and Quality
- Seafood Safety and Quality
- Student
- Viral and Parasitic Foodborne Disease
- Water Safety and Quality

Members of each PDG meet face to face at the Annual Meeting and communicate throughout the year via conference calls and E-mail. So, even if you are not able to attend the Annual Meeting (this year in Anaheim, CA in August), you can still join a PDG and actively participate, providing and gaining insight into critical areas of food safety. Each PDG has a chair and vice chair who set the agenda and run every meeting, submit the minutes, and keep the committee on task to ensure success. All PDG chair and vice chair positions are on a volunteer basis.

Egg: You are a member of at least one PDG, sometimes more. You attend meetings and participate in discussions.

Bacon: You are a member of at least one PDG, usually more. You attend meetings and actively participate, you volunteer to complete tasks off-line, and you agree to be the chair or vice chair of your PDG.

Hashbrown: You agree with this quote, "A committee is a cul-de-sac down which ideas are lured and then quietly strangled." (Sir Barnett Cocks, former Clerk of the House of Commons in the U.K.)

Are You Committed to a Committee? We also need members to volunteer to serve on the Standing and/or Special Committees and Task Forces. IAFP has three Standing Committees (*Food Protection Trends* Management Committee, *Journal of Food Protection* Management Committee, and the Program Committee) and 13 Special Committees (please visit www.foodprotection.org for more detail). Membership on these committees is by appointment only. If you are interested, please let any member of the Executive Board or Executive Director David Tharp know. A list of members who have expressed interest is maintained at the IAFP office and is passed on each year to the appropriate people making the appointments that year.

Egg: You have made it known that you would like to be on one of the Standing or Special Committees; your name is on the list or you sit on one of the committees.

Bacon: You have relentlessly pursued assignment to one of the Standing or Special Committees. You are on one of the Standing or

Special Committees. You attend meetings and actively participate; you volunteer to complete tasks off-line, and you agree to be the chair or vice chair of a Standing or Special Committee.

Hashbrown: You think, "Some-one else will volunteer." You told somebody once that you want to be on one of those Special Committees but never followed up.

You are Rocking the Vote. A great example of involvement and commitment is that of members who agree to stand for nomination to the IAFP Executive Board, which is a five-year commitment. We are currently in the middle of the election for IAFP Secretary, and once again, we have two dedicated members who have agreed to take on this duty, if elected, and to keep the organization moving forward. This year, as in years past, our membership will choose between two outstanding food safety professionals: Dr. Maria Teresa Destro and Dr. Donald Schaffner. Both candidates are experienced, talented and strong leaders. Maria Teresa and Don are both committed-involved IAFP members, as evidenced in their biographies.

The election is open now through March 16, 2010. One of the easiest ways to increase your participation in IAFP is to go to www.foodprotection.org, read Maria Teresa's and Don's biographies, and vote! Our organization has more than 3,000 members, and yet each year fewer than 1,000 votes are cast. This is an extremely disappointing statistic. A new electronic voting system was put into place a few years ago, which is incredibly easy and fast to use. With the implementation of electronic voting we expected to see an increase in

the number of members voting; however, we have yet to observe that increase. As a member of this great organization, this is your opportunity to have a say in who is on the Executive Board guiding, shaping and leading the organization. Let's turn it around this year. Vote and encourage all of your member friends, colleagues and coworkers to do the same.

Egg: You read the biographies and vote.

Bacon: You read the biographies and vote. You encourage, direct or demand that friends, colleagues and coworkers who are members do the same! You consider or agree to stand for nomination (being asked to stand for nomination is usually the direct result of being a committed-involved member!).

Hashbrown: You don't vote. You think that both candidates are great, so you can't decide who to vote for. You forgot or procrastinated and missed the deadline, even though the election was open for 45 days and you received three or more reminders. You think, "The other members will vote."

What did you determine: Are you egg or bacon? You can choose to be involved (egg) or you can choose to be committed (bacon), but if you found that you're a hashbrown, please take a moment to consider how you can contribute more. The current and future success of IAFP depends on our members' involvement and commitment.

As always, feel free to contact me at anytime (even during breakfast!) at VLewandowski@kraft.com.

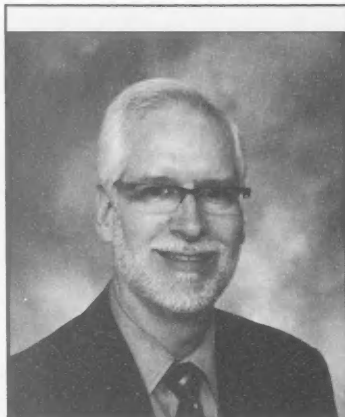
“COMMENTARY” FROM THE EXECUTIVE DIRECTOR

Remember the snowstorm that socked Washington, D.C. and eastern United States in February? Remember Super Bowl Sunday? Well, those Members serving on the Program Committee and the IAFP Executive Board will probably remember those events for years to come! This happened to be the weekend we held the Program Committee meeting and the Board meeting in Anaheim to prepare for IAFP 2010.

As nice as it might sound in comparison to a “Super” snowstorm, Anaheim was actually rainy and “only” in the low-60’s for temperature. In fact, north of Los Angeles, the rains caused mud slides in the areas that had huge fires last summer and fall. So, the weather was a factor all over the United States. Getting home for the Committee Members was another challenge with delayed and cancelled flights!

Having it rain in Anaheim was probably a good thing since the Program Committee had to buckle down and get their work done. The normal, sunny California weather was not a distraction. There were 531 abstracts for the group of twelve to review. This was nearly a 19% increase in submissions over 2009 and is a great indicator of the interest in IAFP 2010! We have also seen immense interest by exhibitors and sponsors in this all-important, food safety meeting.

The preliminary program has been posted on the IAFP Web site. Please keep up-to-date on information we post through the Annual Meeting Web page, as this will be evolving up to the time IAFP 2010 begins on August 1. You might even want to review the abstracts that will be posted prior to the start of the meeting. This



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

**“So with the
program in good
shape and posted
on our Web site,
we invite you
to register for
IAFP’s Annual
Meeting”**

year, we will provide for purchase, a “citable” supplement to the *Journal of Food Protection* containing IAFP 2010 abstracts. This supplement will be distributed onsite to those who order it in advance. As an option, you may decide to bring the abstracts you are interested in by printing them prior to your departure for

Anaheim. Or, you can always either download them to your computer or view them over the Internet on your computer during the meeting.

Something else you will want to be alerted to is that the Committee and PDG meeting schedule is revised from prior years. Please check it carefully to learn the time of your meeting. Most of the meetings held last year in the afternoon are now in the morning and vice versa. In addition to this, we have three, new PDGs that will hold organizational meetings. They are Pre-Harvest Food Safety, Food Defense and Packaging. Each meeting will provide the opportunity for those interested in these specific areas of food safety to come together to discuss pertinent issues related to these subjects. We invite you to participate in these new PDGs.

So with the program in good shape and posted on our Web site, we invite you to register for IAFP’s Annual Meeting! Register early to get the best fee structure and while you are online completing your registration, you might as well reserve your hotel room at the Hilton Anaheim. Many people have been to Anaheim in past years and may know of our hotel selection for IAFP 2010. If you have not been there in the last 12 months, you will be very pleasantly surprised by the total renovation of this hotel property. The new owners poured millions of dollars into the redecoration and face-lift resulting in beautifully appointed rooms and lobby areas. I know that attendees at IAFP 2010 are going to have a great time in this hotel property and will enjoy the opportunity to see each other throughout the event.

Just within Anaheim, there are numerous opportunities for fun and

excitement. When you expand your sights to the greater Los Angeles area, Orange County and further; the prospects grow exponentially! You could choose the beach, the amusement parks, television and movie studios, historical sites or shopping just to name a few. The possibilities are truly endless. To focus back on Anaheim itself, there

are many restaurants within walking distance to the hotel; you can surely eat at a different place for every meal. Of course we cannot talk about Anaheim without mentioning Disneyland, the staple of southern California for more than 50 years. If you have never been to Disneyland, you have got to take some extra time on this trip! You

might even want to bring the family too – I'm sure they would enjoy the park.

Now everything is in place for a perfect Annual Meeting; great facilities, a wonderful hotel, multiple opportunities for fun and entertainment, so what are you waiting for – get signed up now and start planning your time in southern California!!!



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Retort Cooling Water Bacteriological Load and Possible Mitigation Strategies for Microbial Buildup in Cooling Water

RICHARD PODOLAK,¹* WARREN STONE¹ and DARRYL G. BLACK¹

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ABSTRACT

There has been a concern that *Clostridium botulinum* might enter a defective can of low-acid food through a microleak after thermal processing and during the cooling process. This paper reviews most current surveys on bacteriological quality of cannery cooling water, bacteriological testing methods in cannery cooling water, disinfection of container cooling water in canning systems, and common types and methods of disinfection. The Grocery Manufacturers Association (GMA) survey of cooling water systems currently used in industry showed a high percentage of routine microbial testing and chemical treatments. Published reports on the microbiological conditions of the retort cooling water indicated that containers may be sufficiently protected against leaker spoilage only if the aerobic plate count (APC) of the cooling water is less than 100 CFU per ml. Disinfection of all cooling water systems, including single pass systems, is recommended when APC loads exceed 100 CFU/ml. Microbial testing and cooling water treatments may be included in an operational or standard operation procedure to control microbial buildup in retort cooling water and reduce the possibility of post-process contamination.

INTRODUCTION

A recent case of *Clostridium botulinum* contamination in a canned vegetable product has prompted the Food and Drug Administration (FDA) to take a closer look at retort cooling water systems (6). The FDA noted the recovery of *C. botulinum* spores in well water used in the processor's one-pass cooling water system as a major concern. An event such as this serves as a reminder that food canners should pay close attention to controlling bacteriological levels in cooling water. There is always concern that water used in the cooling of thermally processed containers may provide an opportunity for waterborne microorganisms to enter the sterilized container through seam or seal leaks and become a health hazard (7, 29). Odlaug and Pflug (19) modeled the probability of a botulism health hazard from post-processing contamination and concluded that the likelihood of post-processing contamination from *C. botulinum* in canned foods is between 10^{-7} and 10^{-10} . When the possibility of *C. botulinum* growing in canned foods and the likelihood of a consumer eating spoiled product are considered, the probability of human botulism from leakage decreases to approximately 10^{-9} .

A peer-reviewed article

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TABLE 1. Cannery cooling surveys: anaerobic spore content¹

Samples	Anaerobic spores/ml			Cooling system	Reference
	Median	Range	% Positive		
59	< 0.03	< 0.03–9.3	15.2	SP and R	(7)
210	NR	< 1.0–4.0	4.0	SP and R	(11)
171	< 0.1	< 0.1–5.9	NR	NR	(19)
274	< 0.03	< 0.03–4.6	10	R	(29)

¹Adopted from Thompson and Griffith (29)

SP, single-pass; R, recycled

NR, not reported

to 10^{12} . The former National Food Processors Association (currently the Grocery Manufacturers Association) and the Can Manufacturers Institute (NFPA/CMI) Container Integrity Task Force (17) calculated that between 1940 and 1982, 1.3×10^{12} cans of low-acid foods were consumed. Over the same period there were five botulinal incidents in which container leakage was observed as the source of contamination. Thus, the Task Force estimated the probability of botulism from container leakage as 3.8×10^{-12} , or one chance in every 260 billion cans of foods consumed.

Several surveys on bacteriological quality of cannery cooling water have been conducted to determine the aerobic plate count (APC) and the incidence of spores from mesophilic anaerobic sporeformers. The conditions that permit a buildup of mesophilic anaerobic sporeformers would be favorable for *C. botulinum*. The objectives of this paper are: (1) to provide a review of the available literature on bacteriological quality of cooling water used in thermal processing plants, and (2) to make recommendations on adequate testing and control of microbial population build up in retort cooling water to reduce the possibility of post-process contamination.

SURVEYS ON BACTERIOLOGICAL QUALITY OF CANNERY COOLING WATER

Few reports on the microbiological quality of cooling water used in

food canning facilities have been published. The bulk of studies that are available were conducted two or more decades ago. Kibler et al. (12) conducted a survey in nine canneries, located across the United States, for mesophilic anaerobic spores, including *C. botulinum*. Numbers of positive samples in cannery water out of the total 60 samples cultured for mesophilic anaerobic spores were 7 for cooling canals and 17 for cooling towers. None of the samples contained *C. botulinum*. Most of the water was treated with chlorine, but sometimes pond water was used for the cooling process. Pond water was pumped into the plant when needed, treated with an iodophor, used in the cooling process and then returned to the pond. The authors concluded that because of the presence of numerous mesophilic anaerobic bacteria in the cooling water, good manufacturing procedures should be followed, good sanitation procedures enforced, container defects minimized and post-processing equipment regularly cleaned and sanitized.

Lake et al. (13) conducted another survey in three low-acid food canneries (Cannery A, Cannery B and Cannery C) on enumeration and isolation of mesophilic anaerobic sporeformers from cannery post-processing equipments and cooling water. The authors reported that a significant number of these spores were isolated from various pieces of equipment. In one instance a depalletizer turntable (in Cannery C) had a population of 3.5×10^3 CFU/in². Spores were also isolated from the can cooling water in two of the canneries (Cannery B and Cannery C). The

highest number of anaerobic spores was found in Cannery C (20 CFU/in²). The isolates from cooling water were identified as *C. sporogenes*, *C. pasteurianum*, *C. beijerinckii* (Cannery B) and *C. acetobutylicum* (Cannery C). The retorting methods used in these two canneries were continuous rotary cookers (Cannery B) and hydrostatic cookers (Cannery C). Anaerobic spores were not detected in cooling water in the cannery that used still cookers (Cannery A). The low total aerobic plate counts found in the still retort system and high counts in hydrostatic type cookers were consistent with the cooling water counts reported by Graves et al. (7) and Odlaug and Pflug (18). No correlation was noted between mesophilic anaerobic spore counts and total aerobic counts. *C. botulinum* was not isolated from any of the survey samples. The authors concluded that post-process can handling equipment in these plants was the main source of anaerobic spores. In this particular study, can cooling water appeared to be an additional source, but of lesser significance.

Mesophilic anaerobic sporeformers were cultured from recycled cannery cooling water by Thompson and Griffith (29). Chlorinated, recycled water for cooling of containers in still retorts was sampled over a 27-month period at one food processing plant. Of 274 samples taken, 28 contained mesophilic anaerobic spores. The isolates were characterized as *Clostridium* spp., with *C. butyricum* and *C. barati* representing 55% of the isolates. The authors summarized the total anaerobic spore count data and compared them with results of others (Table 1).

TABLE 2. Microorganisms found in cannery cooling water

Microorganisms	Source of cooling water and/or type of cooling system	Sanitizers used	References
<i>Flavobacterium</i> , <i>Bacillus</i> and <i>Corynebacterium</i>	Can cooling water and/or post-process can handling equipment	Chlorine	(2)
<i>Streptococcus</i> , <i>Staphylococcus aureus</i> , <i>Bacillus</i> spores and clostridial spores	Well water	Chlorine	(20)
<i>Klebsiella</i> sp., <i>Pseudomonas aeruginosa</i> and clostridial spores	Surface water	Chlorine	(20)
Coliforms, enterococci and putrefactive anaerobic spores	Cooling canals or tanks for continuous and hydrostatic retorts	Chlorine or iodine Residual chlorine up to 8 ppm (mg/l) Residual chlorine up to 5 ppm	(7, 11)
Mesophilic, thermophilic and anaerobic spores	Cooling canals for hydrostatic retorts	Chlorine or iodine. Residual chlorine up to 3 ppm Residual iodine up to 4 ppm	(19)
Mesophilic anaerobic sporeformers – <i>C. perfringens</i> , <i>C. durum</i> , <i>C. butyricum</i> and <i>C. beijerinckii</i>	Cannery cooling water	Free available chlorine 0.02 – 0.75 ppm, pH = 7.2	(29)

Can cooling water studies were conducted in 1976 by the former National Canners Association (currently the Grocery Manufacturers Association) (unpublished data). The cooling systems in 17 canneries were surveyed and 203 cooling water samples were analyzed. The aerobic plate counts (APC) for 64% of the samples were in the range of less than 1 to 100 CFU/ml. Spores of aerobic mesophilic bacteria were present in 20% of the samples, and the maximum count did not exceed 20 CFU/ml. Spores of anaerobic mesophilic bacteria were recovered, but in low numbers and from only 5% of the samples. In general, anaerobic sporeformers showed a gradual increase when the APC population counts exceeded 100 CFU/ml (17).

OVERALL MICROBIOLOGY OF COOLING AND WELL WATERS

Table 2 indicates that a variety of microorganisms may be present in cannery cooling water, including spores of mesophilic anaerobes and aerobes. These organisms are usually present in low numbers, and their presence is dependent on the source of the cooling water, the type of cooling water systems used and the amount of effective germicide present. However, the APC populations in some instances were high ($> 2.1 \times 10^4$ CFU/ml) and for this reason some of the microbial examinations were extended to include indicator organisms and bacteria associated with food poisoning (7).

Most of the microorganisms isolated from the sanitized cooling water were obligate anaerobic mesophilic spore-forming rods that produced volatile fatty acids and displayed fermentation patterns typical for the genus *Clostridium* (19, 29). *Clostridium perfringens*, which is both proteolytic and saccharolytic, and saccharolytic *C. durum*, *C. butyricum* and *C. beijerinckii* were isolated (29). Put et al. (20) found *Streptococcus*, *Staphylococcus aureus*, *Bacillus* spores and clostridial spores in the chlorinated well water. The canneries using chlorinated surface waters contained higher numbers as well as a greater variety, of microorganisms including *Klebsiella* sp., *Pseudomonas aeruginosa* and clostridial spores (20). Graves et al. (7) noted a relationship between APC and the inci-

TABLE 3. Relation of can abuse and microbial count on double seam areas¹ to rate of spoilage (cans taken at caser)²

Severe Can Abuse		Minimum Can Abuse	
Microorganisms Per Can	Spoilage Rate (Cans/1,000)	Microorganisms Per Can	Spoilage Rate (Cans/1,000)
23,000	18	1,000	0
32,000	30	1,600	0
35,000	23	25,000	< 1
69,000	22	52,000	< 1
73,000	24	209,000	< 1
130,000	25	900,000*	< 1
327,000	25	1,790,000*	< 1

¹Seams inoculated with *Aerobacter aerogenes*

²From Weddig, L. M. et al. (24, 28) * Seams inoculated with *Aerobacter aerogenes*

dence of total coliforms and enterococci in cooling water. The results showed a trend in which the frequency of coliform detection increased as the APC counts increased. Enterococci were also recovered with greater frequency at the higher APC levels, but no significant trend was noted. The study showed the frequency of aerobic spore detection increased as the APC counts increased. Odlaug and Pflug (19) reported that the anaerobic spore means were 0.5 CFU/ml for hydrostatic retorts and 0.4 CFU/ml for the cooling canal. The number of *C. botulinum* spores in the cooling water was not directly measured, but it was assumed that the number was very low, since it would be only a fraction of the total anaerobic spores in the water (19).

BACTERIOLOGICAL TESTING METHODS FOR MONITORING BACTERIAL COUNTS IN CANNERY COOLING WATER

Recontamination of thermally processed cans during the cooling process is the most common cause of microbial spoilage in canned food products (7). Recontamination is dependent upon the condition of the container seam, the condition of the container handling system and the condition of the water (21). Incidences of spoilage are corre-

lated to the number of bacteria in container cooling water (20). As the count in the water increases, the probability of spoilage organisms entering the can also increases. In most cases, water from municipal supplies and deep wells is low in bacterial counts and surface waters are frequently high in bacterial counts. Bacteria multiply rapidly in reused cooling water that is not chlorinated (16).

Although determination of free residual chlorine can be used as a guideline for water quality, counting of bacteria is the most reliable and direct procedure for monitoring the purity of can cooling water (16). Aerobic plate counts (APC) are sufficient indicators of the bacterial content of can cooling water. For testing a city water supply, well water, single pass continuous coolers and cooling canals, where the water is not reused, an appropriate sample should be taken from the source and 1, 0.1 and 0.01 ml tested in duplicate. For water from continuous coolers and cooling canals, an appropriate sample should be taken and the following dilutions tested: 0.1, 0.01, 0.001 and 0.0001 ml. Each dilution should be plated at least in duplicate and incubated at 48 ± 2 h at 35°C (1, 14). If the water has been chlorinated, the chlorine should be neutralized by addition of 1.5% sodium thiosulfate solution (16). The American Water Works Association and Water Environment Federation recommend the het-

erotrophic plate count (HPC), formerly known as the standard plate count, be used (4). Three different methods, such as a pour plate method, a spread plate method and a membrane filter method, may be used to determine the HPC. In the pour plate method, submerged bacterial colonies in agar medium may be exposed to heat shock from the transient exposure of the sample to 45°C agar. The spread plate method causes no heat shock, and all colonies are on the agar surface, where they can be distinguished readily from particles and bubbles. The membrane filter method permits testing large volumes of low-turbidity water and is the method of choice for low-colony waters (< 1 to 10 CFU/ml). This method produces no shock but adds the expense of the membrane filter (4).

Many thermal processing plants do not have the facilities and trained workforce required for aseptic microbial testing. Simplified and rapid microbial testing methods might be the solution for this situation. Currently, there are several modified methods of conventional microbiological testing that can be used for monitoring bacteria in canning plants. This includes the use of 3M Petrifilm™, which uses disposable cardboard disks containing dehydrated media, designated for enumerating specific bacteria. This test eliminates the need for preparing media and agar plates, economizes storage and incubation

space, and also simplifies disposal of materials after analysis. The Iso-Grid™ uses special hydrophobic grid membrane filters that can handle larger cell densities. This reduces the number of dilutions needed prior to filtration. These rapid test kits are approved by AOAC and provide performance equivalence to standard cultural methods such as those contained in the FDA Bacteriological Analytical Manual (14).

DISINFECTION OF CONTAINER COOLING WATER IN CANNING SYSTEMS

Leaker spoilage, also known as post-process contamination, frequently occurs from seam/seal defects and mechanical damage to containers. It may occur in warehouses or retail stores if seams or seals are stressed or damaged, or if containers are punctured or otherwise compromised. Post-process contamination most often occurs during direct water cooling of the container (8).

During the cooling process, in the case of cans or glass containers, containers transition from being pressurized units with the ends/lids extended, to having an internal vacuum. While these changes in container configuration are occurring, or if the seam/seal were to be damaged, the container may allow entry of trace amounts of cooling water. Vacuum, by definition, exerts less pressure than the surrounding atmosphere and water or air could be drawn in from the environment if the container seal is compromised (15). Even high quality seam/seals can draw in small amounts of water before the sealing compounds have set. If the water contains bacteria and organic materials (e.g., product) and environmental conditions are favorable, the bacteria will grow, resulting in possible spoilage. Such spoilage may or may not result in gas production that distends the container (8).

Less than optimum seams/seals or poor operation of processing systems resulting in container abuse only compounds potential problems, as poor quality seams or seals are more prone to leakage. Uncontrolled pressure fluctuations during retorting and cooling operations may also stress the seam, resulting in poor seam/seal integrity and subse-

quent leaker spoilage. Table 3 illustrates the profound difference in spoilage for cans subject to severe abuse versus those subject to minimum abuse.

For these reasons, the bacterial condition of cooling water is very important. As the concentration of microorganisms increases in the cooling water, less contaminated water would be needed to be drawn into the container to cause spoilage. Even the ingress of a single droplet of water containing a single bacterium capable of growing in the product could cause leaker spoilage to occur. Consequently, even low numbers of microbes may tax the ability of even the best closure seals/seams to keep out microbial contamination. For example, a can immersed in cooling water containing an evenly dispersed population of 100 bacteria/ml would have to draw in only 1/100 milliliter (0.01 ml) of water to allow entry of a single bacterium, which may be capable of causing spoilage. If cooling water disinfection is not properly managed, and the microbial population of the water is allowed to reach 10,000 bacteria/ml, then only 1/10,000 milliliter (0.0001 ml) would have to be drawn into the can to create a potential spoilage situation (27). Or, the same 0.01 ml of water could draw in 100 microorganisms, which is likely to result in spoilage. The size of the pathway which allows entry of microorganisms into a container depends upon the microbial quality of the environment (3, 22). In the period from 1948 to 1964, six outbreaks of typhoid fever, including an outbreak in Aberdeen, Scotland, occurred in the U.K. Stersky et al. (25) attributed them to post-process contamination of canned corned beef. The Aberdeen incident was thoroughly investigated and researchers determined that *Salmonella* Typhimurium gained entry into a can from unchlorinated river water used for cooling after thermal processing. Investigations at the Argentina manufacturing plant showed that cooling water chlorination equipment had been out of use for 14 months. The unchlorinated river water was obtained downstream from Rosario, Argentina, a city of 600,000, which discharged raw sewage into the river.

Odlaug and Pflug (18) indicated that the public health hazard from post-process leakage of *C. botulinum* spores

into thermally processed low-acid food containers should be extremely small if the cooling water is properly treated and the addition of soil or any other outside source of *C. botulinum* spores is eliminated. *C. botulinum* will not likely multiply in cooling water that is properly treated with disinfectants. Therefore, only the introduction of large numbers of *C. botulinum* spores into improperly treated cooling water could lead to a public health hazard if those spores were to germinate, grow and yield viable vegetative cells of *C. botulinum* subsequent to entering a container of food.

In their 1980 paper, Ito and Seeger (10) reviewed various publications on the re-contamination of previously processed commercially sterile containers. They summarized that all of those investigations found that the application of a germicide was beneficial in obtaining good quality (containing low bacterial numbers) cooling water. In recirculated systems, careful attention must be given to ensure adequate germicidal applications.

Proper disinfection of container cooling water requires an active management process. Without a disinfection program, recycling of water could result in the buildup of contaminants. Disinfection of recycled water can be critical to minimizing the potential amplification of microbial contamination. Changes in product volume, quality of incoming water, or temperature of the water can require adjustments of the disinfection system (8). Ito and Seeger (10) stated that a regular schedule of monitoring applied germicides at appropriate locations in cooling water systems should be established. Processors should manage cooling water so that it contains as low a microbial population as practical.

In the Aberdeen case described by Stersky et al. (25), contaminated single-pass (one-use), non-recirculated water was a causative factor in the *Salmonella* Typhimurium spoilage, showing that single-pass water is not exempt from microbial contamination. Processors should have disinfection management programs even if they employ single-pass cooling water; water from these systems should be monitored for microbial quality. Results from bacterial analyses may dictate the need to appropriately apply disinfectants in order to maintain bacterial counts below a desired set-point (e.g., 100 CFU/ml).

TABLE 4. GMA survey results from canning facilities

Topic	Yes	Types
Facilities using a treated water source	90%	City water treated, well water treated
Facilities further treating source water	60%	Chlorine, chlorine dioxide, bromine, sodium bromide, lime, filters
Microbial testing of cooling water	80%	APC ¹ in all cases
Microbial testing of source water	70%	APC ¹ monthly/quarterly, potable water test
Single pass systems	53% ²	
Recirculating systems	47% ²	

Responses are from 10 processing facilities. Some facilities reported multiple source and water treatment systems

¹APC: Aerobic Plate Count

²Based on 15 cooling water systems

COMMON TYPES AND METHODS OF DISINFECTION

While prevention of leaker spoilage may involve several factors, microbes are the agents responsible for post-process contamination, regardless of how they get into the container. Various canning regulations (21 CFR 113.60 (b), 9 CFR 381.305 (h) (2 and 3), 9 CFR 318.305 (h) (2 and 3)) require chlorination, or other methods of sanitation, for cooling canals and recirculated cooling water. While there are many other ways of cooling containers, these two examples are distinctly addressed in the regulations cited here.

Hypochlorites, either sodium or calcium, or gaseous chlorine can be used for chlorine disinfection. Chlorine disinfection is dependent on pH, temperature and the level of organic content of the water (7, 8, 10). If systems using hypochlorite and chlorine gas injection do not maintain the proper pH, the chlorine may not be in the chemical form of hypochlorous acid, which is the active disinfectant commonly measured as free available chlorine. Elevated pH values will yield hypochlorite, a poor sanitizer, and there will be little disinfectant activity, or free available chlorine (8). Odlaug and Pflug (18) concluded that when chlorine compounds are added to water with a properly controlled pH to yield free available chlorine, the solution can be both bactericidal and sporicidal. The literature has suggested that calcium hypochlorite, sodium hypochlorite,

and chlorine gas, when added to water with the proper conditions (e.g., proper pH control) to yield free available chlorine, are all equally effective in delivering a 4 log (99.99%) reduction in numbers of viable spores of *C. botulinum* Types A, B, and E (18, 19). According to Graves et al. (7), chlorination at a level of 0.5 mg/l is satisfactory where water is used once to cool containers and then discarded. However, where water is subject to organic contamination or to fluctuation in pH and temperature, management must provide proper mitigations to control the microbial levels in the cooling water. One such mitigation is maintenance of a higher chlorine (disinfectant) residual.

Chlorine dioxide does not react as chlorine does with organic matter, ammonia, or phenolics. Therefore, in water with high organic loads it can be more effective than hypochlorous acid. However, chlorine dioxide is highly reactive and unstable, and it cannot be effectively stored. Therefore, it must be generated on-site. Unlike chlorine, chlorine dioxide appears to be more effective in destroying aerobic spore formers than in destroying anaerobic sporeformers (10, 23). When chlorine dioxide is used, the anti-microbial activity is not as dependent on pH; it has similar effectiveness between pH 6 and 10 (10, 23).

Control of pH is also crucial in bromine disinfection, although hypobromous acid is present at a higher pH than hypochlorous acid (8). Bromine dissolves in water three times more effectively than chlorine. No dangerous

gasses are required for bromine production. It should be noted that bromine is very reactive and thus its activity in water is short lived. Even though low residuals may be quite effective, depending on individual situations, to maintain adequate disinfection, the amount of bromine that must be added may be high (8).

Iodophors are complexes of iodine and certain surface active agents, which slowly release free iodine when diluted with water. They are effective at destroying vegetative bacteria and yeasts. However, iodophors have limited effectiveness against spore-formers, both anaerobic and aerobic. In these cases, high levels of iodophors are required to get population reductions in a relatively short amount of time (10).

Over the past several years, computer controlled systems have emerged that can control water disinfection automatically. Chlorine, ozone, bromine and iodine are all oxidizers, and oxidation involves the transfer of electrons. This flow of electrons creates an electrical potential or current, and this current can be measured as the oxidation-reduction potential (ORP) of the water. ORP monitoring provides a rapid and single value assessment of the disinfection potential of the water. In tandem with pH sensors, ORP sensors can create an automated management system to provide demand-based injection of oxidizer and/or acid (26). Computerized systems can also provide real-time web access to data and enhance recordkeeping.

Water supplies vary from place to place; some supplies are more corrosive than others, and pH values vary, as does mineral content (soft vs. hard water). Therefore, the disinfectant level necessary to achieve and maintain recommended minimum residual concentration and the maximum level that can be tolerated (e.g., to maximize employee safety and minimize corrosivity) must be determined for each individual system. Whatever verification system is employed should include monitoring the bacterial quality of the water. Simply targeting for a residual disinfectant level alone may not be adequate.

GMA SURVEY

Results of a survey by GMA, conducted in the summer of 2008, requesting specific cooling water system information from low-acid canned food facilities are summarized in Table 4. Respondents represent small to large canning companies with various system approaches. A total of 10 facilities, representing 15 separate systems, responded to the survey. Some of these facilities used multiple water sources (city water treated/untreated and well water treated/untreated) and cooling water systems (single pass and recirculating systems). Most of the respondents (90%) indicated that source water is treated (with disinfectants) prior to entering the facility, and 60% of the facilities further treat incoming water regardless of the source. Routine microbial testing on the source water was performed on 70% of the cooling water systems. Additional microbial testing of cooling water systems was performed in 80% of the facilities responding to the survey. More than half (53%) of the systems reported are single-pass systems with recirculating systems making up the balance. For recirculating systems, all plants indicated replenishment with fresh water, chemical treatment, and testing for chemical residual. One facility noted the use of carbon filters and oil skimming. Half (50%) of all respondents treating their systems checked for chemical residuals of disinfectants at the cooling water or retort discharge. Respondents indicated that chemical residuals were predominantly checked at cooling water sumps and discharge locations, and in one instance a respondent indicated checking the

cooling water feed to retorts. Residual disinfectant levels reported ranged from 0.1 to 1.5 ppm; however, the chemical type was not specified, making the differentiation between various forms of chlorine, bromine, or other disinfectants impossible. A number of processors noted the use of alarms, and one reported the use of an automated chemical injection system (with a manual check backup). Three of the respondents reported a product hold and review process following a chemical residual alarm.

RECOMMENDATIONS

Many factors ultimately contribute to the assurance of bacteriological quality in food plant cooling water systems. As seen from surveys of cannery cooling water systems, bacteriological loads can be significant. While container integrity plays an important role in the final spoilage rate for the end product, it is important to understand and control as many risk factors as possible to insure against rare events, such as sub-optimal seams/seals. For the purposes of this paper, adequate seam/seal integrity will be assumed relative to any cooling water system recommendations.

As discussed earlier, APCs have been shown to be significant indicators of specific spoilage organisms and rates of product contamination. Several sources have suggested that containers may be sufficiently protected against leaker spoilage only if the bacterial count (APC) of the cooling water is < 100 CFU/ml (5, 7, 8, 9, 20, 30). Put et al. (20) found that re-infection of containers could be minimized if cooling water had less than 100 bacteria/ml and if the number of bacteria in the water on the double seam at the end of container handling was less than 10,000/ml. Herbert (9) reported that there was little or no re-contamination of cans at the cooling stage when cooling water counts were less than 100 bacteria per ml. Williams (30) considered 100 bacteria per ml to be an acceptable contamination level for cooling water. Consequently, it is a good practice to monitor the bacterial level of cooling water on a periodic basis. This includes both the microbial quality of incoming water, and the microbial quality of the cooling water system.

Disinfection of all cooling water, regardless of source, is a dependable means of maintaining microbial counts of cooling water at low levels. As mentioned above, various canning regulations require chlorination, or other methods of sanitation, for cooling canals and recirculated cooling water and stipulate a measurable residual level of sanitizer at the discharge point of the container cooler section. When single pass systems have APC loads of 100 CFU/ml or above as the water enters the cooling system, these systems should be monitored and treated in the same manner as recirculating systems.

As seen from the GMA survey (above), chemical residual levels may vary by chemical and by facility. It is important for each facility to document and maintain chemical treatment protocols that are sufficient for their product, container and historical incidence of spoilage. It is recommended that processors take advantage of the expertise and services of water treatment professionals in the food industry and/or their local area.

Combining microbial testing and cooling water treatment into an operational protocol, or standard operational procedure, would allow the processor to better evaluate and control risks associated with the cooling of thermally processed food containers in their facilities. In view of the fact that there is no one solution that works for every producer, it is important that companies include basic testing, monitoring and treatment protocols in their cooling water systems in a structured and documented program, such as an Standard Operating Procedure (SOP), with clear plans of corrective actions and verification procedures should non-optimal conditions exist.

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Listeria monocytogenes Biofilm Formation on Silver Ion Impregnated Cutting Boards

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ABSTRACT

Listeria monocytogenes is a human pathogen that can be a member of a biofilm community attached to surfaces in poultry processing plants. When present as a biofilm on product contact surfaces, this organism can cross contaminate ready-to-eat meat. Plastic cutting boards can be formulated to include antibacterial agents such as silver ions. In this study we compared the ability of *L. monocytogenes* to attach and form a biofilm on identical plastic cutting boards manufactured with and without silver ions. Cutting boards were cut into 2 by 2 cm squares and inoculated with a poultry plant isolate of *L. monocytogenes* known to effectively form biofilms. Boards were inoculated by submersion in a cell suspension of approximately 10^8 cells per mL PBS for 2 hours at 25°C. All pieces were then rinsed in PBS to remove unattached cells and incubated in dilute (1/10) brain heart infusion broth for 24 hours at 25°C. Unattached cells were again removed by rinsing in PBS. The surface was sampled using a pre-moistened sterile cotton swab either immediately after removal of unattached cells or after a 24-hour dry exposure of attached cells to the board formulation at 25°C. The experiment was replicated three times, using five cutting board squares for each treatment in each replication ($n = 15$). When surfaces were sampled immediately after rinsing, similar numbers of *L. monocytogenes* were recovered from treated and untreated boards: 6.83 and 6.86 log CFU/cm², respectively. A twenty-four hour dry time reduced the number of viable attached *L. monocytogenes* on both types of cutting boards to the same degree; silver ion impregnated boards had 3.95 log CFU/cm², while untreated control boards had 3.97 log CFU/cm². Under the conditions of these tests, silver ion impregnation did not lessen the ability of *L. monocytogenes* to form a biofilm on the surface of plastic cutting boards.

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INTRODUCTION

Listeria monocytogenes is a human pathogen that can cause foodborne disease. Meat and poultry have been implicated in foodborne outbreaks of listeriosis (4, 9). This organism is ubiquitous in nature and able to grow at relatively low temperatures. Therefore, *L. monocytogenes* is of particular concern in the poultry processing arena because after chilling, most of the plant and all products are maintained at a cool temperature. *L. monocytogenes* has been isolated from raw poultry products and in plants in which poultry undergoes further processing (2).

L. monocytogenes can enter a poultry cooking and further processing plant with raw meat (2). Once in the facility, this organism can become a long-term resident, showing particular ability to persist for months and even years in floor drains (2). The inner surface of floor drains is an environment for complex biofilm communities, including multiple bacterial genera. Spoilage organisms such as *Pseudomonas putida* can also form biofilms and may be present in tandem with pathogenic bacteria. *L. monocytogenes* has been shown to attach especially well to moist low-nutrient surfaces previously colonized with *P. putida* (5).

Bacteria present as long-term residents in a further processing plant floor drain have the potential to escape this niche and cross contaminate other surfaces, including those that contact product. *L. monocytogenes* can attach and form biofilms on a variety of processing plant surfaces (1); plant persistent subtypes are especially capable biofilm formers (7). Once on a product contact surface, *L. monocytogenes* can be transferred to meat (10, 12).

Plastic composite cutting boards, counters, trays and conveyors are common product contact surfaces in many poultry further processing plants. *L. monocytogenes* can attach to and survive on such plastic surfaces (11). Once established as an attached community, *L. monocytogenes* is more difficult to eradicate with heat or surface sanitizing treatments (3). Sanitizers have been shown to lessen but not eliminate *L. monocytogenes* when it is attached to plastic cutting board surfaces (13). Silver ions have an antibacterial affect that is well reviewed by Kampmann et al. (6).

Silver ions can be immobilized in plastics and have been reported to have utility to lessen bacterial contamination associated with treated surfaces (6).

The objective of this study was to test the ability of *L. monocytogenes* and *P. putida* to attach, grow and form stable biofilms on plastic cutting boards with and without silver ions added to the formulation.

MATERIALS AND METHODS

Cutting boards

Plastic (polyethylene) cutting boards with and without silver ion treatment were purchased from the manufacturer (Bio-guard Plastics, Mendota, MN 55120). Control cutting boards were identified by a different color, but were otherwise identical to the treated boards. Each cutting board was cut into squares 2 cm by 2 cm. Squares were disinfected prior to inoculation by rinsing with 70% ethanol and then being air dried under germicidal ultra-violet light on sterile paper towels in a biological safety cabinet.

Listeria monocytogenes culture and inoculation

The *L. monocytogenes* culture used in this study was originally recovered from a poultry further processing plant and found to be capable of forming a biofilm. An overnight broth culture of *L. monocytogenes* was plated onto ten plates of BHI agar (Oxoid Ltd., Basingstoke, Hampshire, England), using a cotton tipped applicator to result in a lawn of growth; plates were incubated for 18–24 h at 37°C. Culture was removed from each of ten plates and suspended in 300 ml of PBS (pH 7). Serial dilutions and subsequent plating on BHI agar (18–24 h, 37°C) revealed a cellular density ranging from 2 to 7 × 10⁸ cells *L. monocytogenes* per ml PBS. Ten 50 ml conical tubes (Tyco Healthcare Group LP, Mansfield, MA 02048) were filled with 25 ml aliquots of the cell suspension. One square of treated cutting board was placed into each of five tubes, and one square of control board was placed in each of the remaining five tubes. An uninoculated control tube of PBS was included for each type of cutting board to assure there was no

contamination present on the cutting board squares prior to inoculation.

Squares remained in the PBS cell suspension at 25°C for 2 h. Following incubation, each square was aseptically removed from the cell suspension and placed into a fresh tube with 25 ml sterile PBS. Each tube was inverted 4 times to remove unattached cells. Each square was then removed from PBS and placed into another fresh tube with sterile 1:10 strength BHI broth (Oxoid Ltd., Basingstoke, Hampshire, England). Dilute BHI broth was used to simulate the limited nutrients expected on a rinsed food contact surface. Squares were allowed to incubate in the dilute BHI broth for 24 h at 25°C.

In the first set of experiments, squares were removed from the growth phase in dilute BHI, rinsed in a tube of PBS by inversion 4 times as previously described, and analyzed immediately. In the second set, the squares were removed from the dilute BHI, rinsed, placed on sterile paper towels and allowed to air dry for one hour under a biological safety cabinet before being transferred to a dry sterile 50 ml tube and subjected to 24 h of dry incubation at 25°C. Thus attached cells were exposed to the silver ion treatment for an additional 24 h. Prior to sampling, the dried squares were subjected to another rinse procedure as already described.

Pseudomonas putida culture and inoculation

The *P. putida* culture used was selected because it is known to be an excellent biofilm producer (5). The growth conditions and inoculum preparation methods for *P. putida* were similar to those previously described for *L. monocytogenes* with a few differences. The inoculum cell suspension ranged from 1.4 to 1.5 × 10⁸ cells *P. putida* per ml PBS. *P. putida* was used only in the second set of experiments, with a 24-h post growth dry incubation period to allow attached cells to remain in contact with the antimicrobial plastic cutting boards. No *P. putida* biofilms were analyzed immediately after the growth phase.

Detection of biofilm cells

To remove biofilm cells from the cutting board squares, one cotton tipped

TABLE 1. Mean log CFU attached *L. monocytogenes* and *P. putida* per cm² polyethylene cutting board formulated with or without antimicrobial silver ions (n = 15 per treatment)

Cutting board	<i>L. monocytogenes</i>		<i>P. putida</i>
	0 h dry time ¹	24 h dry time	24 h dry time
Control	6.86 ^{a,x}	3.97 ^{a,z}	6.46 ^{a,y}
Silver ion	6.83 ^{a,y}	3.95 ^{a,z}	6.53 ^{a,y}

¹time at 25°C between rinsing away unattached cells and sampling surface with cotton-tipped applicator

^avalues within columns are not significantly different by t test ($P > 0.05$)

^{x,y,z}values within row with different superscripts are significantly different by t test ($P < 0.01$)

applicator was moistened by dipping into PBS and used to rub one flat surface of each square. The swab was rubbed over the entire square, the square was rotated 90 degrees and re-sampled with the same swab, the square was again rotated 90 degrees and the same swab was used a third time to rub over one flat surface. Each swab was then again placed into 9 ml PBS. The number of *L. monocytogenes* cells was estimated by plating 0.1 ml of serial dilutions onto the surface of duplicate modified oxford (MOX) agar (Remel, Lenexa, KS 66215). All MOX plates were incubated at 35°C for 24 h before small black colonies characteristic of *L. monocytogenes* were counted. *P. putida* cells were enumerated by direct plating 0.1 ml from serial dilutions onto the surface of duplicate BHI agar plate incubated at 35°C for 24 h.

Experimental design and statistical analysis

Three replications of each experiment were conducted for each organism, with five duplicate cutting board squares per replicate (n = 15). The mean number of colonies per ml was converted to log CFU/cm² and geometric means were calculated. Differences were determined by Students t test, with significance assigned at $P < 0.01$.

RESULTS AND DISCUSSION

Bacterial count data on the surface of cutting boards are presented in Table 1. *L. monocytogenes* attached to the surface of the plastic cutting boards and grew to a density of more than 10⁶ cells per cm² regardless of the presence of silver ions. When attached, *L. monocyto-*

genes cells were left on the cutting board for 24 h, the numbers were substantially lower, less than 10³/cm², than when sampling occurred immediately after the growth phase. This was observed on cutting boards with or without silver ions.

It was assumed that *P. putida*, an efficient biofilm producer, would perform at least as well as *L. monocytogenes*; therefore, no testing was done immediately after the growth phase. Following twenty-four hours of dry incubation after unattached cells had been rinsed away, more than 10⁶ cells *P. putida* could be found per cm² plastic cutting board. As was the case for *L. monocytogenes*, the silver ion treatment did not affect the numbers of *P. putida* detected attached to the surface.

The current data provide conclusions that differ from those of other published work. MacKeen et al. (8) found that silver-containing fiber filters placed in liquid medium significantly lowered the number of surviving *Escherichia coli* and *Pseudomonas aeruginosa*. This decline in numbers was found to be significant at 26°C and faster at 37°C. Our studies did not employ ideal bacterial growth temperatures, because it is assumed that surfaces in a poultry further processing plant would be kept cool; as such, our treatment temperature of 25°C represents a worse-case scenario.

In previous research, silver-containing polystyrene caused a dramatic decrease in bacterial numbers within 24 h at 35°C and within 72 h at 5°C (6). The same researchers examined refrigerator lining material formulated with silver ions and reported that the treated refrigerators and food stored therein had

lower levels of bacterial contamination than levels for untreated control refrigerators. These conclusions, however, were based on visual observation of growth media and not quantitative data subjected to statistical analysis (6).

Gram positive species were proposed to be less sensitive to silver ion treatment than Gram negative species (6). However, in the current work, we found no difference between the effects of silver on a Gram positive (*L. monocytogenes*) and a Gram negative (*P. putida*) bacteria. The presence of silver ions in a plastic cutting board did not affect the attachment, growth or survival of either organism on the surface.

Our data suggest that *L. monocytogenes* cells attached to plastic cutting boards are more susceptible to drying than are cells of *P. putida*. It may be that *L. monocytogenes* becomes unculturable (especially on the selective medium used in the current study) because of dry stress, while *P. putida* is more resistant to drying. However, another explanation is that *L. monocytogenes* cells in a dry biofilm are less well attached, making them prone to removal during pre-sample rinsing. This possibility is supported by an earlier report showing that an *L. monocytogenes* biofilm is more likely to cause transfer to a secondary contact surface when the biofilm has been subjected to drying (10).

CONCLUSIONS/RECOMMENDATIONS

Although silver ion surface treatment has been reported to have antimicrobial utility in other circumstances and

situations, the silver impregnated cutting boards tested in the current study did not inhibit the formation of biofilms by either *L. monocytogenes* or *P. putida* at 25°C.

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ISOPOL XVII

International Symposium on Problems of Listeriosis



May 5 - 8th, 2010

Alfândega Congress Centre, Porto, Portugal

www.isopol2010.org



CATÓLICA
Faculdade de Biologia

2010-2011 *Secretary Election*



MARIA TERESA DESTRO



DONALD W. SCHAFFNER

The following page contains biographical information for the 2010–2011 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 16. Election results will be reported directly from SBS to the IAFP Teller who will report directly to President Vickie Lewandowski. 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 +1 800.369.6337; +1 515.276.3344 or E-mail: dtharp@foodprotection.org.



DR. MARIA TERESA DESTRO

São Paulo, Brazil

Dr. Maria Teresa Destro is an Associate Professor of Food Microbiology in the Department of Food and Experimental Nutrition at the University of São Paulo (USP), Brazil. She earned a B.Sc. in Biological Sciences at the University of São Carlos. Her first professional experience was at an animal pre-mix production company. She later joined the Food Technology Institute (ITAL). At ITAL, she discovered the importance and beauty of food microbiology. After moving to a pharmaceutical research company, she found that food microbiology was her main interest and passion, and subsequently enrolled in the M.Sc. Program in Food Technology at the University of Campinas (UNICAMP) where she began the first studies in Brazil of *Listeria* contamination problems in food.

While pursuing her M.Sc., Dr. Destro began teaching Food Hygiene at the Catholic University of Campinas. She joined the Food Department at USP in 1989, first as a teaching assistant, and then promoted to assistant professor and lecturer in 1990. Dr. Destro obtained her Ph.D. in Food Science at USP in 1995, after developing part of her *Listeria* research under the supervision of Dr. Jeff Farber in Canada. She spent the year 2000 working as a Research Fellow in the Food Science Department of the University of Nottingham, England. In 2006 she received her *Livre Docencia* and was promoted to Associate Professor.

As a professor at USP, Dr. Destro dedicates her time to three areas: teaching, research and extension. Her responsibilities as a professor are teaching food microbiology to undergraduates and studies on Gram-positive foodborne pathogens to graduate students. She also delivers regular courses at several universities in Brazil and in other South American countries. To date she has supervised several graduate students; 11 M.Sc. and 10 Ph.D. candidates.

Dr. Destro's research areas of interest are foodborne pathogens, with a special interest in *Listeria monocytogenes*, from detection and control to the influence of processing conditions on the virulence of the pathogen. She has served as lead investigator and collaborator in several multi-institutional projects addressing food safety and microbial risk assessment.

Dr. Destro has fostered extension and outreach activities by helping micro and small food producers implement GMP, HACCP programs, and by training private and official laboratory staff in *Listeria* detection and enumeration. As an FAO certified HACCP instructor, she has delivered courses all over Brazil and trained over 500 food processors and government employees. She has served on several Brazilian Government committees and works at the international level with FAO, ILSI North America and PAHO.

Dr. Destro joined IAFP in 1994 and has attended the association's annual meetings since 1999. She has served as Member, Vice-Chair and Chair of the *Journal of Food Protection* Management Committee (2000–2008); and Vice-Chair and Chair of the Awards Committee (2007–2008). As Affiliate Council Secretary and then Affiliate Council Chair (2005–2007), she had the opportunity to join the IAFP Executive Board as the first non-North American member of the Board. Maria Teresa currently serves as a member of the IAFP Program Committee (2008–2011) and on the Meat and Poultry Safety and Quality PDG. Dr. Destro was responsible, together with Dr. Mariza Landgraf, for the establishment of the Brazil Association for Food Protection, the first IAFP Affiliate organization in South America. She has also acted as an ambassador for IAFP in different Latin America countries, always committed to spreading the IAFP objective: advancing food safety worldwide.

In addition to IAFP, Dr. Destro has been very active in Brazilian scientific associations. She served as treasurer of the Brazilian Society of Microbiology; Director of Courses for the Brazilian Society for Food Science and Technology, and president of the Brazil Association for Food Protection.

DR. DONALD W. SCHAFFNER

New Brunswick, New Jersey

Dr. Donald W. Schaffner is Extension Specialist in Food Science and Professor at Rutgers University. He also serves as the Director of the Center for Advanced Food Technology. His research interests include quantitative microbial risk assessment and predictive food microbiology. Dr. Schaffner has authored more than 100 peer-reviewed publications, book chapters and abstracts. He has been the recipient of more than \$5 million in grants and contracts, largely in the form of competitive national grants. Dr. Schaffner has educated thousands of Food Industry professionals through numerous short courses and workshops in the United States and more than a dozen countries around the world.

Dr. Schaffner was awarded the IAFP Elmer Marth Educator Award in 2009 for outstanding service to the public and IAFP in the area food safety and food protection education. He also received the Sustained Research and Impact Award in 2008 from the Rutgers School of Environmental and Biological Sciences and NJ Agricultural Experiment Station in recognition of research and scholarship that has provided significant contributions to his profession, and contributions that have had direct measurable impact on the communities he serves.

Dr. Schaffner has served on a variety of national and international expert committees. He served on the US National Academy of Sciences Standing Committee on Use of Public Health Data in FSIS Food Safety Programs and the Committee to Review the Use of Scientific Criteria and Performance Standards for Safe Food. He chaired two expert workshops on microbial risk assessment for the World Health Organization (WHO) and Food and Agriculture Organization (FAO) of the United Nations. Expert reports offering guidelines for Microbial Exposure Assessment and Risk Characterization arising from those two workshops were recently published by FAO/WHO. He also served on a number of Institute of Food Technologist (IFT) expert panels working on projects for FDA including: Development and implementation of a risk-ranking framework to evaluate potential high threat microbiological agents, toxins, and chemicals in food; evaluation and definition of potentially hazardous foods; and quantification of the destruction kinetic of alternative processing technologies. Dr. Schaffner also served two terms on the US National Advisory Committee on Microbial Criteria for Foods (NACMCF), co-authoring documents on Parameters for Determining Inoculated Pack/Challenge Study Protocols and Consumer Guidelines for the Safe Cooking of Poultry Products.

Dr. Schaffner is active in several scientific associations including IAFP, IFT, Society for Risk Analysis (SRA), American Society for Microbiology (ASM), and Conference for Food Protection (CFP). Dr. Schaffner is an Editor for the *ASM Journal, Applied and Environmental Microbiology*, and serves on CFP Council III – Science and Technology.

His recent service to IAFP includes membership on the *Journal of Food Protection* Editorial Board, IAFP Foundation Committee, Program Committee, Organizing Committee for IAFP's Second European Symposium on Food Safety, GMA Food Safety Award Jury and Nominating Committee. He currently serves as Vice Chairman for the IAFP Membership Committee.

Dr. Schaffner holds a B.S. in Food Science from Cornell University and a M.S. and Ph.D. in Food Science and Technology from the University of Georgia.



NEW MEMBERS

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CSIRO FNS
Tingalpa

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bioMérieux Canada
Beaconsfield, Quebec

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Wuxi Zodolabs Biotech Co., LTD.
Wuxi

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Hungarian Food Safety Office
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Shiraz University
Badjgah, Shiraz

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Silver Spring

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David A. Haas
Eastern Research Group
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Jared C. Strong
University of Massachusetts-Amherst
Amherst

MICHIGAN

Jerry Wojtala
International Food Protection
Training Institute
Battle Creek



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ConAgra Foods
Omaha

Yulie E. Meneses
University of Nebraska–Lincoln
Lincoln

NEW YORK

Elias Khan
NYC Dept. of Health – Bureau
of Food Safety
Brooklyn

Lorraine Doralys Rodriguez-Rivera
Cornell University
Ithaca

NORTH DAKOTA

Timothy Haak
Grand Forks Health Dept.
Grand Forks

OHIO

Chongtao Ge
The Ohio State University
Columbus

PENNSYLVANIA

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Clemson University
Clemson

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Pasadena

VIRGINIA

Shelley R. Feist
Partnership for Food Safety Education
Arlington

Daniel Gallagher
Virginia Tech
Blacksburg

WISCONSIN

Cristine Helminger
DCI Cheese Co. – Green Bay
Green Bay

Ralph A. Weber
Gass Weber Mullins LLC
Milwaukee

NEW GOLD SUSTAINING MEMBER

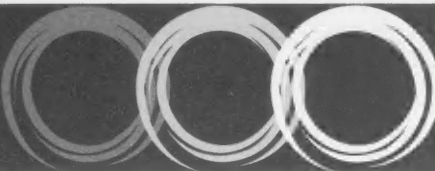
This membership was previously a Regular Sustaining Membership

Nestlé USA, Inc.
Les Smoot
Dublin, OH

NEW SILVER SUSTAINING MEMBER

Supervalu
Adam T. Johnson
Eden Prairie, MN

WHAT'S HAPPENING IN FOOD SAFETY



3-A SSI Opens Nominations for 2010 Volunteer Service Awards

3-A Sanitary Standards, Inc. (3-A SSI) announces the opening of nominations for its 2010 Volunteer Service Awards program to recognize the extraordinary dedication and commitment of individuals who contribute to the development of voluntary standards and the mission of 3-A SSI. The three annual awards constitute a highly visible and significant form of recognition for the outstanding service of individuals to the advancement of 3-A SSI.

The 3-A SSI awards include the following:

- The Leadership Service Award is presented to an individual or group who demonstrates a record of significant contribution to 3-A SSI voluntary standards development and who has demonstrated outstanding service in enabling 3-A SSI to attain its objectives. Accomplishments may include leading a major new activity, reducing the cycle time of development, revitalizing a 'dormant' activity or other outstanding service.
- The 3-A SSI Advancement Award honors outstanding accomplishments performed by any individual or group on behalf of 3-A SSI, such as advancing the use or industry recognition of 3-A Sanitary Standards or 3-A Accepted Practices.
- The Next Generation Award honors an individual who has been engaged in 3-A SSI stan-

dards development activities for less than five years and has demonstrated leadership, dedication and significant contributions to the development of 3-A Sanitary Standards or 3-A Accepted Practices.

According to 3-A SSI Executive Director Tim Rugh, "3-A SSI relies on a network of engaged and committed volunteers to forge consensus on the voluntary standards and practices and we should all recognize the immense contribution they make to this organization and to the goal of advancing public health."

Names of previous award winners are maintained on the 3-A SSI Web site under 'About 3-A, Honors and Awards' at http://www.3-a.org/about/honors_awards.html.

More details on the new program and a Nomination Form are available on the 3-A SSI Web site at www.3-a.org under News & Events or go directly to http://www.3-a.org/news/releases/1-25-10_volunteer-awards2010.html. The deadline for 2010 nominations is April 9, 2010. Awards will be presented at the 3-A SSI Annual Meeting on May 19, 2010 in Milwaukee, WI.

The Outstanding Achievement Award from the Government of Canada

The Government of Canada introduced the Outstanding Achievement Award, considered the most prestigious in the Public Service, in 1966. This award is presented to senior public servants who have distinguished themselves through a sustained commitment to excellence, with an emphasis on modernizing service delivery, build-

ing the Public Service as a vibrant national institution geared to future needs, or enhancing Canadian interests in the global arena. The award emphasizes the importance that the Government of Canada attaches to efficient operations in the Public Service and to the provision of quality service to Canadians.

Each award consists of a framed certificate signed by the Prime Minister and the Governor General, a gold pin and a Canadian work of art. Including this year's recipients, a total of 86 awards have been conferred since the program's inception. A list of previous recipients of the Outstanding Achievement Award as well as details of the recognition program may be found on the Treasury Board of Canada Secretariat Web site: www.tbs-sct.gc.ca/arp/instn-eng.asp.

The Selection Committee for the Outstanding Achievement Award consists of distinguished Canadians appointed by the Prime Minister and covers a broad cross-section of individuals with diverse interests and backgrounds from outside the Public Service. The Committee reviews the nominations and makes its recommendations directly to the Prime Minister. Candidates must be professionals at the executive, deputy head or equivalent levels – including Governor-in-Council appointees – and must occupy a full-time position in the Public Service at the time of nomination.

Recipients of the 2009 Outstanding Achievement Award are:

- Louise Branch, Service Canada, Human Resources and Skills Development Canada. Ms. Branch is an executive head of service manage-



ment for Service Canada. She envisioned a workforce focused on service that would attract and retain employees and promote progression within the ranks of the Public Service of Canada.

- Dr. Jeffrey Farber, Health Canada. Dr. Farber has spent his career focusing on the health and safety of Canadians. He arrived at Health Canada in 1982 for a post-doctoral fellowship after having obtained an MSc (applied) in medical microbiology and immunology and a doctorate in food microbiology from McGill University. In 1983, he joined the Public Service of Canada as a research scientist with Health Canada's Bureau of Microbial Hazards, and in 2001, he became its director. As director of Health Canada's Bureau of Microbial Hazards (BMH), Dr. Farber has developed and continues to foster a dynamic team of scientists that produces some of the most trusted research.

Under his leadership, the Bureau has become recognized nationally and internationally as a centre of excellence in scientific research, risk assessment, policy and food safety education. He has devoted considerable time to grooming the next generation of experts through continually supporting, inspiring and encouraging members of his team to venture into challenging areas and through his work as an adjunct professor at the University of Ottawa.

He is regarded by many of his peers and mentees as a role model.

- Jim Judd, Canadian Security Intelligence Service. With a bachelor of arts in political science and a master of arts in international affairs, both from Carleton University, Mr. Judd entered the public service in 1973 as a foreign service officer with the then-Department of External Affairs. He spent several years in various positions related to his field of expertise in Canada and abroad before accepting a management position in 1981.

In the following years, Mr. Judd demonstrated vision and outstanding judgment as he faced some of the toughest leadership challenges in the federal government. From assignment to assignment, he was often called upon to revitalize departments in the midst or aftermath of difficult situations. At External Affairs, he became a central figure in creating and managing a corporate centre for the department when it was struggling to incorporate its new responsibilities for trade. He implemented a four-year renewal program for National Defence when it was still embroiled in controversy after the Somalia Affair.

- John Sims, Dept. of Justice Canada. Mr. Sims received a bachelor of arts (honors) in history and economics and a bachelor of laws from Queen's University. He was called to the Ontario Bar in 1973 and joined the Public

Service of Canada in 1977 as legal counsel to Transport Canada.

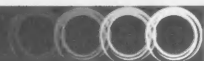
As a colleague, Mr. Sims is well-respected across the country and around the world. He has represented Canada at international conferences and events, at times on very contentious issues. He headed the Canadian delegation when the United Nations reviewed Canada's human rights record, and his open and constructive approach ensured that Canada's review served as a model for other countries and ultimately enhanced the credibility of the review process.

Silliker Announces Opening of New State-of-the-Art Laboratory in Salida, CA

Silliker, Inc., an international network of accredited food testing and consulting laboratories, has opened a new facility in Salida, CA. The new facility replaces its previous location in nearby Modesto and doubles its available laboratory space.

"Our opening marks the culmination of over two years of planning and the beginning of a new chapter in the area of customer service for Silliker," said Johannes Burlin, president - North America. "This new facility significantly increases both our space and capabilities, and will allow us to provide our clients with top level services and localized customer attention."

Designed by John Baile of Watkins/Baile and Associates and Linwood Engineering Associates, both of Costa Mesa, CA, the state-of-the-art Salida laboratory utilizes innovative workstation designs,



advanced robotic automation and multi-use work-flow processes to help minimize common workplace errors and assure the production of consistent quality results.

"The lab's design allows us to achieve optimum sample flow, meet increases in sample volume, better manage process changes and seamlessly incorporate new testing and technology innovations," noted Robert Colvin, vice president of operations.

Silliker has relocated its staff to the new Salida facility, about eight miles north of its former site in Modesto.

Michael R. Taylor, J.D., Deputy Commissioner for Foods

Michael R. Taylor, J.D., was named deputy commissioner for foods at the US Food and Drug Administration, January 2010. He is the first individual to hold the position, which was created along with a new Office of Foods in August 2009 to elevate the leadership and management of the Foods Program. Mr. Taylor is a nationally recognized food safety expert, having served in numerous high-level positions at FDA and USDA, as a research professor in academia, and on several National Academy of Sciences expert committees. Mr. Taylor returned to FDA in July 2009 as senior advisor to the commissioner.

As deputy commissioner for foods, Mr. Taylor will help FDA to develop and implement a prevention-based strategy for food safety, plan implementation of new food safety legislation, and ensure that food labels contain clear and accurate information on nutrition.

Mr. Taylor began his career as a staff attorney at FDA, holding various positions, including deputy commissioner for policy. While

at FDA, he oversaw rulemaking to implement the Nutrition Labeling and Education Act and issuance of the proposed rule on Hazard Analysis Critical Control Points (HACCP) for seafood. Mr. Taylor also served as administrator of the Food Safety and Inspection Service (FSIS) and acting under secretary for food safety at USDA, spearheading public health-oriented reform of the FSIS, guiding the development of the HACCP rule for meat and poultry products, and addressing the hazard associated with *E. coli* O157:H7 by declaring the pathogen an adulterant in ground beef.

Before returning to FDA in July 2009, Mr. Taylor served as research professor, School of Public Health and Health Services, The George Washington University. His research agenda focused on policy, resource and institutional issues that affect the success of public health agencies in carrying out their prevention-related missions. During that time, he co-authored *Stronger Partnerships for Safer Food—An Agenda for Strengthening State and Local Roles in the Nation's Food Safety System* and *Harnessing Knowledge to Ensure Food Safety—Opportunities to Improve the Nation's Food Safety Information Infrastructure*.

Mr. Taylor has served on several National Academy of Sciences committees studying food-related issues, including dioxin and animal biotechnology.

Other positions held by Mr. Taylor include senior fellow, Resources for the Future; professor, School of Medicine, University of Maryland; partner, King Spalding Law Firm; and vice president for public policy, Monsanto Company.

Mr. Taylor received his law degree from the University of Virginia and his B.A. degree in political science from Davidson College.

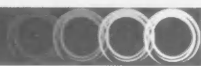
Bettcher Industries Names Rolf Laager to International Sales Management Position

Bettcher Industries, a manufacturer and supplier of precision cutting tools for food processing, foodservice and industrial applications, has announced that Rolf Laager has joined the company as international sales manager. In this position, Mr. Laager will be responsible for sales and market development functions for the Bettcher product line in Europe, including managing distributor relationships in various European countries.

Mr. Laager joins Bettcher Industries from Hoegger AG, an international manufacturer of meat and bacon presses where he was general manager of the company's US operations in Vermont. He managed sales, technical service and product development activities for the company's customer base in North America and Latin America. Earlier, Laager served as an international sales manager and assistant to the president at Hoegger AG's headquarters in Flawil, Switzerland. Laager's technical background includes formal training in mechanical engineering and electronics. He has taught a wide range of mechatronics-related coursework and is also a member of the Examining Board for Mechatronics Professionals.

The appointment of Rolf Laager underscores the expansion in Bettcher Industries' product line and international activities of the company. In the European region, Bettcher has established distributor partnerships over the past several years in Russia and the Balkans, as well as in the Baltic Republics.

According to David Quebbemann, vice president of sales and marketing, continued expansion into European markets underscores the importance of international busi-



ness for Bettcher Industries. "Today, more than 50% of our sales come from business outside the United States," Mr. Quebbemann reported. "In the meat and poultry processing field, there is continuing strong demand for our trimmers as processors continue to look for ways to improve yields, productivity, and the safety and comfort of their workers," he added.

Onset Announces New President

Onset, a supplier of data loggers, has announced that Justin Testa has been hired as the company's new president.

With more than 28 years of sales, marketing, and general management experience, Mr. Testa brings to Onset a strong background in product management and marketing strategy resulting in increased revenue and market share.

"Onset holds a strong position as the global leader in innovative measurement, data logging and monitoring solutions," said Mr. Testa. "I look forward to working with our

experienced and talented team to expand our reach and increase our market share."

Most recently, Mr. Testa served as the executive vice president and business unit manager for Cognex Corporation.

Mr. Testa holds a Master of Business Administration from the Carroll School of Management at Boston College and a Bachelor of Arts from Boston University.

DIREVO Industrial Biotechnology GmbH Appoints Dr. Joerg Riesmeier as COO

DIREVO Industrial Biotechnology GmbH (DIREVO) has announced the appointment of Dr. Joerg Riesmeier as managing director and chief operating officer with immediate effect. Dr. Riesmeier is an executive with a proven track record in industrial biotechnology, both in long-range industry investment and in product development. He will be leading the company together with the company's CEO, Dr. Thomas von Ruden.

Dr. Riesmeier joins DIREVO from LSP, Inc. (Boston), where he had been general partner since 2006.

Prior to his position at LSP, Dr. Riesmeier was head of business development at BURRILL & CO. (San Francisco).

Previously, Dr. Riesmeier was president and CEO at PLANTTEC BIOTECHNOLOGY—Potsdam, Germany.

Mettler-Toledo Hi-Speed Appoints New Western Regional Sales Manager

Mettler-Toledo Hi-Speed is pleased to announce the appointment of Juan Zuniga as the western regional sales manager.

Mr. Juan has over thirty years of experience in the packaging and inspection industry. His previous position was a multi-territory sales manager representing checkweighers, metal detectors, and x-ray systems. He has also held positions as an applications sales engineer and service technician.

Mr. Juan holds a Bachelor of Arts in communication journalism from Stanford University.

In Memory

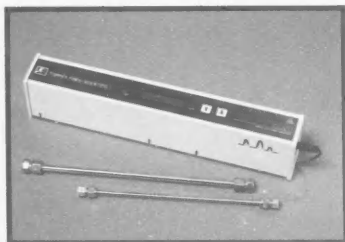
O. D. (Pete) Cook
Mount Airy, Maryland

We extend our deepest sympathy to the family of Pete Cook, who passed away on January 15, 2010. IAFP will always have sincere gratitude for his contribution to the Association and the profession.

Mr. Cook received his Bachelor of Arts degree in 1964 and his Master of Science degree in 1967 in Missouri and a second Master of Science degree in Public Health in Michigan. After working as a food safety expert for the National Park Service in Yellowstone, he then transferred to the Washington area in 1985 to work as an epidemiological investigations coordinator for the FDA's Office of Regulatory Affairs where he achieved much success in this role.

Mr. Cook has been an IAFP Member since 1964 and served on various committees and the *FPT* Editorial Board. In 2001, he received the IAFP Sanitarian Award.

INDUSTRY PRODUCTS



Torrey Pines Scientific, Inc.

New Compact HPLC Column Heater from Torrey Pines Scientific, Inc.

Torrey Pines Scientific, Inc. has announced its new EchoTherm™ HPLC Column Heater Model CO20.

This new unit has a temperature range from room temperature to 90.0°C readable and settable to 0.1°C. The PID temperature control software regulates temperatures to ±0.1°C. 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 CO20 holds 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 CO20 features simple controls, digital display of target and actual chamber temperatures, an injection counter, and 30-day timer with alarm and user settable Auto-Off.

The unit operates from 12 volts DC and comes with a bench top universal power supply for use anywhere in the world, 3-wire AC line cord for the country of use, coun-

ter cable, twelve month warranty and instruction manual. The Model CO20 is UL, CSA, and CE compliant.

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

Biohit, Inc. New Ergonomically Designed MicroTubes

Biohit, Inc. has introduced their new ErgoTubes. These microtubes are designed with a patented flip cap, which significantly reduces strain and effort during use. This feature assists in opening the ErgoTubes more safely than traditional micro centrifuge tubes.

The ErgoTube meets today's demand for ergonomic, safe, and functional tubes for use in centrifugation, sample prep, boiling, and storage.

Biohit ErgoTubes are RNase, DNase and Pyrogen-Free. They are available in clear as well as eight colors. Sizes include 0.5 ml, 1.5 ml and 2.0 ml. All tubes are packaged in tamper evident re-sealable bags for user protection as well as sample protection.

ErgoTubes are excellent for centrifugation, sample prep or storage. They are made of virgin polypropylene and have a frosted area for marking on both the cap and the side of the vial.

Biohit ErgoTubes are ideal for OEM, private label and custom kit applications.

Biohit, Inc.
800.922.0784
Neptune, NJ
www.biohit.com

Eriez® Offers Overview of HACCP Regulations and Recommended Magnetic Equipment That Meets Federal Safety Guidelines

Eriez® has developed a report outlining the principals of meeting Hazard Analysis Critical Control Point (HACCP) regulations and the role magnetic separation equipment and inspection systems (X-Ray and Metal Detectors) play in improving product purity, protecting vital process equipment and removing potentially harmful ferrous contaminants.

The report, titled "HACCP Overview and How Eriez Magnetics Can Help You Succeed," lists the seven principals in monitoring Critical Control Points (CCPs) as set for by the Food and Drug Administration (FDA) and United States Department of Agriculture (USDA). Readers also gain knowledge of the various types of magnetic equipment—from plate magnets to drum magnets—that impact the sanitary operations during product processing. There is also a section dedicated to inspection systems and how Metal Detectors and X-Ray Systems play a role detecting contaminants before products are shipped.

HACCP is a systematic preventive approach to food safety and pharmaceutical safety that addresses physical, chemical and biological hazards as a means of prevention rather than finished product inspection. It is used in the food industry to identify potential food safety hazards so that key actions, known as CCPs can be

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

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

INDUSTRY PRODUCTS

taken to reduce or eliminate the risk of the hazards being realized.

HACCP is used at all levels of food production and preparation processes, including packaging and distribution. The FDA and USDA say that their mandatory HACCP programs for juice and meat are an effective approach to food safety and protecting public health.

The Eriez document is in PDF format and available for download at <http://en-us.eriez.com/products/haccpoverviewdownload/>.

Eriez
888.300.ERIEZ (3743)
Erie, PA
www.eriez.com

Calibration Guide Now Available from Dickson

Quality managers and others responsible to maintaining the integrity of temperature and/or humidity chart recorders or data loggers can now download a comprehensive guide to all aspects of instrument calibration at http://www.dicksondata.com/calibration/calibration_order.php.

Chapters of this online guide include:

- Explanations of why calibrations are required
- Review of calibration methods to choose from
- A step-by-step guide to developing calibration schedules
- "Before" Data considerations
- Best fit applications for 1-point, 3-point and custom point calibrations
- Glossary of calibration terms
- Optional Calibration Club registration

Chris Sorensen, Dickson vice president sales and marketing explains, "All instruments lose accuracy over time due to normal usage and the environmental conditions to which they are exposed. Periodic NIST certified calibrations maintain the accuracy of your instrument throughout its life. This guide is designed to make it very easy for users of chart recorders and data loggers to navigate the many choices in calibration approaches to find the one that is best-matched to their application requirements."

Dickson
800.757.3747
Addison, IL
www.dicksondata.com

Charm Sciences Enhances UHT/ESL End Product Testing with Acquisition

Charm Sciences has announced that it has acquired the MLX Microplate Luminometer product line from Dynex Technologies, Chantilly, Virginia. The acquisition includes full global rights to the MLX luminescence instrument line which will now be manufactured at Charm's headquarters in Lawrence, Massachusetts. The MLX will be integrated with Charm's EPIC <<http://www.charm.com/content/view/172/431/lang.en/>> (End Product Indicator Charm) product line.

"Growing consumer demand for fresh-tasting food and beverage products and longer shelf life, ensures the EPIC system has a unique role for UHT/ESL manufacturers to produce a safe product with faster release through the distribution chain," said Donna Stearns, Charm's EPIC product manager. EPIC has been successfully applied to dairy products, soy milk, rice milk, almond

milk, soups, salad dressings, and nutraceutical beverages.

The acquisition is designed to bring faster product release to the industry by coupling a sensitive microplate luminometer with innovative luminescence solutions. "Charm Sciences plans to expand Charm's presence in an emerging growth market and we look forward to applying our electronics and diagnostics expertise to an expanding array of luminescence-based tests for the dairy, food and industrial markets," said Shirley Charm, executive vice president, Charm Sciences. The EPIC system complements Charm's bioluminescence applications for surface hygiene (PocketSwab® Plus, FieldSwab), water hygiene (WaterGiene), and allergen control (AllerGiene®).

Charm Sciences
978.687.9200
Lawrence, MA
www.charm.com

FoodLogiQ Solves Universal Food Traceability Challenge with a Hosted, Easy-to-Use and Affordable Technology at www.FoodLogiQ.com

FoodLogiQ, has launched a free version of an innovative application for growers, produce buyers and consumers. This technology solution makes the goal of farm-to-fork traceability achievable for family operated farms and larger grower/packer/shipper operations alike. Once adopted, consumers will have full confidence that their produce has been brought to market following safe food practices and enables full traceability from farm to fork. FoodLogiQ has developed the first application to deliver complete

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INDUSTRY PRODUCTS

supply chain traceability information directly to the consumer's mobile device. The baseline version of the application is free to all food chain participants – grower, produce supplier, and consumer.

This ready-to-use, hosted software solution enables growers to comply with the produce traceability initiative requirements while marketing their business directly to produce buyers, to connect with consumers directly about their food, and to meet industry and government labeling requirements around traceability and country of origin labeling.

Produce buyers are able to search the directory for local produce, rate suppliers, and review and recommend products. Consumers and produce buyers can also leverage mobilemarQit short codes to find the origin of traceable food. Underlying mobilemarQit is FoodLogiQ's traceability solution which enables growers, packers-shippers through to retailers to capture, identify and trace detailed information about a product at the item, case or pallet level.

FoodLogiQ is also addressing the needs of industry associations at www.FoodLogiQ.com. Registration for associations will result in free traceability for members, create a branded community collaborative platform for the association, and create a social networking environment where members can share information with each other.

Food LogiQ
866.492.4468
Dunham, NC
www.FoodLogiQ.com



Mettler Toledo

Mettler Toledo Hi-Speed Introduces a USDA-approved Cornerstone® SA Checkweigher

Mettler-Toledo Hi-Speed is pleased to introduce the new USDA-approved Cornerstone® SA checkweigher – ideal for dairy and meat applications, whether packaged or bulk. The system's hygienic design and full stainless steel construction is built to withstand the heavy, washdown environment of applications such as blocks of cheese, ice cream bars, milk, and raw and processed meat products. The system is designed for COP or CIP for cleaning to a microbiological level. All non-product areas are designed to eliminate debris build-up and potential bacterial reservoirs and product contact areas are corrosion-resistant, non-toxic and non-absorbent.

Fully customizable for easy integration into production lines, the Cornerstone Beltweigh SA checkweigher delivers exceptional accuracies for up to 11 pounds (5 kilograms) for reduced product giveaway and increased profits. The

system can be integrated with a Mettler-Toledo Safeline metal detector for added inspection. With the SAFELINE patented Zero Free Metal Zone technology, exceptional inline stability and sensitivity, the system can reliably identify and automatically reject all types of metal contaminants, including ferrous, non-ferrous, and the notoriously difficult to detect stainless steel.

Mettler-Toledo patented Electromagnetic Force Restoration (EMFR) technology ensures sustained accuracy over long periods of time and minimizes weighing errors caused by changes in temperature and mechanical vibration which may be present in the production area. This reduces expensive product giveaway, prevents underweight products from leaving the factory, and ensures legal compliance.

A central support spine used for mounting interchangeable belts provides a stable, sturdy, and robust frame for years of reliable service requiring virtually no maintenance beyond cleaning. The modular construction accommodates nearly any combination of conveyor lengths, widths, and line heights. Easy-to-clean snap-out conveyors and quick disconnect servo motors further ease belt changeovers, cleaning and maintenance for reduced downtime and increased productivity.

The 15" color touch screen controller makes product setup and changeover fast and simple. The intuitive, easy-to-understand icon-driven menu is clearly visible at up to 10 feet away, even in low-light conditions. With password protection and set up available in multiple languages, possible operator errors

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INDUSTRY PRODUCTS

are significantly reduced while productivity is increased.

The system can be easily connected to plant-wide networks using Ethernet, PLC, OPC, or serial connectivity. A fully integrated Cornerstone Beltweigh SA checkweigher can be used to control upstream processes, reducing under-fill and over-fill products by providing automatic, real-time feedback to fillers on trends or out-of-tolerance conditions.

Mettler Toledo
813.889.9500
Tampa, FL
www.mt.com/pi

Strategic Diagnostics' RapidChek® E. coli O157 System Awarded AOAC Research Institute Certification for Composite Testing of Raw Beef Products

Improved test strip design helps improve the accuracy and time-to-result of pathogen testing required in the beef processing industry.

Strategic Diagnostics Inc., a provider of biotechnology-based detection solutions for food safety and life science applications has announced that its recently improved RapidChek® E. coli O157 (including H7) System has earned Performance-Tested MethodsSM certification from the AOAC

Research Institute (License Number # 070801) for testing composite samples of raw beef including ground beef and boneless beef trim.

Reacting to testing and sampling protocol changes in the beef industry, this third-party validation study was performed with the RapidChek E. coli O157 test system for detection of E. coli O157 (including H7) in composited 375 g beef trim and ground beef samples. The results were compared to the USDA (United States Department of Agriculture) FSIS (Food Safety Inspection Service) reference method. All samples were confirmed using biochemical/serological procedures as listed in the USDA MLG 5.04 (*Microbiology Laboratory Guidebook*). RapidChek E. coli O157 was shown to reliably detect E. coli O157 (including H7) in 375 g beef trim samples in as few as 10 hours using a 1:5 sample to media dilution factor and in 375 g ground beef samples in as little as 12 hours. The study also demonstrated the ability to verify RapidChek E. coli O157 potential positive results with commercially available DNA-based methods directly from the RapidChek media system followed by further confirmation with biochemical/serological procedures as listed in the USDA MLG 5.04.

Tim Lawruk, SDI food safety marketing manager, said, "With the recent announcements of E. coli

O157:H7 contamination in beef products, SDI has been working with leaders in the beef industry and regulatory agencies to understand testing requirements based on new sampling practices and industry testing concerns. The newly improved AOAC-certified RapidChek E. coli O157 test system, which includes improved materials and reagents, is designed to offer several advantages over competitive testing methods, including greater accuracy, faster results, reduced testing costs, and increased confidence in test results. This certification also confirms SDI's commitment to provide the food market with superior, complete pathogen testing solutions that provide rapid and accurate results."

Scott Coates, AOAC Research Institute senior managing director, commented, "Beef processors and regulators are responding to increasing pressure to protect the health of consumers. The AOAC Research Institute Performance-Tested Methods program supports these enhanced expectations by independently evaluating and validating the technologies that most effectively address E. coli O157 and other food safety outbreaks."

Strategic Diagnostics Inc.
800.544.8881
Newark, DE
www.sdix.com



IAFP 2010 Activities

SATURDAY, JULY 31

COMMITTEE MEETINGS

3:00 p.m. - 4:30 p.m.

WELCOME RECEPTION

5:00 p.m. - 6:30 p.m.

Sponsored by Eurofins Scientific

SUNDAY, AUGUST 1

COMMITTEE MEETINGS

7:00 a.m. - 5:30 p.m.

STUDENT LUNCHEON (ticket required)

12:00 p.m. - 1:30 p.m.

EDITORIAL BOARD RECEPTION (by invitation)

4:30 p.m. - 5:30 p.m.

OPENING SESSION AND IVAN PARKIN LECTURE

6:00 p.m. - 7:30 p.m.

CHEESE AND WINE RECEPTION

7:30 p.m. - 9:30 p.m.

Sponsored by Kraft Foods

IAFP JOB FAIR

Sunday, August 1 through Wednesday, August 4

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

MONDAY, AUGUST 2

COMMITTEE AND PDG CHAIRPERSON

BREAKFAST (by invitation)

7:00 a.m. - 9:00 a.m.

EXHIBIT HALL LUNCH

12:00 p.m. - 1:00 p.m.

Sponsored by Johnson Diversey

EXHIBIT HALL RECEPTION

5:00 p.m. - 6:00 p.m.

Sponsored by DuPont Qualicon

TUESDAY, AUGUST 3

EXHIBIT HALL LUNCH

12:00 p.m. - 1:00 p.m.

Sponsored by DNV

BUSINESS MEETING

12:15 p.m. - 1:00 p.m.

EXHIBIT HALL RECEPTION

5:00 p.m. - 6:00 p.m.

Sponsored by 3M Food Safety

PRESIDENT'S RECEPTION (by invitation)

6:00 p.m. - 7:00 p.m.

WEDNESDAY, AUGUST 4

JOHN H. SILLIKER LECTURE

4:00 p.m. - 4:45 p.m.

AWARDS RECEPTION AND BANQUET

6:00 p.m. - 9:30 p.m.

TOURS

IAFP has partnered with Southern California Gray Line to offer daily sightseeing tours to all major Southern California attractions. Specialty tours include LA/Hollywood and San Diego/Tijuana city tours, OC beaches, shopping excursions, movie stars' homes and Catalina Island. Book your tours now at www.graylineanaheim.com with your special IAFP discount coupon available under 'Special Promotions.' Or visit the IAFP Registration Desk once you arrive in Anaheim to arrange your tours.



IAFP 2010 General Information

REGISTER ONLINE

Coming soon, register online at www.foodprotection.org.

REGISTRATION

Register to attend the world's leading food safety conference. Full Registration includes:

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

GUEST REGISTRATION

Guest registration includes:

- Welcome Reception
- Ivan Parkin Lecture
- Cheese and Wine Reception
- Exhibit Hall Admittance
- Exhibit Hall Lunch (Mon. & Tues.)
- Exhibit Hall Reception (Mon. & Tues.)

Please note that Guest registration applies to those individuals who are not employed in the food safety arena.

PRESENTATION HOURS

Sunday, Aug. 1	
Opening Session	6:00 p.m. – 7:30 p.m.
Monday, Aug. 2	
Symposia & Technical Sessions	8:30 a.m. – 5:00 p.m.
Tuesday, Aug. 3	
Symposia & Technical Sessions	8:30 a.m. – 5:00 p.m.
Wednesday, Aug. 4	
Symposia & Technical Sessions	8:30 a.m. – 3:30 p.m.
Closing Session	4:00 p.m. – 4:45 p.m.

FOUNDATION GOLF TOURNAMENT

Saturday, July 31
Golf Tournament
To be determined

EVENING EVENTS

Sunday, Aug. 1	
Opening Session	6:00 p.m. – 7:30 p.m.
Cheese and Wine Reception	7:30 p.m. – 9:30 p.m.
	<i>Sponsored by Kraft Foods</i>
Monday, Aug. 2	
Exhibit Hall Reception	5:00 p.m. – 6:00 p.m.
	<i>Sponsored by DuPont Qualican</i>
Tuesday, Aug. 3	
Exhibit Hall Reception	5:00 p.m. – 6:00 p.m.
	<i>Sponsored by 3M Food Safety</i>
Wednesday, Aug. 4	
Awards Banquet Reception	6:00 p.m. – 7:00 p.m.
Awards Banquet	7:00 p.m. – 9:30 p.m.

SPECIAL EVENTS

NFPA Alumni and Friends Reception
To be determined

EXHIBIT HOURS

Sunday, Aug. 1	7:30 p.m. – 9:30 p.m.
Monday, Aug. 2	10:00 a.m. – 6:00 p.m.
Tuesday, Aug. 3	10:00 a.m. – 6:00 p.m.

HOTEL INFORMATION

Hotel reservations can be made online at www.foodprotection.org. The IAFP Annual Meeting Sessions, Exhibits and Events will take place at the Anaheim Convention Center. Hilton Anaheim \$149.00 per night

CANCELLATION POLICY

Registration fees, less a \$50 administration fee and any applicable bank charges, will be refunded for written cancellations received by July 16, 2010. No refunds will be made after July 16, 2010 however, the registration may be transferred to a colleague with written notification. Refunds will be processed after August 9, 2010. Event and extra tickets purchased are nonrefundable.

 International Association for
Food Protection
6200 Aurora Avenue, Suite 200W
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
Web site: www.foodprotection.org



IAFP 2010 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 JULY 6, 2010 TO AVOID LATE REGISTRATION FEES

REGISTRATION FEES	MEMBERS	NONMEMBERS	TOTAL
Registration	\$ 445 (\$ 495 late)	\$ 665 (\$ 715 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.	\$ 240 (\$ 265 late)	\$ 370 (\$ 395 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, 8/4	\$ 55 (\$ 65 late)	\$ 55 (\$ 65 late)	_____
Student Luncheon – Sunday, 8/1	\$ 10 (\$ 15 late)		_____
FOUNDATION GOLF TOURNAMENT			
To be determined – Saturday, 7/31			
SPECIAL EVENTS			
NFPA Alumni and Friends Reception			
ABSTRACTS			
Annual Meeting Abstracts (citable publication to be distributed in Anaheim)	\$ 30	\$ 30	_____
PRE-MEETING WORKSHOPS			
Workshop 1			
Workshop 2			
Workshop 3			

Payment Options: VISA Master Card American Express Discover

TOTAL AMOUNT ENCLOSED \$ _____
US FUNDS US BANK

Check Enclosed

Refunds subject to cancellation policy

CREDIT CARD # _____

JOIN TODAY AND SAVE!!!

CARD ID # _____ EXP. DATE _____

(Attach a completed Membership application)

SIGNATURE _____

* 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.





Contribute to the Thirteenth Foundation Silent Auction Today!

Proceeds from the Silent Auction Benefit the Foundation

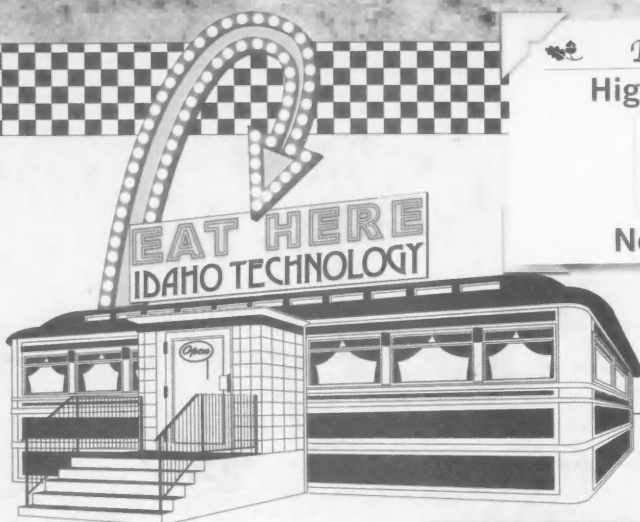


Support the Foundation by donating an item today. A sample of items donated last year included:

- Hand Dipped Premium Chocolate Truffles
- Borden Glass Milk Bottles
- Georgia Gift Basket
- *The Texas Cowboy Kitchen* Cookbook
- Hand Painted Armadillo
- *Down Home with the Neelys* Cookbook
- Margaritaville Frozen Concoction Maker
- New York State Maple Syrup
- Ontario Ice Wine
- *Food Safety Culture* Book
- Tetley Tea Gift Set
- Cultured Pearl and Lemon Quartz Necklace
- Holstein Leather Jacket

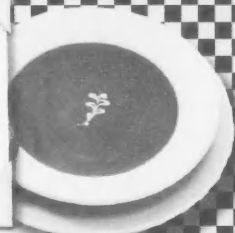
To donate an item go to our Web site at www.foodprotection.org and complete the Silent Auction Donation Form or contact Donna Gronstal at dgronstal@foodprotection.org +1 515.276.3344; +1 800.369.6337





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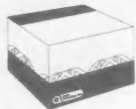


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Salmonella..... AOAC Approved
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E. coli O157:H7..... AOAC Approved
Campylobacter..... Available
L. monocytogenes..... Available
C. botulinum..... Available
Avian Influenza..... Available



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COMING EVENTS

MARCH

- **31–April 2, Missouri Milk, Food and Environmental Health Association Annual Educational Conference**, Stoney Creek Inn, Columbia, MO. For more information, contact Steve Sikes at 636.797.3737 or E-mail: sikess@lpha.mopublic.org; or visit www.mmfeha.org.

APRIL

- **7–8, Upper Midwest Dairy Industry Association with Iowa Association for Food Protection Spring Meetings**, April 7 at Holiday Inn South, in Rochester, MN; April 8 at Holiday Inn in Alexandria, MN. For more information, contact Dale Heintz at 507.951.0756 or E-mail daheintz@landolakes.com.
- **9–14, Conference for Food Protection 2010 Biennial Meeting**, Providence, RI. For more information, call 916.645.2439 or go to www.foodprotect.org.
- **12–13, Advanced HACCP Training**, Eagan MN. For more information, go to www.ecosure.com/EcoSure%20Supply%20Chain.asp.
- **12–14, 2010 Food Safety Summit**, Washington, D.C. For more information, go to www.foodsafetysummit.com.
- **14, Indiana Environmental Health Association Annual Educational Spring Conference**, Ball State University, Muncie, IN. For more information, go to www.iehaind.org.
- **14–15, Implementing SQF 2000 Systems**, Eagan MN. For more information, go to www.ecosure.com/EcoSure%20Supply%20Chain.asp.
- **22, Ontario Food Protection Association Spring Meeting**, Mississauga Convention Center, Mississauga, Ontario. For more information, E-mail: info@ofpa.on.ca or go to www.ofpa.on.ca.

- **22–23, Kansas Environmental Health Association Spring Conference**, Rock Springs Convention Center, Junction City, KS. For more information, go to www.e-keha.org.
- **25–27, ADPI/ABI Annual Conference**, Hyatt Regency, Chicago, IL. For more information, go to www.adpi.org.

MAY

- **5, Carolinas Association for Food Protection Annual Meeting**, North Carolina Research Campus, Kannapolis, NC. For more information, contact Steve Tracey at smtracey@foodlion.com.
- **5, Florida Association for Food Protection Annual Educational Conference**, International Plaza Resort and Spa, Orlando, FL. For more information, contact Zeb Blanton at 407.618.4893 or go to www.fafp.net.
- **5, Metropolitan Association for Food Protection Spring Seminar**, Douglass Student Center, Rutgers University, New Brunswick, NJ. For more information, contact Carol Schwar at cschwar@co.warren.nj.us or go to www.metrofoodprotection.org.
- **5–8, ISOPOL XVII International Symposium on Problems of Listeriosis**, Alfandega Congress Centre, Porto, Portugal. For more information, go to www.esb.ucp.pt/isopol2010.
- **6, Metropolitan Association for Food Protection Spring Seminar**, Rutgers University, Cook College Campus, New Brunswick, NJ. For more information, contact Carol Schwar at 908.475.7960; E-mail: cschwar@co.warren.nj.us.
- **6–7, Associated Illinois Milk, Food and Environmental Sanitarians Spring Conference**, Eastland Suites, Bloomington, IL. For more information, contact Steve DiVencenzo at Steve.DiVencenzo@illinois.gov.

- **6–8, High-throughput Methods for Detecting Foodborne Pathogens Workshop**, York College, Jamaica, NY. For more information, go to www.york.cuny.edu/conted/fdaworkshops/2008-fda-workshop/preliminary-program.
- **11–13, FMI 2010**, Mandalay Bay Convention Center, Las Vegas, NV. For more information, go to www.fmi.org/events.
- **12–13, Pennsylvania Association of Milk, Food and Environmental Sanitarians Annual Conference**, Nittany Lion Inn, State College, PA. For more information, contact Gene Frey at erfrey@landolakes.com.
- **17–21, 3-A 2010 Education Program and Annual Meeting**, Wyndham Milwaukee Airport Hotel and Convention Center, Milwaukee, WI. For more information, go to www.3-a.org.
- **18–19, The 4th Annual Congress on Food Safety & Quality 2010**, Shanghai, China. For more information, contact Fanny Wang at +8621.51720126 or go to <http://www.foodsafetycongress.com/>.
- **23–27, 110th General Meeting of the American Society for Microbiology**, San Diego Convention Center, San Diego, CA. For more information, go to www.gm.asm.org.

JUNE

- **6–9, NEHA Annual Educational Conference**, Albuquerque, New Mexico. For more information, go to <http://www.neha.org>.
- **8–10, 2nd International MoniQA Conference**, Krakow, Poland. For more information, go to <http://krakow.moniqua.org>.
- **9–11, IAFF's Sixth European Symposium on Food Safety**, University College Dublin, Dublin, Ireland. For more information, go to www.foodprotection.org.

COMING EVENTS

- **14-15, Brazil Association for Food Protection Annual Meeting**, Conselho Regional de Química, São Paulo, SP, Brazil. For more information, E-mail Maria Teresa Destro at mtdestro@usp.br or go to www.abrappa.org.br.
- **18-20, Food Processing Suppliers Association Annual Conference**, Chicago, IL. For more information, call 703.761.2600 or go to www.fpsa.org.
- **19-23, AFDO 114th Annual Educational Conference**, Sheraton Waterside Hotel, Norfolk, VA. For more information, contact Leigh Ann Stambaugh at 717.757.2888 or go to www.afdo.org.

JULY

- **5-8, Society for Applied Microbiology's Summer Conference**, Brighton, UK. For more information, call +44 (0)1234 761752 or go to www.sfam.org.uk.
- **14-16, NACCHO Annual Meeting**, Marriott Memphis Downtown, Memphis Cook Convention Center, Memphis, TN. For more information, go to www.naccho.org.
- **17-21, IFT 2010 Annual Meeting and Food Expo**, McCormick Place, Chicago, IL. For more information, go to www.am-fe.ift.org/cms/.

- **18-20, FPSA Process Expo - 2010**, McCormick Place, Chicago, IL. For more information, call 703.761.2600 or go www.fpsa.org.
- **30-31, IAFP Workshops**, Anaheim Convention Center, Anaheim, CA. For more information, go to www.foodprotection.org.

AUGUST

- **1-4, IAFP 2010 Annual Meeting**, Anaheim Convention Center, Anaheim, CA. For more information, go to www.foodprotection.org.
- **25-26, 2010 BioPro Expo**, Cobb Galleria Centre, Atlanta, GA. For more information call 800.332.8686 or go to www.tappi.org.
- **30-Sept. 3, FoodMicro 2010**, Copenhagen, Denmark. For more information, go to www.foodmicro.dk/.

SEPTEMBER

- **15-17, China International Food Safety and Quality Conference & Expo**, Beijing, P.R.C. For more information, go to www.chinafood-safety.com.

- **21-23, New York State Association for Food Protection 87th Annual Meeting**, Syracuse, NY. For more information, contact Janene Lucia at 607.255.2892; E-mail: jgg@cornell.edu.
- **21-24, IAFP's Latin American Symposium of Food Safety**, Bogota, Colombia. For more information, go to www.foodprotection.org.
- **22-23, Wisconsin Association for Food Protection Joint Education Conference**, Holiday Inn, Eau Claire, WI. For more information, go to www.wafp-wi.org.
- **22-24, Kansas Environmental Health Association Fall Conference**, Great Wolf Lodge, Kansas City, KS. For more information, go to www.e-keha.org.
- **22-24, Washington Association for Food Protection Annual Conference**, Campbell's Resort, Lake Chelan, WA. Contact Stephanie Olmsted at 206.660.4594 or go to www.waffp.org.
- **28-29, Arkansas Association for Food Protection Annual Meeting**, Tyson Foods, Springdale, AR. For more information, contact Mike Sostriin at 479.277.8641 or go to <http://arkafp.org>.

IAFP UPCOMING MEETINGS

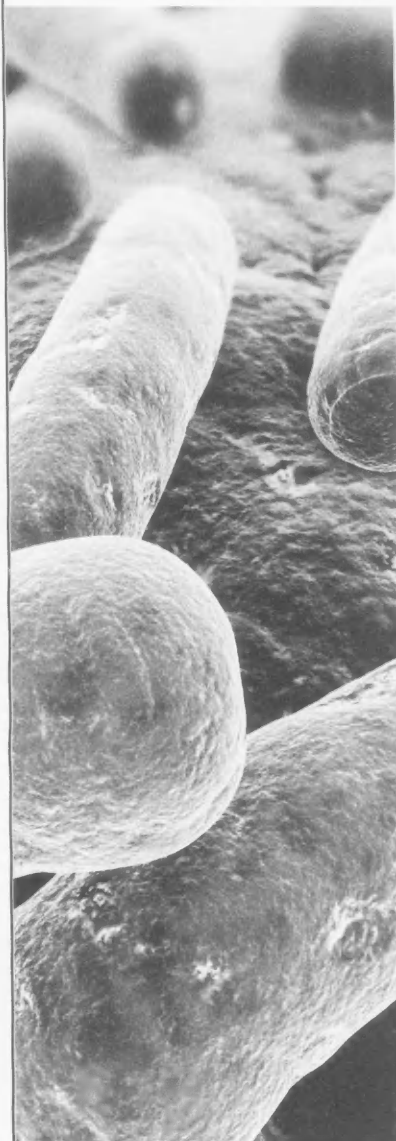
AUGUST 1-4, 2010
Anaheim, California

JULY 31-AUGUST 3, 2011
Milwaukee, Wisconsin

JULY 22-25, 2012
Providence, Rhode Island

CD ClorDiSys

ClorDiSys Solutions, Inc's chlorine dioxide gas decontamination equipment and services help keep the world safe.



Decontamination Services

ClorDiSys provides decontamination services and equipment for all types of facilities and applications. If you have contamination issues or are interested in overall facility decontamination as preventative maintenance, Clordisys can help you.

Clordisys' method of using chlorine dioxide gas allows us to completely decontaminate your facility with an EPA registered product all at once with minimal equipment, minimal downtime, and leaving no residues. Gaseous systems provide the ability to get thorough distribution and complete penetration when compared to any other method.

What?

- Processing Rooms
- Processing Tanks
- Equipment
- Entire Facilities
- HVAC ductwork

When?

- During Scheduled Maintenance
- Contaminations
- Facility Shut Downs

Why Chlorine Dioxide Gas?

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- No Residues
- Complete Distribution

Chlorine Dioxide Gas kills:

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- Viruses
- Fungi, Mold
- Spores
- more...

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CD ClorDiSys www.clordisys.com



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BD Diagnostics	147
ClorDiSys	191
DuPont Qualicon	Back Cover
Idaho Technology, Inc.	188
MATRIX Microscience	149

Clean.

As experts continue to recommend we add more fruits and vegetables to a healthy diet, it becomes increasingly important that consumers know how to handle produce safely to reduce the risk of illness.



be food safe.



clean

rinse fruits & vegetables

- **WASH** hands with warm water and soap for at least 20 seconds before and after handling produce.
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- **RUB** firm-skin produce (or scrub with clean brush) under running tap water.
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Vol. 73	February 2010	No. 2
Behavior of <i>Escherichia coli</i> O157:H7 on Damaged Leaves of Spinach, Lettuce, Cilantro, and Parsley Stored at Abusive Temperatures	Rowaida K. Khalil and Joseph F. Frank*	212
A Quantitative PCR Assay for Rapid Detection of <i>Shigella</i> Species in Fresh Produce	Wen S. Lin,* Chong-Ming Cheng, and Khanh T. Van	221
Carvacrol and Cinnamaldehyde Inactivate Antibiotic-Resistant <i>Salmonella enterica</i> in Buffer and on Celery and Oysters	Sadhana Ravishankar,* Libin Zhu, Javier Reyna-Granados, Bibiana Law, Lynn Joens, and Mendel Friedman	234
Rapid Detection and Differentiation of <i>Campylobacter jejuni</i> , <i>Campylobacter coli</i> , and <i>Campylobacter lari</i> in Food, Using Multiplex Real-Time PCR	A. M. Mayr, S. Lick, J. Bauer, D. Thäring, U. Busch, and I. Huber*	241
Caprylic Acid Reduces Enteric <i>Campylobacter</i> Colonization in Market-Aged Broiler Chickens but Does Not Appear to Alter Cecal Microbial Populations	Fausto Solís de los Santos, Michael Hume, Kumar Venkatarayanan, Ann M. Donoghue, Irene Hanning, Michael F. Slavik, Vivian F. Aguiar, Joel H. Melcalf, Ischel Reyes-Herrera, Pamela J. Blore, and Dan J. Donoghue*	251
Effect of Organic Acids and Marination Ingredients on the Survival of <i>Campylobacter jejuni</i> on Meat	Tina Birk, Anne Christine Grenlund, Bjarke Bak Christensen, Susanne Knöchel, Kristin Lohse, and Hanne Rosenquist*	258
Antilisterial Effects of Gravidol-S Grape Seed Extract at Low Levels in Aqueous Media and Its Potential Application as a Produce Wash	Bledar Bisha, Natalia Weinsel, Byron F. Brehm-Stecher, and Aubrey Mendonca*	266
Quantitative Microbial Risk Assessment for <i>Escherichia coli</i> O157:H7, <i>Salmonella</i> , and <i>Listeria monocytogenes</i> in Leafy Green Vegetables Consumed at Salad Bars	E. Franz,* S. O. Tromp, H. Rigersberg, and H. J. van der Fels-Klerx	274
Colonization of a Newly Constructed Commercial Chicken Further Processing Plant with <i>Listeria monocytogenes</i>	Mark E. Berrang,* Richard J. Meinersmann, Joseph F. Frank, and Scott R. Ladely	286
Applicability of Bacteriocinogenic <i>Lactobacillus pentosus</i> 31-1 as a Novel Functional Starter Culture or Co-culture for Fermented Sausage Manufacture	Guorong Liu, Mansel W. Griffiths, Nan Shang, Shangwu Chen, and Pinglan Li*	292
Inactivation Kinetics of <i>Alicyclobacillus acidoterrestris</i> Spores in Orange Juice by Ohmic Heating: Effects of Voltage Gradient and Temperature on Inactivation	Ayşe Handan Baysal* and Filiz İcier	299
Comparison between Quantitative Real-Time Reverse Transcription PCR Results for Norovirus in Oysters and Self-Reported Gastroenteric Illness in Restaurant Customers	James A. Lowther,* Justin M. Avant, Krzysztof Giziński, Rachel E. Rangdale, and David N. Lees	305
Estimating Parametric Distributions of Storage Time and Temperature of Ready-to-Eat Foods for U.S. Households	Régis Pouillot, Meryl B. Lubran, Sheryl C. Cates, and Sherri Dennis*	312
Aminopeptidase Activity by Spoilage Bacteria and Its Relationship to Microbial Load and Sensory Attributes of Poultry Legs during Aerobic Cold Storage	José Alfredo Guevara-Franco, Carlos Alonso-Calleja, and Rosa Capita*	322
Qualitative Studies of the Food Safety Knowledge and Perceptions of Transplant Patients	Gang Chen, Patricia A. Kendall, Virginia N. Hillers, and Lydia C. Medeiros*	327
Impact of Water Activity and Temperature on Growth and Alternariol and Alternariol Monomethyl Ether Production of <i>Alternaria alternata</i> Isolated from Soybean	M. S. Oviedo, M. L. Ramirez,* G. G. Barros, and S. H. Chulze	336
Four-Year Surveillance for Ochratoxin A and Fumonins in Retail Foods in Japan	Koji Aoyama,* Masahiro Nakajima, Setsuko Tabata, Eichi Ishikuro, Toshitsugu Tanaka, Hiroko Nonzaki, Yoshinori Itoh, Kazuhiro Fujita, Shigemi Kai, Toru Tautsumi, Masanori Takaishi, Hiroki Tanaka, Seichiro Izuka, Motoki Ogo, Mamoru Maeda, Shigeki Yamaguchi, Kei-ichi Sugiyama, Yoshiko Sugita-Konishi, and Susumu Kumagai	344
Research Notes		
Use of Electron Beam Radiation for the Reduction of <i>Salmonella enterica</i> Serovars Typhimurium and Tennessee in Peanut Butter	A. L. Hvizdzak, S. Beamer, J. Jaczynski, and K. E. Matak*	353
Reduction of <i>Escherichia coli</i> O157:H7 in Fresh Spinach, Using Lactic Acid Bacteria and Chlorine as a Multihurdle Intervention	S. E. Gragg and M. M. Brashears*	358
Validation of a Washing and Sanitizing Procedure for Cantaloupes at a Mexican Packing Facility	S. Alvarado-Casillas, L. S. Ibarra-Sánchez, N. E. Martínez-González, M. O. Rodríguez-García, and A. Castillo*	362
Evaluation of a Direct-Fed Microbial Product Effect on the Prevalence and Load of <i>Escherichia coli</i> O157:H7 in Feedlot Cattle	Terrance M. Arthur,* Joseph M. Bosilevac, Norasak Kalchayanand, James E. Wells, Steven D. Shackelford, Tommy L. Wheeler, and Mohammad Koochmaria	366
Enhanced Thermal Resistance of <i>Salmonella</i> in Marinated Whole Muscle Compared with Ground Pork	Adriana Velasquez, Tasha J. Breslin, Bradley P. Marks, Alicia Orta-Ramirez, Nicole O. Hall, Alden M. Booren, and Elliot T. Rysler*	372
Antibiotic Resistance in <i>Salmonella</i> Isolates from Imported Chicken Carcasses in Bhutan and from Pig Carcasses in Vietnam	L. Ellerbroek,* D. Narapati, N. Phu Tai, N. Pooasaran, R. Pinthong, A. Sirmalasuwan, P. Tshering, R. Fries, K.-H. Zessin, M. Baumann, and A. Schreoter	376
Prevalence of <i>Listeria</i> , <i>Aeromonas</i> , and <i>Vibrio</i> Species from Fish Used for Human Consumption in Turkey	Nihal Yücel* and Şenay Balcı	380
Histamine, Cadaverine, and Putrescine Produced In Vitro by <i>Enterobacteriaceae</i> and <i>Pseudomonadaceae</i> Isolated from Spinach	T. Lavizzari, M. Breccia, S. Bover-Cid, M. C. Vidal-Carou,* and M. T. Veciana-Nogués	385
Isolation and Identification of Thermo-Acidophilic Bacteria from Orchards in China	Ying Wang, Tianli Yue,* Yahong Yuan, and Zhenpeng Gao	390
Prevalence of Emetic <i>Bacillus cereus</i> in Different Ice Creams in Bavaria	U. Messelhäusser,* P. Kämpf, M. Fricker, M. Ehling-Schulz, R. Zucker, B. Wagner, U. Busch, and C. Höller	395
Attachment of Noroviruses to Stainless Steel and Their Inactivation, Using Household Disinfectants	Maryline Girard, Solange Ngazoa, Kirsten Mattison, and Julie Jean*	400

* Asterisk indicates author for correspondence.

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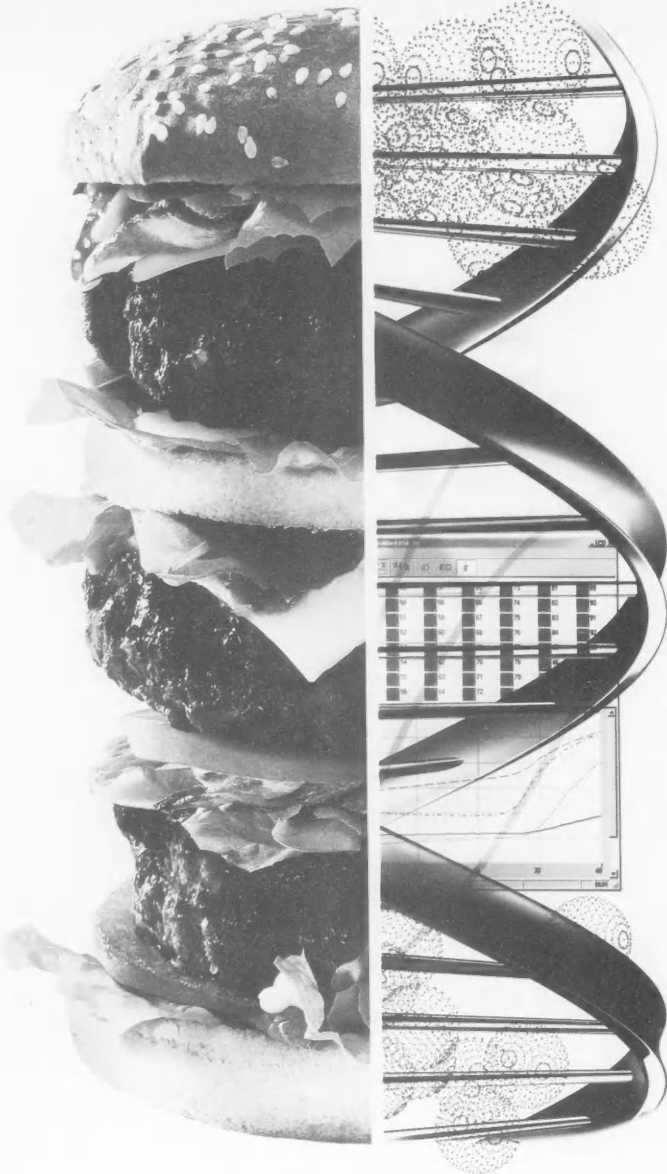
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