The 3-A Symbol Story

The 3-A Sanitary Standards Symbol Administrative Council, known throughout the industry as the "3-A Symbol Council," was organized in 1956. Its purpose is to grant authorization to use the 3-A Symbol on equipment that meets 3-A Sanitary Standards for design and fabrication.

A Modern Concept

The modern concept of the 3-A program was established in 1944 when the Dairy Industry Committee (DIC) was formed. DIC is one of the three industry segments involved in the preparation of 3-A Sanitary Standards. These industry segments are:

- Processors, represented by DIC
- Equipment Manufacturers, represented by IAFIS
- Sanitarians, represented by IAMFES

Use of the Symbol

Voluntary use of the 3-A Symbol on dairy equipment:
- assures processors that equipment meets sanitary standards
- provides accepted criteria to equipment manufacturers for sanitary design & fabrication
- establishes guidelines for uniform evaluation and compliance by sanitarians.

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DAIRY, FOOD AND ENVIRONMENTAL
Sanitation
International Association for Food Protection

Articles
Food Protection: New Developments in Handwashing
Anne K. Taylor

Reduction of Escherichia coli O157:H7 on Apples Using Wash and Chemical Sanitizer Treatments
Jim R. Wright, Susan S. Sumner, Cameron R. Hackney, Merle D. Pierson, and Bruce W. Zoecklein

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Sustaining Members
Quotations from Jack
Commentary from the Executive Director
New Members

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Reflections from the Past
Association Secretary Candidates
3-A Holders' List
87th Annual Meeting Registration Form
Booklet Order Form
Membership Application

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DAIRY, FOOD AND ENVIRONMENTAL SANITATION

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The Black Pearl Award, sponsored by Wilbur Feagan and F&H Food Equipment Company, was first presented in 1994. The Black Pearl Award was established to recognize a company for outstanding commitment to and achievement in corporate excellence in food protection. For more information and to receive nomination criteria, contact the International Association for Food Protection office at 800.369.6337 or 515.276.3344; Fax: 515.276.8655; E-mail: info@foodprotection.org.

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<th>Partial Support</th>
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<tr>
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<td>$4,000 - $9,000</td>
<td>Evening Social Event (Monday)</td>
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<td>Opening Reception Wine (Sunday)</td>
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<td>Exhibit Hall Reception (Monday)</td>
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<td>Leather Badge Holders w/Lanyards</td>
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<td>Exhibit Hall Pastries/Coffee (Monday)</td>
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<td>Refreshment Break (Wednesday)</td>
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<td>New Member Orientation (Saturday)</td>
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<td>Exhibitor Move in Refreshments (Sunday)</td>
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<td>$1,500</td>
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<td>Awards Banquet Flowers (Wednesday)</td>
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<td>$1,500</td>
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<td>Committee Day Refreshments (Sunday)</td>
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<tr>
<td>$1,000</td>
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<td>Speaker Travel Support</td>
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<tr>
<td>$600</td>
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<td>Golfers' Continental Breakfast (Sunday)</td>
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<tr>
<td>$Various</td>
<td>$75 - $300</td>
<td>Golf Tournament Prizes (Sunday)</td>
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The mission of the Association is to provide food safety professionals worldwide with a forum to exchange information on protecting the food supply.
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<tr>
<td>GARY ACUFF</td>
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By JACk GUZEWICH
President

"An update on the status of implementing the goals we set in 1997"

One thing I did not fully appreciate until I became a member of the Executive Board was how much it takes to run an Association! With a staff of twelve people, publication of two monthly journals, a four-day Annual Meeting that attracts over 1,200 people and the numerous Member services we provide, there is a lot going on and more details than you want to know about. We also are very much involved in long-range planning for the organization. At our spring meeting in 1997 we updated a long-range plan that had been developed in 1993. This column is an update on the status of implementing the goals we set in 1997.

Membership
Our Association had been experiencing an annual attrition rate of 18% in 1997, which is typical for an association like ours. Our goal was to reduce that number to 15%, but so far we hang at 18% in spite of some different approaches we have tried. We have seen an increase in total International (outside North America) and North American Members such that our overall Membership has grown from 2,793 in 1997 to 3,002. This is not bad given the attrition rate. We also have been seeking to increase Sustaining Membership, an important way to hold down individual Member dues. Sustaining Membership has remained constant, in spite of the large number of consolidations that have occurred in the industry. Thanks go out to all of our Sustaining Members for their support. We really need the help of every Member to encourage existing Members to remain Members, to solicit new Members and to encourage additional firms to become Sustaining Members. Our staff has been developing new recruiting brochures and information that they will gladly send you upon request. Please give them a call or send an E-mail for any assistance.

Member Services
Much of what we have done new is electronic in one way or another. Our new Web page is up and running at foodprotection.org. You will be able to register for the Annual Meeting, renew Membership, order booklets and 3-A publications online by March. Both the Journal of Food Protection and Dairy, Food and Environmental Sanitation have information available online. Abstract submission was available for the 2000 Annual Meeting. Sustaining Members have been offered a link from our Web page to theirs at no charge. All of these concepts were called for in our 1997 plan.

Education
One service we try and provide to authors who submit manuscripts for publication in one of our journals is rapid turn-around times from first receipt of the manuscript through the review process to publication. Our goal was to have our average turn-around time be four months. Unfortunately, we are running closer to five months average. Two
of the reasons we are having a hard time making the time shorter relate to the authors themselves. We often wait a long time to receive corrected manuscripts back from authors after the review has been done. Another problem we have had is receiving page charges from authors before publication. We had to go to a system of collecting page charges up front as we were having difficulty collecting them after publication. We set another goal of conducting a reader survey of readers of both journals. Our current plans call for this to happen in the fall of this year. We set goals to increase attendance at our Annual Meeting. We had 1,030 attendees in 1997 (Orlando), 1,152 in 1998 (Nashville) and 1,131 in 1999 (Dearborn). Our goal for 2000 is 1,200 attendees and I think we will make it given the location, program, name change attracting new interest, and growing recognition of the value in attending our Meeting. Annual Meeting exhibitors have grown from 76 in 1997, to 84 in 1998, to 85 in 1999 and an expected 90 in 2000. We set the goal of seeking sponsorships for functions at the Annual Meeting, a good way to hold down ticket costs while giving sponsors added opportunities for recognition. I am very pleased to report that sponsorship has grown from $0 in 1997, to $10,000 in 1998 and over $25,000 in 1999. We expect to exceed $30,000 in sponsorships at our 2000 Meeting. Many thanks to our sponsors for their generosity. Our goal has been to hold two workshops at the Annual Meeting and two to three stand-alone workshops during the year. We met the goal at the Annual Meeting and have been doing one stand-alone workshop per year. We have some good ideas for stand-alone workshops, but they require further development for us to meet our goal.

Operations

Plans were developed and implemented by the staff and the Board to assure that we operate effectively and efficiently. We set and have met the goal of assuring ongoing training of our staff, our most valuable resource. We established a computer rotation system e.g., leasing, in the office to keep the office up to date and functioning smoothly. We developed a system to update Board and office policies annually. The office staff organization has been realigned to empower the staff and to assure efficient operation.

None of these activities could have happened without the dedication and hard work put forth by our Executive Director, David Tharp, and the staff: (Lisa Hovey, Assistant Director; Donna Bahun, Design and Layout; Julie Cattanach, Membership Services; Lucia Collison, Association Services; Beverly Corron, Public Relations; Karla Jordan, Order Processing; Didi Sterling Loynachan, Administrative Assistant; Beth Miller, Accounting Assistant; Pam Wanninger, Proofreader; Tanya Wheeler, Audiovisual Library Coordinator; and Frank Zuehlke, Senior Accountant). David’s efforts are further demonstrated by his seeking and receiving recognition as a Certified Association Executive (CAE) from the American Society of Association Executives. Congratulations David! Speaking for the Board and myself, we are very proud of how our Association has matured in the last three years and we feel confident that things will continue to get even better in the future.

Visit our Web site
www.foodprotection.org
Many times throughout the year, we receive requests from Members wanting to become more involved with our Association. Sometimes the person is interested in serving on a Committee or a Professional Development Group (PDG) or they may be interested in giving a presentation at the Annual Meeting. This month, I thought we could cover ways in which you can expand your professional growth through the International Association for Food Protection.

One item to point out before going any further is that the Association focus is just the same as when our name was the International Association of Milk, Food and Environmental Sanitarians! By changing the Association name, we are not ignoring any segment of our Membership population. Just the opposite — we need and encourage everyone's continued involvement. Although we have a new name, our mission remains the same, “to provide food safety professionals worldwide with a forum to exchange information on protecting the food supply.”

The manner in which we carry out our mission is a direct result of our Members' involvement. The Association journals, *Dairy, Food and Environmental Sanitation* and the *Journal of Food Protection*, provide an excellent forum to exchange information on protecting the food supply. International Association for Food Protection Members submit articles to be peer reviewed and accepted for publication. Last year, we had a record number of submitted manuscripts for both journals and we commend each and every author for their active support of our journals and the Association. You are invited to submit articles and participate in “Advancing Food Safety Worldwide!”

Another obvious way we fulfill our mission is through the Annual Meeting. More than 250 presentations on the latest developments in food safety and protection take place during the Meeting. Again, we rely on our Members and food safety professionals to provide cutting-edge scientific information to the attendees. This is an excellent way to expand your professional growth. During the Annual Meeting, the exhibit hall also is a resource for attendees to meet with equipment, laboratory and industry suppliers and provides a friendly environment to network with colleagues. Here again, we owe a compliment to so many people who come together to make the Annual Meeting an overwhelming success.

If you find that you are unable to attend the Annual Meeting, or giving presentations during the Meeting is not your strong point, Committee service may be for you. We have a number of Committees and PDGs that meet at the Annual Meeting and conduct business throughout the year that you can volunteer to be involved with. What better way to share your knowledge with other food safety professionals? Feel free to contact the Association office for more information on Committee service. We welcome your involvement!

As I said earlier, our mission remains the same although our
name has changed. Both the journals and our Annual Meeting will continue to carry the most current topics in food safety that you have come to rely on. We are here to serve the information needs of our Members and without you, and your direction to us, there would not be a need for our Association! We believe changes are made for reasons that are well-thought out and all input is considered during the decision-making process. Our name change is but one example of the extreme analysis to which the Executive Board goes through before making decisions.

Before we conclude for this month, let me cover one area where we are fortunate to have so many fine individuals willing to give of their time and be involved. That is of course, those who are elected to serve on the Executive Board. In this issue of DFES, the Secretary candidates for 2000-2001 are announced on page 132. By placing their names in the running for Secretary, the candidates have committed to serving the International Association for Food Protection for a period of five years on the Executive Board. This is a huge commitment and one that should be recognized by all Members. Reviewing the list of Past Presidents of the Association is like a "Who's Who" list of food safety professionals. This may be a lofty goal for you to set, but in the future, it could be your picture in DFES as a candidate for Secretary! It can happen if you resolve to become involved in the Association today!

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A Student Professional Development Group is Forming

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Faculty: Please inform your students.
Food Protection: New Developments in Handwashing

Anne K. Taylor

SUMMARY

Foodborne illness is a serious problem that is receiving increased attention from government, industry, and consumer groups. The first line of defense against disease is frequent handwashing by foodhandlers. This article is a review of recent handwashing research, with special emphasis on handwashing for food protection.

A number of products are available to aid in the fight against foodborne illness. All handwashing reduces the bacteria on the hands, and antiseptic handwash products can further reduce the bacteria, some with a long-lasting effect. Instant hand sanitizers are useful when washing is not possible but do not have a lasting effect. Topical barrier products (protective creams/lotions) may be used as a supplement to handwashing. In compliance with the 1999 Food Code, gloves may be used to prevent contact between foodhandlers and food. However, gloves may leak, and natural rubber latex gloves may cause serious allergies. In addition, germs flourish in the warm, moist environment under the gloves. One solution to this problem is the use of a protective, antiseptic lotion under the gloves.

INTRODUCTION

In September 1997, eighteen people who had attended the same party in Florida were sickened by a disease diagnosed as food poisoning from staphylococcal enterotoxin type A. Health Department investigators found that all the victims had eaten ham that had not been cooled quickly, thus allowing bacteria to grow and produce enough toxin to cause illness. The ham was apparently contaminated by the food preparer's hands and by contact with a meat slicer that had not been cleaned properly (6).

For the food service industry, such an outbreak of foodborne illness is more than an inconvenience. The National Restaurant Association (NRA) estimates that an outbreak could cost a restaurant as much as $75,000 — more if there is death or serious injury (2). In response to the dangers of foodborne illness, the NRA's Educational Foundation offers ServSafe, a training course in food safety. ServSafe teaches that the factors in foodborne illness fall into three categories: time and temperature abuse, poor personal hygiene, and cross contamination. The hands of food service employees can be the vectors in the spread of disease because of poor personal hygiene or cross contamination. For example, an employee might con-
taminate his hands when using the toilet, or bacteria might be spread from raw meat to salad greens by an employee’s hands.

To prevent this type of contamination, the 1999 Food Code, from the Food and Drug Administration (FDA), requires employees to wash their hands and arms for 20 seconds (15) before handling food and between different activities. The 1999 Food Code also requires that there be no direct hand contact of foods that are ready to eat:

"...Food employees may not contact exposed, ready-to-eat food with their bare hands and shall use suitable utensils such as deli tissue, spatulas, tongs, single-use gloves, or dispensing equipment... Food employees shall minimize bare hand contact with exposed food that is not in a ready-to-eat form" (15).

Handwashing remains the most effective way to prevent the spread of disease, and this review will focus on new developments in handwashing – the use of antiseptics, instant hand sanitizers, and protective lotions – and on the limitations of gloves for food protection. Handwashing products that contain an antiseptic to reduce the germs on the hands are regulated under the FDA tentative final Monograph for Health Care Antiseptic Drug Products (14), which defines three categories of hand wash products: patient preoperative products, surgical hand scrub products, and health care personnel hand wash products. Recognizing that the monograph is limited to medical applications, the Cosmetic, Toiletries, and Fragrance Association (CTFA) has proposed more extensive standards, known as the Healthcare Continuum Model (8). The Model defines additional categories of products: foodhandler handwash, antimicrobial handwash, and antimicrobial bodywash. The latter two categories are for consumer use; the others are for professional use.

This article will survey the overlapping topics of foodhandler and healthcare personnel handwashes. Much of the research reviewed here is of medical origin and involves surgical scrubbing as well as patient care, but this research is still relevant to food handling. The topic of handwashing was thoroughly surveyed in an article introducing handwashing guidelines for medical professionals, from the Association for Professionals in Infection Control and Epidemiology, Inc. (APIC) (26). In addition, the issue of handwashing versus gloving was discussed from a foodservice perspective by Fendler, Dolan, and Williams (17).

**ANTIPOETIC HANDWASHING PRODUCTS**

For the food industry worker, the most important way to reduce the spread of foodborne illness is also the simplest and least expensive – frequent handwashing. The possibility of illness spread by food contact has been confirmed in many studies, such as the 1971 report (37) in which *Salmonella* was shown to survive on fingertips, even after handwashing, and to be passed onto samples of meat. Numerous handwashing products are available, and some contain antimicrobial ingredients to reduce the number of bacteria on the hands. (The terms antiseptic, antibacterial, and antimicrobial will be considered equivalent as used in this review.) It has been shown that even non-antimicrobial soaps can significantly reduce the amount of bacteria on hands, presumably by physical removal of the bacteria (44). However, in one medical study, washing with a non-antibacterial (bland) soap did not prevent transfer of bacteria to medical devices, such as catheters (12). Reduction in transferable bacteria may be improved by use of an antibacterial chemical in the soap/detergent or in a rinse or dip (38). The most frequently used antiseptics are:

- **Alcohols.** The alcohols ethan-ol and iso-propanol, at levels of 62.72%, have long been used for preparation for surgery (26). Alcohol products are now available to both professionals and the public as instant hand sanitizers. Alcohols can kill large numbers of microbes instantly, but their antibacterial properties are only temporary. Alcohols also have a drying effect on the skin. However, the instant hand sanitizers generally contain emollients and skin conditioners to counteract this effect.

- **Iodine and iodophors.** Iodine-containing ingredients for handwash and surgical scrub products are iodophors, complexes of iodine with a carrier such as polyvinylpyrrolidone (PVP). Although highly effective, the iodine is very irritating and may cause allergic reactions (26). Iodine products include hand dips as well as washing products.

- **Chlorhexidine gluconate.** Used in both surgical scrubs and hand wash products, chlorhexidine gluconate (CHG) has a broad spectrum of activity, being effective against both gram positive and gram negative bacteria. It is generally considered to have a six hour residual activity (10). CHG is usually used at a level of 2 to 4% in a detergent base (26).

- **Chloroxylenol.** The phenolic antiseptic, chloroxylenol (para-chloro-meta-xylene), or PCMX) is less active than CHG, but its activity persists over several hours (26, 35). Reports of its effectiveness vary, because the efficacy of PCMX, like that of CHG, is highly formula dependent (26). Product formulated with surfactants that inhibit the activity of PCMX were found to be no more effective than a non-antimicrobial handwashing product (40).
However, in other formulations, PCMX at concentrations of 0.3% to 2.5% was highly effective (16, 35, 36). In addition, the effectiveness of PCMX against *Pseudomonas* species was greatly enhanced when EDTA (ethylene-diamine tetraacetic acid) was incorporated into the formulation (9).

- **Triclosan.** Another phenolic compound, triclosan (5-chloro-2-[2,4-dichlorophenoxy]phenol), is used in consumer products such as deodorants, dishwashing liquids, and bar soaps, as well as handwashing products for healthcare and foodservice environments. It is generally used in concentrations of 0.1% to 1.0% and has a broad spectrum of activity against both gram positive and gram negative bacteria (4, 26). Like PCMX, triclosan provides good immediate and persistent effects when formulated with non-inhibiting ingredients.

Researchers at Tufts University School of Medicine (28, 39) reported that triclosan blocks lipid synthesis in bacteria, similar to the biocidal mechanism of some antibiotics. Thus, in the same way that some bacteria have become resistant to antibiotics, antiseptic-resistant strains might develop. However, no resistance to antiseptics has been reported outside the laboratory. There are a number of reports on the efficacy of triclosan-containing products in reducing or eliminating *Methicillin-resistant Staphylococcus aureus* (MRSA) outbreaks in hospital settings (5, 45, 47).

A number of studies have compared the effectiveness of antiseptic ingredients. For example, when hands were exposed to contaminated meat and then washed, iodophor and CHG were the most effective agents in reducing the bacterial count on the hands (41). Similar results were obtained under in-use conditions in a meat processing plant (44), but workers found the iodophor products objectionable. When a strong antiseptic (2.5% PCMX) product was compared to an alcohol hand sanitizer, the alcohol initially reduced the bacterial count more, but its effectiveness decreased with multiple applications (36). The PCMX product, however, produced greater reduction with each use. A second study using a variety of products gave similar results (29).

### INSTANT HAND SANITIZERS

A number of waterless hand sanitizing products, such as Dial, Lysol, and Purell® instant hand sanitizers, are now available. These products kill germs with alcohol and may contain emollient ingredients to counteract the drying effect of the alcohol. The 1999 Food Code allows the use of such products by food handlers under certain conditions (15). These products may be a supplement to regular handwashing, especially when workers are unable to wash with soap and water. It has been suggested that alcohol hand sanitizers may increase handwashing compliance, especially in a healthcare setting, because less time is required to clean the hands (46) and less skin irritation occurs (31).

Considerable evidence exists, especially in the infection control literature (25, 26), for the effectiveness of alcohol hand sanitizers. However, some experimental evidence is mixed, perhaps because of differences in the reliability of the measurement techniques used and the interpretation of the data (34). For example, in a study (18) comparing different combinations of gloving and handwashing to protect the hands from *Escherichia coli*-contaminated meat, bare hands with hourly washing and sanitizing with alcohol had the lowest microbial levels, and low levels were achieved with alcohol alone in spite of the necessity for hand washing due to the physical soil from the meat. One study concluded that bacteria increased after an alcohol hand sanitizer (29, 34) was used; however, other studies have shown that an alcohol sanitizer causes large decreases in both transient and resident bacteria (36). Numerous studies have shown that effectiveness of alcohol hand sanitizers does not change with repeated use. However, one recent study found that effectiveness decreased with repeated use, while another, which contained benzalkonium chloride, allantoin, and a surfactant, gave increasing effectiveness under the same conditions (11).

### SKIN PROTECTIVE PRODUCTS

Skin protective drug products include creams, lotions, and foams that form a protective film (barrier) over the skin. The FDA (13) defines "skin protectants" as products that contain one or more of a list of ingredients including glycerin and dimethicone. The silicone oil dimethicone coats the skin with a protective film that is resistant to water-based and some oil-based substances (21). Although these products are intended to protect hands from dryness, several studies have shown that they also reduce the release of microorganisms from hands. For example, Sheena and Stiles found that applying a barrier cream after washing with a non-antibacterial soap reduced the number of bacteria released from fingertips as much as an iodophor did (42).

Emollient/protective lotions may act in another way to reduce the spread of disease: In two whole-body studies, lotions reduced the amount of skin shedding and actually slowed the growth of bacteria on the skin. In the first study (20), application of a skin lotion (non-antiseptic) to the body after showering greatly reduced the number of bacteria and skin scales dispersed from 10 men and 10 women, an effect that lasted for at least four hours. The subjects in the second study (1) showered with either a plain soap or an antiseptic soap and then applied an emollient lotion.
(non-antiseptic) to one side of the body. When bacterial counts were taken 4 hours later, the number of colonies was 54% lower for the antiseptic side and 93% lower for the antiseptic-lotion side. The data suggest that the emollient has an antimicrobial effect that is enhanced when it is combined with an antiseptic.

Some topical barrier products, contain both emollient and antimicrobial ingredients. The protective film keeps the antimicrobial substance in contact with the skin; extending the time during which it can continue to kill microbes. SAFE-SHIELD™ (DermaGuard, Inc.) contains PCMX (chloroxylenol), a phenolic antimicrobial agent, and many similar products contain triclosan. HAND MEDIC Antimicrobial Skin Treatment™ (GOJO Industries, Inc.) contains benzalkonium chloride as the active ingredient. Products such as these provide three benefits to the user: a persistent antimicrobial effect, a protective barrier, and moisturizing.

**LIMITATIONS OF GLOVE USE**

Since the AIDS scare of the 1980s, the use of gloves by healthcare workers has increased dramatically, and glove use has now spread into other fields. As discussed, the 1999 Food Code requires that there be no direct hand contact with ready-to-eat-food, and this requirement necessitates the use of gloves for many operations (15).

The APIC Guidelines emphasize that “gloves should be used as an adjunct to, not a substitute for, handwashing” (26). Furthermore, increased glove use has revealed their limitations as protective devices. In one hospital study, 85% of used vinyl gloves and 18% of used latex gloves had physical leaks after use (22). In another study, 63% of used vinyl gloves and 7% of used latex gloves allowed virus to leak into them (23). Because germs can grow in the warm, moist environment inside the gloves, it is important to wash the hands with an antimicrobial product before gloving and when the gloves are removed (24).

Although latex gloves may be stronger and more resistant to penetration than vinyl gloves, latex is the source of a serious health threat—latex allergy. The National Institute of Occupational Health and Safety (NIOSH) has surveyed the scientific literature and reports that 1% to 5% of the general population and 8% to 12% of healthcare workers are sensitized to latex (32). Sensitized persons experience symptoms ranging from a mild dermatitis (rash) to asthma and anaphylactic shock and possibly death. Latex gloves are made from natural rubber, which may contain traces of proteins; these proteins trigger the allergic response in sensitized persons. The powder used in some gloves may absorb the proteins and spread them into the air, thus increasing exposure.

An article in the American Journal of Nursing (19) differentiates between the three types of reactions to natural rubber latex: (1) Contact dermatitis is an irritant reaction to the chemicals used during the processing of the latex. This dermatitis, characterized by skin redness and itching, is not a true allergy and may be relieved by using a different type of latex glove; (2) Type IV hypersensitivity is a cell-mediated allergic reaction to the chemicals used during the processing of latex. This type of sensitivity may cause delayed reactions (one to 48 hours after exposure) that include redness, itching, hives, or swelling. The Type IV reaction may lead to the more serious Type I reaction; and (3) Type I hypersensitivity is a true allergy (an IgE mediated response) that is potentially life threatening. A wide variety of symptoms may occur, up to and including respiratory and cardiac arrest. Some Type I patients may become so sensitive that they can react to balloons and other common latex items.

Latex allergy has become such a serious problem that NIOSH (32, 33) and other organizations, such as American Academy of Dermatology (7), Association of Operating Room Nurses (43), and Emergency Nurses Association (3), have issued statements and calls for its prevention. The NIOSH guidelines include the following:

- Use non-latex gloves for activities that are not likely to involve contact with infectious materials (food preparation, routine housekeeping, general maintenance).
- When latex gloves are necessary, use powder-free gloves with reduced protein content.
- When wearing latex gloves, use no oil-base hand creams or lotions.
- After removing latex gloves, wash hands with a mild soap and dry thoroughly.
- Frequently clean areas and equipment contaminated with latex dust.
- For those workers who have latex allergies, avoid contact with latex gloves and products as well as avoiding the powder from latex gloves.

Some guidelines (30, 48) suggest that workers in whom glove use causes mild irritation should use (1) cotton glove liners, (2) non-petroleum based moisturizing creams/lotions, and (3) topical barrier products. These products may reduce contact with latex as well as protecting the skin from harsh detergents and other irritants. In a study in which a protective foam was applied to hands after washing with plain or antibacterial surgical scrub, the bacterial counts of the entire hand were not significantly altered by the presence of the foam (27). In addition, the protective product did not affect glove integrity and thus could be used under surgical gloves.

**CONCLUSIONS**

The use of antiseptic products for hand cleansing can significantly reduce the bacteria on the hands and thus reduce the chance of cross-contamination. These products include soap/detergents, instant hand
sanitizers, and antiseptic lotions/creams. In addition, gloves may be used to prevent cross contamination. When used in antiseptic handwash products, only alcohol and iodophores can kill large numbers of microbes instantly, although several other active agents CHG, PCMX, and triclosan are available that act less rapidly but have a residual effect. Antiseptic soaps or detergents remove surface bacteria and may have a residual effect. Instant hand sanitizers kill bacteria but do not have a lasting effect. The use of protective and antiseptic lotion products after washing may produce a protective and antiseptic lotion product that does not have a lasting effect. The use of hand sanitizers杀死细菌但没有持续的效力。使用具有保护和抗微生物作用的产品，可以在皮肤表面残留。使用瞬时洗手液可以杀死细菌，但不具有持续性。使用保护和抗微生物乳液产品后洗可生产具有保护和抗微生物作用的产品，但不具有持续性。

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Reader Service No. 129
Reduction of *Escherichia coli* O157:H7 on Apples Using Wash and Chemical Sanitizer Treatments

Jim R. Wright, Susan S. Sumner,* Cameron R. Hackney, Merle D. Pierson, and Bruce W. Zoecklein

**SUMMARY**

Unpasteurized apple cider has been implicated in outbreaks involving *Escherichia coli* O157:H7. Apples used for cider production may become contaminated by contact with animal feces. The objective of this study was to determine if wash and sanitizer treatments can reduce or eliminate *E. coli* O157:H7 on apples. Apples were subjected to six wash or sanitizing treatments: 200 ppm hypochlorite, a commercial phosphoric acid fruit wash, 5% acetic acid, 5% acetic acid followed by 3% hydrogen peroxide, a commercial peroxyacetic acid sanitizer, and distilled water. Apples that had been inoculated with a five-strain mixture (~2 x 10^3 CFU *E. coli* O157:H7 per cm^2^) were immersed in treatments for two minutes. The water wash, which caused reductions of only 1.1 logs when cells were enumerated on Sorbitol MacConkey agar (SMAC) and 0.6 logs when Tryptone Soy agar with 1% pyruvic acid (TSAP) was used, and was the only treatment that did not differ significantly from the no-wash control. Hypochlorite caused reductions of 2.1 logs on both media but differed significantly from the most effective treatment, 5% acetic acid. Phosphoric acid resulted in a reduction of 2.9 logs when cells were enumerated on SMAC but only 2.3 logs when TSAP was the recovery medium, indicating that the treatment caused some sublethal injury. For the acetic acid/hydrogen peroxide treatment, reduction was 2.5 log with SMAC and 2.4 logs with TSAP. The 5% acetic acid and peroxyacetic acid solutions were the most effective, causing reductions of 3.1 logs and 2.6 logs respectively, without apparent sublethal injury.

**INTRODUCTION**

*Escherichia coli* O157:H7 was first identified as a foodborne pathogen in 1982 and is now acknowledged as a significant cause of foodborne illness (759 ranging from self-limited, watery diarrhea to the more severe hemorrhagic colitis, hemolytic uremic syndrome (HUS), and thrombotic thrombocytopenic purpura (TTP) (28).

One of the earliest HUS outbreaks associated with apple juice or cider occurred in Canada two years before the recognition of *E. coli* O157:H7 as a foodborne pathogen; however, the agent responsible was not identified, possibly because of the length of time between sampling and analysis (33). Outbreaks of HUS in Massachusetts in 1991 (4) and Connecticut in 1996 (10) attributed to *E. coli* O157:H7 were associated with the consumption of contaminated apple cider. In a 1996 outbreak involving unpasteurized apple juice in the Pacific northwest, Odwalla brand apple juice and juice mixtures contaminated with *E. coli* O157:H7 were implicated and caused a nationwide recall of all products containing apple juice (9).

Although the specific mechanism of contamination of apple
cider with \textit{E. coli} O157:H7 is often unknown, several explanations have been offered. Because cattle and other ruminants are generally regarded as the primary reservoir for this organism \textit{(6)}, contamination most likely originates directly or indirectly from fecal matter. Direct contamination may result from the use of fallen apples, fertilization of orchards with manure, or even grazing of farm animals in close proximity to orchards. Other possibilities include poor hygiene and unsanitary procedures of field and processing staff, inadequate cleaning of processing equipment, the use of decayed or damaged fruit, and failure to wash apples properly before processing \textit{(4, 35)}.

Many believe that the use of a kill step such as pasteurization rather than prevention of contamination is the best means of eliminating \textit{E. coli} O157:H7 from apple cider. Some of the larger juice processors have already begun using a pasteurization procedure \textit{(2)}. However, pasteurization may be cost prohibitive for many smaller operations, because costs increase sharply as production capacity and number of days per year of processing decrease \textit{(22)}. In addition, pasteurization may adversely affect sensory characteristics responsible for the appeal of fresh cider \textit{(29)}.

Besides pasteurization or other process that sterilizes the final product, the preventive measure with the greatest impact on the microbiological safety of cider may prove to be the use of a wash and/or sanitizing treatment on apples before processing. Such a measure may be the easiest to implement and monitor and may result in only moderately increased cost of production. A typical wash procedure employs water or chlorinated water, may be used with or without a scrubber, and is designed for removal of field soil prior to processing \textit{(14)}. In addition, a commercial fruit wash can be added to wash water to facilitate removal of field soil. There is little research on the effectiveness of such products for the removal of bacteria. One such product was evaluated during this study.

Sanitizing compounds such as a chlorine solution, used either alone or in conjunction with a wash step, may also be employed \textit{(8)}. In fact, chlorine solutions at concentrations of 50-200 ppm are the most widely used treatments for fresh produce, with a typical contact time of 1 to 2 minutes \textit{(16)}. Organic acids such as acetic acid have GRAS status and have been shown to have antimicrobial properties. Hydrogen peroxide is also known for its bactericidal effects and decomposes, rapidly leaving no residual toxicity \textit{(12, 13)}. Peroxyacetic acid displays good antimicrobial activity against a wide variety of microorganisms \textit{(12, 13)}.

The objective of this study was to evaluate the effectiveness of various wash and sanitizer treatments for eliminating \textit{E. coli} O157:H7 from the surface of apples.

**MATERIALS AND METHODS**

**Preparation of inoculum**

Five acid resistant \textit{E. coli} O157: H7 strains, 380-94; 933; C7927 (human isolate from cider outbreak); E0019; and E09, were obtained from the University of Nebraska, Lincoln culture collection. Stock cultures were maintained on Tryptone Soy agar (TSA) (Difco Laboratories, Detroit, MI) at 4°C and grown in Tryptone Soy broth (TSB) (Difco Laboratories) at 35°C. From preliminary research, it was determined that the level of inoculum obtained in TSB for the five individual cultures was relatively even \textit{(8.0 x 10^8 - 1.5 x 10^9 CFU/ml)}. Each culture was subjected to two successive transfers by loop inocula to 10 ml TSB. A third culture was subjected to two successive transfers by loop inocula to 10 ml TSB. A third transfer of 1 ml was made into 100 ml TSB adjusted to pH 5 with 1 N HCl; this step allowed the cultures to become acid adapted, as reported by Leyer et al. \textit{(23)}.

Incubation of cultures was for 18-24 hours at 35°C. Equal volumes of cultures were then combined to create a five-strain mixture. A 30-ml aliquot from the mixed culture was added to 9 liters sterile distilled water at 25°C in a 7 gal polypropylene tank (Nalgene, Rochester, NY). Preliminary studies showed that this cell suspension routinely resulted in a level of approximately \textit{1 x 10^9 E. coli} O157:H7 per ml. This suspension served as the inoculum for the test apples.

**Preparation and inoculation of apples**

Sound, unwaxed, blemish-free Red Delicious apples of uniform size and shape (2 1/2 to 2 3/4 inches in diameter) were obtained from the Virginia Tech fruit and vegetable processing plant and assigned randomly to treatments. Apples were allowed to come to room temperature (\textit{25°C}) before being inoculated. A flow chart that illustrates inoculation procedures is given in Fig. 1. Apples were placed in the inoculum and agitated by stirring with a glass rod for 10 min to ensure even inoculation. For each replication, a portion of the apples were not inoculated and served as controls to check for natural flora. Inoculated apples were allowed to dry for at least 30 min in a laminar flow biological hood before treatment. Results of preliminary experiments indicated that this procedure provided uniformity and consistency in inoculation procedure and counts on the apples.

**Preparation of wash and sanitizer treatments**

Five wash or sanitizer treatments were prepared: 200 ppm sodium hypochlorite; Decco APL Kleen® 246 (ELF Atochem North America, Inc., Monrovia, CA), a commercial phosphoric acid-based fruit wash (0.3% phosphoric acid); 5% acetic acid V/V (LabChem, Inc., Pittsburgh, PA); 5% acetic acid followed by 3% hydrogen peroxide (Fisher Scientific, Fairlawn, NJ); and Tsunami 100® (Ecolab®, Food and Beverage Division, St. Paul, MN), a commercial peroxyacetic acid-based solution (80 ppm peroxyacetic acid). A distilled water treatment was also included as a control. Dis-
tilled water for all treatments was allowed to reach room temperature (~25°C) before addition of chemicals and introduction of apples. Treatments were prepared in 2 gal polypropylene tanks (Nalgene) and stirred to mix before being applied.

**Application of wash and sanitizer treatments**

Procedures in the application of treatments are outlined in Figure 1. Apples were placed in the treatment tanks and stirred with a glass rod to ensure even contact with the solution. Because a contact time of 2 minutes or less is generally employed with hypochlorite solutions used for produce (16), a 2-min contact time was employed for each treatment for the sake of comparison. Contact time was determined by using a stopwatch. For the combination treatment, 5% acetic acid followed by 3% hydrogen peroxide, contact time was 1 min in each solution. For each apple, treatments were followed by a 10-ml distilled water rinse applied from a hand-held sprayer (Fisher Scientific, Pittsburgh, PA). Apples were allowed to dry in a laminar flow biological hood for at least 30 min before analysis. For each replication, a portion of the inoculated apples received no treatment and served as a control to determine the actual inoculum level.

**Analysis and enumeration**

Following treatment, apples were placed individually in stomacher bags to which 100 ml of 0.1% sodium lauryl sulfate solution (SLS) (Fisher Scientific) was added. SLS was used to facilitate removal of any bacteria remaining on apple surfaces. Preliminary studies demonstrated that recovery was generally better with SLS solution than for 0.1% peptone solution. Each bag was massaged by hand for 1 minute.

Serial dilutions were made in 0.1% peptone (Difco Laboratories) and spread plated in duplicate on Sorbitol MacConkey agar (SMAC) (Difco Laboratories) and on TSA supplemented with 1% pyruvic acid (Fisher Scientific) (TSAP). Recovery of injured *E. coli* O157:H7 is best when nonselective media such as TSA (32) are used; thus the nonselective TSAP was used for the recovery of sublethally injured cells. Plates were incubated for 20 to 24 h at 35°C. Sorbitol negative colonies on SMAC and morphologically typical colonies on TSAP were enumerated with a Quebec colony counter. Routine verification of isolates was conducted using Micro-ID's (Remel, Lenexa, KS) and an *E. coli* O157 Latex agglutination test kit (Unipath Oxoid USA). Serial dilutions prepared from uninoculated apples were spread plated in duplicate on Yeast and Mold agar (Difco Laboratories) supplemented with 0.01% chloramphenicol (Fisher Scientific) (YMAC) for yeasts and molds; on TSA for aerobic mesophilic bacteria; and on SMAC. YMAC plates were incubated for 48 h at 25°C.

**Experimental design and statistical analysis**

The experiment was replicated six times, and multiple samples from each of the 7 treatments plus the uninoculated control were analyzed at each sampling time. For each treatment, the total numbers of samples plated on SMAC and TSA were 23 and 16, respectively. Microbial counts (CFU per square centimeter of apple surface area) were determined in duplicate for each replication. Because apples were uniform in size, a standard surface area measurement was used. Counts were subjected to the Kruskal-Wallis Test and Fisher’s
Figure 2. Populations of E. coli O157:H7 on apples subjected to wash or sanitizer treatments as enumerated on Sorbitol MacConkey agar (SMAC) and Tryptone soy agar with 1% pyruvic acid (TSAP). Within each media type, values with different letters (a, b, c, d) differ significantly (P ≤ 0.001 except for c-d, where P ≤ 0.022).

RESULTS

E. coli O157:H7 was not detected on apples that had not been inoculated, and the level of aerobic mesophilic background microflora on apples was <10 CFU/cm². Preliminary studies were conducted to determine the level of inoculum that could be obtained on the surface of apples. Although the level of inoculum obtained for the test apple suspension was routinely >10⁶ CFU/ml, the inoculum level achieved for apple surfaces ranged from 4.6 to 8.0 × 10⁶ CFU/cm². This was also the case for the control treatment that did not receive a wash or sanitizing step.

Mean E. coli O157:H7 counts on apple surfaces after treatments as recovered on SMAC are shown in Fig. 2. All treatments except water and 200 ppm hypochlorite resulted in a reduction of 2.5 logs or more. All treatments yielded reductions that differed significantly from results with the inoculated control that did not receive a wash. Likewise, water alone differed significantly from all other treatments. Reduction of E. coli O157:H7 on apple surfaces from water alone was 1.1 logs. No significant difference between chemical treatments was seen except for that between 5% acetic acid and 200 ppm hypochlorite (P ≤ 0.022). The reduction achieved with 200 ppm hypochlorite, adjusted to pH 5 to maximize the amount of free available chlorine in solution, was 2.1 logs. Mean counts on SMAC for chemically treated apples ranged from 1.17 CFU/cm² for 5% acetic acid to 11.91 CFU/cm² for 200 ppm hypochlorite.

Results obtained using the injury recovery media TSAP, also shown in Fig. 2, were similar to those obtained with SMAC, although some differences were evident. When allowing for the recovery of sublethally injured organisms, only two of the chemical treatments (5% acetic acid and peroxyacetic acid) resulted in a reduction of 2.5 logs or greater. All treatments, including water, were significantly different from uninoculated controls, and all chemical treatments differed from water alone. As with SMAC, the only chemical treatments to differ significantly were 5% acetic acid and 200 ppm hypochlorite (P ≤ 0.018). Mean counts on TSAP for chemically treated apples ranged from 1.25 CFU/cm² for 5% acetic acid to 23.28 CFU/cm² for 200 ppm hypochlorite.

DISCUSSION

The reduction of approximately one log E. coli O157:H7 seen here when using the water dip treatment is consistent with reductions reported by other researchers. Brackett (7) reported a 1 log reduction of Listeria monocytogenes on Brussels sprouts dipped in water. Likewise, Harmon et al. (20) found that washing mung bean sprouts 3 times by spraying with water for 5 minutes reduced Bacillus cereus by approximately 1 log. Nguyen and Carlin (27) saw bacterial reductions of less than 1 log when using water as a wash for many different vegetables. Also, water alone had a little effect on the microbial load of packaged salad mix (31).

Because water has no antimicrobial activity at the temperature at which it was used in this study, the reduction must have been due...
to bacteria simply being washed off the surface of the apples. There may be a limit to the number of cells that can be removed in this way. A water wash used in conjunction with some physical means of removing bacterial cells, such as brushing may result in a greater reduction. In a survey of Virginia cider producers’ practices, washing the fruit before crushing was reported by 98% of respondents, of whom indicated that they use brushing along with washing (36). However, the results of the present study clearly show that a water dip treatment may be inadequate for removal of E. coli O157:H7 from apple surfaces, particularly if the fruit is heavily soiled. This finding appears even more important given that only 17% of those surveyed use any type of detergent wash, only 34% use a sanitizer, and the majority use water washing alone (36).

Cider producers often use chlorinated water from a municipal water supply to wash apples. Chlorine is also widely added to wash water in fruit and vegetable processing plants as a sanitizer (5). However, the antimicrobial activity of hypochlorite is reliant on environmental factors such as the pH, temperature, organic load, and ionic concentration of the solution (12, 37). Goverd et al. (19) investigated the frequency of coliforms and Salmonella in cider and juice processing plants and saw an ongoing and cumulative bacterial contamination from fruit production to finished product. Coliform counts of flume water ranged from over 1.8 \times 10^3 to 8.0 \times 10^6. The microbial counts of fruits and vegetables, and thus the organic loads in fruit and vegetable wash and flume water, are often high (27). In addition, wash solutions are often recycled, and this leads to a higher organic load and a greater chance of contamination of fruit (8). Garg et al. (17) found that maintaining the desired level of free available chlorine in wash solutions in the processing plant was difficult and the difficulty was attributed to organic material in solution from vegetables and to the fact that chlorine addition was done manually.

For this study, a 200 ppm hypochlorite solution, adjusted to pH 5 to maximize available chlorine, was used. At a pH between 4 and 5, 98-100% of the chlorine is in the hypochlorous acid (HOCl) form, which is the form with greatest bactericidal activity (12). Wash water was not recycled, the apples were not highly soiled, and levels of background microflora were low. Under such conditions, the effectiveness of chlorine is maximized, as has been shown by other researchers in laboratory studies (1). In this study, the mean count of E. coli O157:H7 on apple surfaces after chlorine treatment, 11.91 CFU/cm^2 on SMAC and 23.28 CFU/cm^2 on TSAP, were the highest counts seen among the chemical treatments. Although these numbers may seem low, the infective dose of E. coli O157:H7 is believed to be very low (25). This study was done under controlled conditions, and the effectiveness of hypochlorite in processing plants may be reduced, as mentioned. Several researchers have reported less-than-ideal results when using a hypochlorite solution as an antimicrobial wash treatment for various fruits and vegetables (1, 7, 18, 34, 37, 38). Possible reasons given for the ineffectiveness of hypochlorite solutions in these studies are inactivation of hypochlorite by organic matter, incomplete wetting of produce (7), and the inaccessibility of chlorine to crevices and pockets (1).

The hypochlorite treatment was the only chemical treatment that differed significantly from any of the other chemical treatments. The difference was seen between hypochlorite and 5% acetic acid, which resulted in the lowest mean counts on both media. Only small differences were seen between the other chemical treatments, all of which were more effective than either water or hypochlorite solution in eliminating E. coli O157:H7 from apples.

The phosphoric acid-based fruit wash resulted in the second largest reduction (2.9 logs) when cells were plated on SMAC. However, it was better than only one other treatment, hypochlorite, when the injury recovery medium was used, resulting in a reduction of 2.3 logs. This suggests that the phosphoric acid may have caused sublethal injury to a portion of the bacterial cells. However, the difference between SMAC and TSAP was not statistically significant. It should be noted that this product is described by the manufacturer as a general purpose acidic cleaner and is not intended to be a sanitizer. It is designed for the removal of field soil from apples and pears.

Hydrogen peroxide used in chiller water for poultry at a concentration of 6600 ppm is an effective bactericide, but it leads to bleaching and bloating of carcasses (24). Researchers investigating the effectiveness of several sanitizers in removal of E. coli O157:H7 from produce, saw a reduction of 2 logs on broccoli and 4 logs on tomatoes when 3% hydrogen peroxide was used. However, the most effective treatment, 5% acetic acid followed by 3% hydrogen peroxide, reduced the number of organisms to undetectable levels (30). This treatment is also an effective means of reducing the bacterial load on beef carcass tissue (3). We chose to include this treatment in our study based on the results of these earlier works. In this study, the combination treatment of acetic acid/hydrogen peroxide caused a reduction of 2.5 logs when cells were enumerated on SMAC and 2.4 logs on TSAP. This treatment was slightly less effective than acetic acid alone. Increasing the contact time in each solution may result in a greater reduction. However, as mentioned previously, these treatments did not differ significantly.

Little information exists on the use of peroxyacetic acid for removing pathogens from produce surfaces. It is increasingly used in clean-in-place sanitizing in beverage
and dairy plants because to its effectiveness against yeasts and molds (26). It has also been used as a sanitizer for food contact surfaces and has been found to be effective for inactivating various pathogens, including *Listeria monocytogenes*, *Yersinia enterocolitica*, and *Campylobacter jejuni* (12). In the present study, the peroxyacetic acid treatment, like acetic acid, tended to kill rather than injure the organism though reduction was slightly lower for peroxyacetic than for acetic acid.

Studies on the antimicrobial effectiveness of acetic acid have yielded mixed results. Zhang and Farber (37) saw *Listeria monocytogenes* reductions of less than one log including *Listeria monocytogenes*. Aylsworth (2) found that acetic acid was effective for food contact surfaces and (26). Feest and Van der Meer (20) found that acetic acid has been found to be effective for spray treatments for the elimination of *Listeria monocyto¬ genes* infections associated with drinking unpasteurized commercial apple juice — British Columbia, California, Colorado, and Washington, October, 1996. MMWR 45:975.

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REFERENCES


The Association’s New Name:
A Historical Perspective

Elmer H. Marth

The Members have spoken and our Association has a new name! This action resulted after nearly 20 years of efforts to reach that goal. It cannot be said that IAMFES acted in haste on this issue. Much of what happened during the past 20 years regarding a change in the Association’s name was never written into the official records and resides in the memories of persons involved with this matter. Consequently, before memories become too dim with time, I thought it appropriate to describe some of the work that went into this project.

EARLY EFFORTS

The seeds for the Association’s new name were sown at the 1976 Annual Meeting of the Journal Management Committee. Dr. Kenneth G. Weckel, then a professor of food science at the University of Wisconsin-Madison and a past president of IAMFES, was a member of the committee and had been for several years. Dr. Weckel felt that the title, Journal of Milk and Food Technology, was inappropriate because it did not reflect the journal’s content nor the primary purpose of IAMFES. He had expressed this view at several earlier meetings of the committee, and also offered suggestions of titles that might be adopted. The committee agreed with Weckel’s views, but his suggested titles were unacceptable to the committee and to me as editor.

In 1976, Dr. Weckel again brought up the matter of the journal title but this time offered no suggestions of alternative titles. Instead, the matter was discussed by the entire committee and the title, Journal of Food Protection, emerged from the discussion. This title was acceptable to the entire committee, including the editor. Dr. Ralston B. “Pete” Read, then director of the microbiology division of the Food and Drug Administration, was chairman of the committee and in his report to the Executive Board of IAMFES, on behalf of the committee, recommended that the new title be adopted for the journal. The Executive Board accepted the recommendation and the first issue of the Journal of Food Protection appeared in January of 1977.

By 1980 it was evident to me (and to others) that the change in title had a salutary effect on the journal. The number of manuscripts submitted for publication...
had increased and the overall quality of work reported in these papers had improved. As I was preparing for the 1980 annual meeting of the Journal Management Committee, it occurred to me that a similar change in the name of the Association would be beneficial both for the Association and for the journal. Thus I suggested to the committee that the name of IAMFES be changed to International Association for Food Protection. The committee agreed with my reasoning and so Chairman Read, on behalf of the committee, recommended to the Executive Board of IAMFES that the Association’s name be changed as just mentioned. The Executive Board did not accept the recommendation. The process was repeated in 1981 with the same result, the recommendation was not accepted by the Executive Board.

In 1982, the Journal Management Committee agreed it would be futile to further pursue the matter. It was then that I decided to offer a motion at the annual business meeting that the name of the Association be changed to International Association for Food Protection. My motion was seconded and then was soundly defeated. At this point I concluded it served no purpose to continue working on this issue.

Later in 1982, Dr. Robert Marshall, then president of IAMFES, arranged for a survey form to be sent to the Members. Members were offered three choices regarding the name of the Association: no change, International Association for Food Protection, or International Association for Milk and Food Protection. There were 876 forms returned with 92 (10.5%) choosing no change, 517 (59%) choosing International Association for Food Protection and 265 (30.3%) selecting International Association for Milk and Food Protection (see report by then president Robert T. Marshall, *Journal of Food Protection* 45:1273, 1982). Even though nearly 90% of votes indicated the name of the Association should be changed and nearly 60% chose International Association for Food Protection, the Executive Board at its 1983 annual meeting listened to the views of some vocal dairy sanitarians, ignored the wishes of most Members, and chose to maintain the status quo.

However, the matter did not go away. In 1984 at the annual business meeting, Dr. R. B. Read made a motion to require the Executive Board to take immediate action to change the name of the Association to Association for Food Protection. The motion was seconded and then was promptly tabled by a vote of 46 to 25. This meant the motion had to be considered again at the 1985 annual business meeting when it, too, was soundly defeated. With this action the issue went into hibernation for the remainder of the 1980s.

### RECENT EFFORTS

The question of a name change was considered by the Executive Board early in the 1990s. The Board agreed that the name should be changed to International Association for Food Protection. A motion to that effect was brought before the business meeting in 1993 when Dr. Michael Doyle was president of IAMFES. The motion was defeated.

In April of 1997, the Executive Board revisited the issue of the Association’s name, the issue also was discussed at meetings of committees at the IAMFES Annual Meeting in Orlando, Florida. These discussions generally were favorable and prompted the Executive Board at its October 1997 meeting to agree that the name of the Association should be changed to International Association for Food Protection. In February, 1998 Mr. Gale Prince discussed the name change in his president’s column in *Dairy, Food and Environmental Sanitation*. A few months later, personnel in the IAMFES office researched the legal aspects of a change in the Association’s name. The proposed new name was promoted in July, 1998 at the IAMFES Annual Meeting in Nashville and soon after a task force began to rewrite the constitution and bylaws to incorporate the new name.

During the fall of 1998 and the spring of 1999 Dr. Robert Brackett and Mr. David Tharp discussed the proposed new name in the president’s and executive director’s columns, respectively, in *Dairy, Food and Environmental Sanitation*. Revision of the constitution and bylaws was completed and a copy was sent to members in June, 1999.

The revised constitution and bylaws, with the name change in place, were adopted almost unanimously by over 300 Members who attended the annual business meeting on August 3, 1999 in Dearborn, Michigan. This was followed by the mailing of ballots to the entire Membership so everyone could vote on the issue. Ballots had to be returned to the IAMFES office by September 30, 1999; results of the vote were posted on the IAMFES Web site on October 10, 1999 and published in the November, 1999 issue of *Dairy, Food and Environmental Sanitation*. During the fall of 1999 legal matters regarding the name change were completed and on January 1, 2000 IAMFES became the International Association for Food Protection.

### WHY NOW?

Why did the Membership vote overwhelmingly to change the name of the Association when earlier efforts to do so were soundly defeated? It appears that the confluence of several factors made it possible.
First, the Executive Board recognized the need to change the name and members of the Board, even with the annual changes in Membership, were unanimous in their decision that it should be International Association for Food Protection. This vision and unanimity enabled the Board to exert the leadership needed to inform and convince the Members that this move was important for the welfare of the Association. Such leadership by the Executive Board was lacking in the 1980s.

Second, the *Journal of Food Protection* has grown continuously since 1977 and now is the major source of published information, worldwide, on issues related to food protection. Likewise, the programs of IAMFES Annual Meetings in the last decade have grown to become the leading source of current information on food protection. Thus, Members felt it was reasonable for food protection to be in the Association’s name.

Third, newer Members in the Association had no emotional ties to the old name and hence were ready to vote for a name that represents current and future activities of the Association.

Fourth, the Membership of IAMFES changed markedly during the last two decades. It once was primarily dairy-oriented, whereas now it is largely food-oriented. This change ultimately overcame the desire of some to retain “milk” (even though it too is a food) in the name of the Association.

There may still be other reasons for the near-unanimous vote by the members (94% favored the change) on this issue. It is unfortunate that Dr. R. B. Read did not live to see this change in the name of the Association. He would have been pleased.

ACKNOWLEDGMENTS

This article was reviewed by Drs. Robert E. Brackett, Michael P. Doyle, and Robert T. Marshall; by Emeritus Professor Earl O. Wright; and by International Association for Food Protection Executive Director, Mr. David Tharp. I thank all for their help to make this article as accurate as possible.

ABOUT THE AUTHOR

Emeritus professor of food science, bacteriology, and food microbiology and toxicology, University of Wisconsin-Madison; editor, *Journal of Milk and Food Technology* (1967-1976) and *Journal of Food Protection* (1977-1987), Department of Food Science, University of Wisconsin-Madison, 1605 Linden Drive, Madison, WI 53706-1565.
This year will be recorded as one of big change for IAMFES. The office of the Executive-Secretary was relocated on January 1, 1974. At that time the headquarters and office functions were moved from Shelbyville, Indiana to Ames, Iowa. This will certainly also be a year that I will long remember. It has been gratifying that the Membership has been very patient and helpful through the transition. Publication of the Journal will be moved to Ames where a new printer will do the work after January 1, 1975. We hope you will again have patience with us when we make this move. The wearing of two hats since last January has been an intriguing experience for me. I am referring to serving as both President of the organization and taking on my new duties as Executive Secretary.

Affiliates and Membership

This year, considerable effort has been directed toward strengthening the affiliate organizations and reviving affiliates that had not been active in recent years. Affiliate organizations are the local arm of IAMFES, and it is very essential that this representation be a strong one if our Association is to continue its outstanding work. There are several states or areas that do not have organized affiliates even though they do have a large number of direct members. There is a challenge for us to help organizations function in these areas. To accomplish this it will take the effort of many active affiliates. I know that the affiliates will respond when called upon to help in this effort.

It has been very gratifying to know that the Association has had 350 to 400 new direct or affiliate members join this year. This is largely due to the fine efforts of our Committee on Membership that is led by Harold Heiskell. Increasing Membership should be a goal for everyone to work on. The strength of an organization is in its Membership. I wonder how many prospective members each of you have talked to this year? A good, active, membership is the first ingredient to a successful organization. The activity of that membership is the second important ingredient. Put these two together with proper leadership and a successful organization will emerge. With the successful organization that we enjoy in IAMFES, it is necessary to constantly keep reviewing these two ingredients if we are to continue to be one of the leading organizations in this field.

There is a good possibility that we will have new affiliates organized in two of our neighboring countries in the near future. With the number of our subscribers growing abroad this could well be our golden opportunity to begin to establish affiliate activity in other countries. Your Executive Board is taking a serious look at such possible developments. One new affiliate organization has become a reality at this meeting. We now have two affiliate associations with our neighbor, Canada.

Cooperation with NEHA

The Association has continued its investigation of a possible future merger with the National Environmental Health Association (NEHA). This year the Executive Secretaries of the two organizations made a study of the organizations - comparing their composition, functions, and financial status. This report is now in the hand of the two Executive Boards who will be giving it further consideration. It is not an easy
matter to combine two strong organizations into an amalgamated organization. It first must be determined if this type of procedure would benefit the Membership. If this is a possibility then what type of an organization should be the outcome? Joining two strong organizations together is no assurance that the new or reorganized group will be successful. I have seen both successes and failures in the past decade among dairy and food plants attempting to combine into another organization. Because of the similarities of our Memberships, before steps toward merger can be taken a thorough investigation should be made with both organizations participating.

Committees

Committee work is the backbone of our organization. Much effort has been put forth to strengthen committees. We have 28 committees functioning within our organization. Keeping up-to-date with each of these committees is no easy task. The success of this organization is very dependent on hard working committees. IAMFES is very fortunate in having not only hard working Membership but also top notch leadership which makes things happen and gets things done. We are asking our affiliate associations to annually make suggestions and recommendations to the President-Elect who is in charge of committee assignments, so that new leadership becomes involved in committee work. I want to thank the chairman of each committee for the help he has given me this past year. If our organization is to serve our Membership properly, the committees must be in tune with the needs of the Membership. The affiliate organizations can play a major role in this area.

The Journal

The Journal of Milk and Food Technology is our mouthpiece. It serves as a strong public relations medium for our organization. Subscriptions for this Journal from foreign countries are growing; we are now mailing the Journal to most foreign countries. This Journal is recognized as being outstanding in the area of milk and food safety and sanitation. Because of the reputation of the Journal and our strong organization we have clientele covering a wide spectrum of interests. Our clientele vary from the research scientist in the laboratory doing research on quality and other problems, to students, and to sanitarians who are doing quality control work in the field. The food industry has become an important section of our clientele. We need to increase and promote the interest of this group in our Journal and organization. With this wide range of clientele it is evident that our Journal cannot be all things to all people. Our Journal enjoys the recognition of researchers and the academic community. Therefore, we have the good fortune of receiving outstanding research articles for publication. In addition to research papers the Journal endeavors to have an equal amount of space devoted to technical papers (sometimes in form of review articles), non-technical papers, and affiliate news published in each issue, in that order, if all these materials are available. The most difficult papers to obtain for publication are those of a non-technical nature. We ask your help in strengthening this area of the Journal.

The Journal is nearly a self-supporting vehicle. Printing of the Journal will be moved to Ames, Iowa on January 1, 1975 so that this operation is located in close proximity to the main office.

In Conclusion

IAMFES is an active and strong organization because of the input from its individual Members. IAMFES will continue to represent the Members as their professional organization in a manner that is desired by the Members. It is up to you as Members to communicate with leaders of your organization to let your wishes be known. This can be done by working through your affiliate and also by directly contacting the Executive Secretary's office. This office is waiting for suggestions about needed improvements. Many have already been made and changes are being planned because of your suggestions. More communication always results in better understanding.

Reprinted from The Journal of Milk and Food Technology, Vol. 37, No. 11.
Biographical information on the Secretary candidates for 2000-2001 is presented on the following page. Please review the information carefully as you make your decision on which candidate to vote for.

Ballots will be mailed to all International Association for Food Protection Members during the first week of February. Completed ballots are due back to the Association office by March 24, 2000. Sealed ballots will be forwarded to the Tellers Committee for opening and counting. Results of the election will be announced in the May issue of Dairy, Food and Environmental Sanitation.

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

**THE CANDIDATES**

**PAUL A. HALL**

**FRANK YIANNIS**
Paul A. Hall

Paul A. Hall is Director of Microbiology and Food Safety for Kraft Foods where he is responsible for developing and directing strategic microbiological safety and research programs including microbiological risk management, control of pathogens and spoilage organisms, HACCP implementation and regulatory compliance. Prior to joining Kraft in 1989, Mr. Hall previously held corporate microbiology positions for Anheuser Busch Companies and Ralston Purina Company.

During his 25-year career, Mr. Hall has published and lectured extensively in the area of microbiological food safety and has served on a number of microbiological trade and professional association technical committees. He is an active member and past-chair of the International Life Sciences Institute's (ILSI) Technical Committee on Food Microbiology and was instrumental in forging the highly successful Annual Meeting collaboration between IAFP and ILSI. Mr. Hall has been an active member of IAFP since 1987. He is currently vice-chair of the Annual Meeting Program Committee and is also a member of the Journal of Food Protection Management Committee, past editorial board member of the Journal of Food Protection and past Black Pearl Award Jury Committee member. Mr. Hall has organized and chaired numerous Annual Meeting symposia and programs over the past twelve years.

Other professional affiliations for Mr. Hall include, Chair – Industry Board of Advisors for the University of Georgia, Center for Food Safety and Quality Enhancement, National Center for Food Safety and Technology, Past President – Food Microbiology Division – American Society for Microbiology, and Executive Committee – Food Microbiology Research Conference. Additionally, Mr. Hall has served on the Food and Drug Administration’s CFSAN Research Review Committee and as an industry representative on the Food Laboratory Accreditation Working Group. Mr. Hall received his bachelor’s degree in microbiology from the University of Missouri – St. Louis and his M.S. in management of technology from Washington University in St. Louis. He is currently completing a Ph.D. in quality management.

Frank Yiannas

Frank Yiannas is Manager of Walt Disney World's Environmental Health Department. He oversees all food safety programs, as well as other public health functions, for one of the world's largest entertainment companies. Mr. Yiannas joined Disney in 1989 to establish their first food safety laboratory. During his tenure, Mr. Yiannas has expanded the program beyond testing by establishing cutting-edge risk management strategies.

Mr. Yiannas is a nationally recognized speaker on the topic of innovative and creative approaches to food safety. Under his direction, Disney has been recognized for playing a leadership role in implementing HACCP at the food service level, developing hand-held computer technology to conduct food safety audits, and utilizing progressive microbial detection methods. Mr. Yiannas plans to extend the hand-held technology to computerize HACCP measurements. Also, he presently co-chairs a committee to develop international food safety icons that visually and universally communicate important food safety processes.

Mr. Yiannas has been an active Member of IAFP since 1993. His involvement at the Annual Meetings includes organizing symposia, functioning as convenor, and presenting on relevant food safety issues. Mr. Yiannas is presently serving a three-year term on the Annual Meeting Program Committee. He also chairs the Food Sanitation Professional Development Group (PDG), and is a member of the Microbial Risk Assessment and Retail Food Safety & Quality PDGs.

Locally, Mr. Yiannas is very involved with the Florida Association of Milk, Food and Environmental Sanitarians (FAMFES). He is the current president of FAMFES and plays an active role in organizing the annual education conferences, assisting with the FAMFES newsletter, and recruiting new members.

At the national level, Mr. Yiannas holds a seat on Council I, Laws and Regulations, of the Conference for Food Protection (CFP). This council recommends changes to the Food and Drug Administration Model Food Code. He recently co-chaired a committee for the CFP to develop standards for permanent, outdoor cooking sites.

Mr. Yiannas is a Registered Microbiologist with the American Academy of Microbiology in the area of Consumer Products and Quality Assurance. He received his BS in microbiology with honors from the University of Central Florida and is pursuing a master of public health from the University of South Florida. In addition, he is a member of several professional associations, including the Institute of Food Technologists and the American Society for Microbiology.
# New Members

## AUSTRALIA
Patricia Desmarchelier  
Food Science Australia  
Brisbane, Queensland

## CANADA
Brian R. Smith  
Maple Leaf Meats Inc.  
Mississauga, Ontario

## GREECE
Stamatia Kotretsou  
Technological Institute  
Athens, Attiki

## ITALY
Leslie G. Huck  
U.S. Army Veterinary Corps.  
Vicenza

## MEXICO
Lopez Guisa Gabriel  
Siasport, S.A. DE C.V.  
Jacona, Michoacan

## UNITED STATES
Arkansas
Mike Doyle  
OK Foods, Fort Smith

California
Toni L. Hofer  
Raley’s, W. Sacramento

Mary S. Palumbo  
California Dept. Health Services  
Sacramento

Connecticut
Bob Sulick  
Carl’s Pasta Inc., Manchester

Illinois
Ray Burke  
Haarmann & Reimer, Kildeer

Winston Lees  
The Chicago Group Inc., Chicago

Maria P. Oria  
Institute of Food Technologists  
Chicago

Indiana
Dave McClure  
The Steritech Group, Indianapolis

Iowa
Edward E. Fetzer  
Iowa State University, Ames

Kansas
Tom Nielsen  
National Beef Packaging Co.  
Liberal

Maryland
Margaret E. Cole  
CFSAN, Laurel

Missouri
Kristin L. Kollath  
Whitmire Micro-Gen, St. Louis

Eric Murphy  
Archimica (Missouri) Inc.  
Springfield

Nevada
Theodore Mori  
The Sausage Factory, Carson City

New Jersey
Yi-Cheng Su  
Papetti’s Hygrade Egg Products  
Elizabeth

New York
Joseph Corby  
NYS Dept. Ag. & Mkts., Albany

Martin Wiedmann  
Cornell University, Ithaca

North Carolina
Martin Bembers  
Carolina Turkeys, Mount Olive

Ohio
Terry A. Kroening  
Borden Foods Corp., Gahanna

Pennsylvania
Donna Boozer  
Capsugel, Greenwood

Nkuchia Mikanatha  
Pennsylvania Dept. of Health  
Harrisburg

Brendan A. Niemira  
USDA-ARS, Wyndmoor

John S. Novak  
USDA-ARS-ERRC, Wyndmoor

Texas
Tim Henderson  
City of Carrollton, Carrollton

Wisconsin
Todd C. Charnetzki  
Bou-Matic Equipment, Madison

### New IAFP Sustaining Member

Stuart J. Ray  
Seward Limited  
London, United Kingdom
Alfa Laval Flow Inc.
Appoints Marketing Supervisor

Marty Organ of Milwaukee, WI, has been promoted to marketing supervisor for Alfa Laval Flow Inc.

Organ joined Alfa Laval Flow Inc. in 1997 as marketing coordinator. He became senior marketing communication specialist before taking on his new role as marketing supervisor. In addition to his marketing communications activities, his new responsibilities will include overseeing the day-to-day activities in the marketing department.

Society for Industrial Microbiology Elects Officers

New officers and directors have been elected by the Society for Industrial Microbiology (SIM). Vincent Gullo, Ph.D., director of microbial products, Schering-Plough Research Institute (Kenilworth, NJ) will serve as SIM president for the 1999-2000 term.

President-elect for the term commencing in August 2000, is Kristien Mortelmans, Ph.D., senior research fellow in natural products drug discovery at Merck Research Laboratories (Rahway, NJ); Brendlyn Faison, Ph.D., associate professor of biological sciences, Hampton University (Hampton, VA); and Douglas Jaeger, manager of custom fermentation for Abbott Laboratories (N. Chicago, IL).

Dycus Joins Bell Laboratories as Technical Sales Rep for Western United States

Roman Dycus has joined Bell Laboratories' sales and marketing team as a technical sales representative for the western United States.

Dycus provides technical support and information on Bell's rodent control products to Bell distributors and PCOs in northern California, Oregon, Washington, Idaho, Montana, Wyoming, Utah, Nevada and Hawaii.

A trained entomologist, Dycus received a bachelor of science degree in entomology from the University of Kentucky, Lexington, KY, in 1995. He also holds a pest control license in fumigation, general pest control and termite control from the Hawaii Dept. of Agriculture.

Before joining Bell, Dycus worked for Terminix International, most recently as a regional service manager where he provided technical expertise and managed sales and service for its Hawaii region. Before that, he worked as a termite entomologist for the New Orleans Mosquito Control Board where he conducted practical field research with pesticide companies on controlling termites.

AACC Appoints Editor-in-Chief of Cereal Chemistry

Dr. Jon Faubion, director of scientific services, American Association of Cereal Chemists, St. Paul, MN is the new editor-in-chief for the association's premier scientific journal Cereal Chemistry. Primary responsibilities include solicitation of cereal research results internationally, as well as supervising the Board of Editors and the scientific review process.

According to Steve Nelson, executive vice president, "The AACC Board of Directors selected Dr. Faubion because of his experience in cereal science research and publishing. In addition, the Board of Directors decided to take advantage of having the editor-in-chief position located at AACC headquarters as Cereal Chemistry makes the transition to an electronic journal."

Faubion succeeds Dr. Vladimir Rasper, Guelph, Ontario, Canada, who was editor-in-chief for six successful years.
New Data Establish Link Between ‘Mad Cow Disease’ and Fatal Brain Damage in Humans

A new study now provides the most compelling evidence to date that infectious proteins called prions from cattle with bovine spongiform encephalopathy, commonly known as mad cow disease, have infected humans and caused fatal brain damage. Recent epidemiological findings, along with studies of the prion protein and transmissions to inbred mice and primates, have raised the possibility of a link between mad cow disease and a new form of Creutzfeldt-Jakob disease in humans, both characterized by an ultimately fatal perforation of tissue in the brain. In the article beginning on Page 15137 of the Dec. 21, 1999 PNAS, researchers from the University of California, San Francisco, and Western General Hospital in Edinburgh, Scotland, present the first compelling data to indicate that the particular strain of prion implicated in mad cow disease is the same strain that causes the variant of Creutzfeldt-Jakob disease. By creating a genetically altered line of mice carrying prion protein genes from cows, the researchers successfully eliminated the “species barrier” thought to afford members of one species some degree of protection from prions derived from a different species. Approximately 250 days after being inoculated with prions from diseased cows, the transgenic mice developed the disease. A second group of mice inoculated with prions from the diseased mice became sick after a virtually identical period of time, confirming that the transgenic mice transmit mad cow disease prions with no detectable change of strain or properties specific to the species and attributable to the mice themselves. Most significantly, inoculation of the transgenic mice with prions from human cases of the new form of Creutzfeldt-Jakob disease produced the same incubation period and pattern of brain damage as had inoculation with prions from diseased cows.

Additionally, inoculation of transgenic mice with prions from sheep with scrapie, another prion-related disease causing neurological damage, produced prions with dramatically different biological properties.

This work was supported by the National Institutes of Health and the G. Harold and Leila Y. Mathers Foundation.

Reprinted from Academy of Sciences (PNAS).

Food Recalls: How Can You Prepare? Insurance Brokers Service Offers Advice to Businesses

A series of food recalls in December prompted Insurance Brokers Service, Inc. (IBS) president and COO Bob Greenebaum to offer the following advice to food companies: Get coverage. “The truth is, for big and small food producers alike, recalls can cost millions of dollars in product losses and operational delays, not to mention intangible losses to a company’s reputation and customer confidence,” Greenebaum said. “Protecting the consumer is the number one priority in a product recall. But can you do so without crippling your business?”

Greenebaum, whose company offers product recall insurance for food companies, stresses that while manufacturers and processors may have an understanding of the operational aspects of a recall – which regulators to notify, how to contain the exposed product and how to track a problem – they may not have a plan that incorporates these logistical requirements with reputation-saving communications efforts. He suggests that companies must be prepared to deal with a recall from several angles, including financial protection, logistical planning and effective communication with the public and media.

Currently, there are a number of different insurance products on the market offering financial coverage for both accidental contamination and products tampering. For example, IBS’s Total Recall PLUS product includes a unique crisis management component that assists companies both with logistics and communications considerations, as well as real-time crisis support to safeguard the insured’s reputation.

Again emphasizing the growing number of recalls, Greenebaum advises companies to prepare for a worst case scenario. “It’s an up-front investment that can save your company.”

Collaboration to Help Thwart Foodborne Pathogens

High-quality, fresh-cut melon and tomatoes that are free of microbial pathogens are the goal of Agricultural Research...
Service scientists and industry cooperators who have teamed up in a joint research project.

Scientists at the ARS Eastern Regional Research Center's Plant Science and Technology Research Unit in Wyndmoor, PA, have entered into a two-year Cooperative Research and Development Agreement with EPL Technologies, Inc., in Philadelphia, PA News. Retailers have long desired a way to produce fresh-cut tomatoes and melons safely, but haven't pursued this market due to product quality problems and food safety concerns caused by inadequate cold temperatures during distribution.

Melons and tomatoes have been associated with foodborne illnesses from *Salmonella* contamination in the past. *Salmonella* heads the list as one of the most common causes of foodborne illnesses, with about 40,000 salmonellosis cases reported yearly, according to the federal Center for Disease Control and Prevention.

ARS researchers have already developed improved methods for extending the shelf life of perishable fruits and vegetables. Under the agreement with EPL Technologies, they plan to develop novel methods for reducing or removing pathogenic bacteria from fresh-cut fruits. These methods should be friendly alternatives to common washing agents, such as chlorine, which are used to rid fresh-cut foods of microbial pathogens. Previous ARS studies and others have shown limitations with conventional washing and sanitizing agents in reducing microbes on fruit surfaces.

This technology is needed in the fresh-cut market, which grows at a rate of 20 percent annually. Most of this growth, however, is in the fresh-cut vegetable market. This research should allow fresh-cut manufacturers to expand their markets and make healthy fresh-cut products available to a larger group. Successful introduction of these products will have a major impact on growers and shippers.

**USDA Approves Irradiation of Meat to Help Improve Food Safety**

Industry will soon be able to irradiate raw meat and meat products such as ground beef, steaks, and pork chops to reduce significantly or eliminate *E. coli O157:H7* and other hazardous microorganisms. Agriculture Secretary Dan Glickman announced on Dec. 14, 1999. "While there is no single silver bullet to cure all food safety problems, irradiation has been shown to be both safe and effective," said Glickman. "USDA is committed to approving new technologies that offer industry additional tools to help produce even safer food."

Food irradiation is the process of exposing food to high levels of radiant energy to reduce or eliminate potentially dangerous microorganisms on meat and poultry. The Food and Drug Administration (FDA), which approves food additives such as irradiation, determined in December 1997 that irradiation of raw meat is safe.

Irradiation is currently the only known method to eliminate deadly *E. coli O157:H7* bacteria in raw meat. The technology also significantly reduces levels of *Listeria, Salmonella*, and *Campylobacter* on raw product.

However, consumers need to continue to handle and prepare irradiated meat and poultry as they would other raw products because some bacteria, especially spoilage organisms, are not destroyed by irradiation, and bacteria from other foods can cross-contaminate irradiated foods.

Under USDA's plan, which will take effect in mid-February 2000, radiation will be permitted to treat refrigerated or frozen raw meat and meat products.

As with other antimicrobial interventions USDA has approved for meat and poultry, irradiated products must still meet all other food safety requirements, including sanitation and pathogen reduction standards.

Ensuring consumer choice, USDA is requiring that irradiated meat and meat products bear the radura international symbol for irradiation, and a statement that the product was treated by irradiation. Irradiated meat used in other products such as sausages and bologna also must be labeled. For unpackaged meat products that do not have labels, the statement and logo must be displayed at the point of sale to consumers. These labeling requirements do not apply to products purchased through foodservice operations, such as restaurants.

In a related action, USDA is streamlining the approval process for food additives by ending the requirement that food additives be approved separately by both FDA and USDA. Currently, once FDA approves a food additive, USDA must conduct separate rulemaking in order for it to be approved for use in meat or poultry. This regulatory reform effort will pave the way for the use of irradiation on ready-to-eat products such as luncheon meat. On August 23, 1999, a consortium of industry organizations petitioned FDA to approve irradiation for processed meat and poultry products.

**Early Warning and Response System for Communicable Diseases Becomes Fully Operational**

The European Commission adopted two important decisions concerning the setting up of an early warning and response system for communicable
diseases. Terms of action are now clearly defined and communicable diseases and special health issues identified. The system will be run by the European network for the epidemiological surveillance and control of communicable diseases which was set up in 1998. The network focuses on the permanent surveillance of tuberculosis, travel associated legionnaires' disease, AIDS and HIV, human salmonellosis and the bacteria *E. coli O157*. This list has now been extended to include a range of other diseases.

David Byrne, Commissioner for Health and Consumer Protection welcomed the adoption of the management guidelines for the early warning and response system: “These two decisions bring the operation of the network to full speed. They set out the principles of the early warning and response system for communicable diseases. Rapid reaction to threats to public health from communicable diseases is one of the priorities of the Commission’s policy in this field. We need to be increasingly alert to the huge threat to health from many communicable diseases. As Europe becomes increasingly integrated, there is a corresponding increase in the ease with which such diseases can be transmitted. We need, therefore, to have well developed mechanisms to identify suspected or actual outbreaks and to take the appropriate measures to bring them under control.”

The first decision clearly identifies the “terms of action” that will be dealt with by the early warning and response system of the community network. These are “events,” which by themselves or in association with other similar events, are or have the potential to become public health threats. The decision furthermore describes the procedures for information, consultation and cooperation under the early warning and response system.

The second decision identifies the communicable diseases and special health issues which have to be covered by epidemiological surveillance in the community network. The network will progressively cover, amongst others, influenza, hepatitis A, B, C, malaria, other diseases preventable by vaccination – e.g. diphtheria, measles, mumps, sexually transmitted diseases, food and waterborne diseases and diseases of environmental origin, diseases transmitted by non-conventional agents (e.g. Creutzfeldt-Jakob disease) airborne diseases, zoonoses, serious imported diseases e.g. cholera, plague. The growing resistance against antibiotic agents will also be observed attentively by means of the European network. This will contribute to ensure timely reaction on this major threat for human health through guidance to health professionals and the public and adaptation of legislation to scientific findings.

The Commission has now the tools to allow the network to become fully operational. The early exchange and analysis of data within the network will improve the rapid reaction to emergencies and as such the prevention of communicable disease outbreaks inside and outside the community.

**Achievements in Public Health, 1900-1999**

According to the U.S. Centers for Disease Control, the Ten Great Public Health Achievements – United States, 1900-1999 are:

- Vaccination
- Motor-vehicle safety
- Safer workplaces
- Control of infectious diseases
- Decline in deaths from coronary heart disease and stroke
- Safer and healthier foods
- Healthier mothers and babies
- Family planning
- Fluoridation of drinking water
- Recognition of tobacco use as a health hazard

These 10 public health achievements highlighted in MMWR reflect the successful response of public health to the major causes of morbidity and mortality of the 20th century. In addition, these achievements demonstrate the ability of public health to meet an increasingly diverse array of public health challenges. The full report, available at www.cdc.gov/mmwr, highlights critical changes in the US public health system this century.

**Leatherhead Food RA Announces a New Journal**

Food Allergy and Intolerance – *a Journal for the World Food Industry*, is a new journal to be launched by Leatherhead Food Research Association in 2000. To be published three times a year, the journal will appeal to food technologists, nutritionists and technical personnel in the food industry, as well as clinicians and other health professionals. The journal will contain articles by international experts in food allergy and intolerance, and all articles will be reviewed by an editorial board of experts.
Key areas covered by the journal will include:

• Guidelines and advice for industry aimed at good practice during food manufacture and processing.
• Legislation issues and other legal requirements of food manufacturers, and liability issues of concern to food manufacturers and retailers, including labelling information and advice.
• The latest and clinical research into the causes of food allergy and intolerance (including milk, eggs, wheat, soya, peanut/nut, fish, shellfish and additives, etc.). Information on the prevalence of food allergy and intolerance.
• Commercially available analytical kits for detecting food allergens.
• The development of vaccines and other treatments for victims of allergic reactions.

Each issue of the journal will also contain regular features on new research, food allergy and intolerance in the media and internet sites relevant to the subject.

For further information, please contact the Publications Department at Leatherhead Food RA on 44.0.1372.376.761; Fax: 44.0.1372.822.374; E-mail: publications@lfra.co.uk.

ISO 9001
Unique Rhino™ Squeeze Bag from Custom Packaging Systems, Inc.

The Rhino™ Squeeze Bag from Custom Packaging Systems provides a reusable semi-bulk package holding up to 2,200 pounds of viscous and heavy liquids that completely discharges contents in a clean, efficient and ergonomic operation. The design of the Rhino Squeeze Bag features Custom Packaging’s exclusive cone-shaped bottom for fast flow and complete discharge of thick and highly viscous liquid products. An internally secured form-fit liner aids in preventing product entrapment in the bag and assures expulsion of residual product that might otherwise be trapped in the bag’s bottom.

Holding up to 2,200 pounds of product, the Squeeze Bag offers an economical, labor-saving alternative to drums, totes, and trucks. Once the product is discharged and the liner removed, the self-folding squeeze bag will weigh only 9 pounds and may be reused for additional cost savings, or easily recycled or disposed of.

The Rhino Squeeze Bag is constructed of USDA and FDA approved materials, and is designed with a durable woven polyethylene or polypropylene outer bag and a multiply poly form-fit inner disposable liner. The special design of the liner, which is taped and tied to the tough outer bag, prevents the liner from collapsing during discharge and keeps the liner securely in place until removal. The liner is available in barrier films to maintain shelf life.

Labconco Corporation, Kansas City, MO

Groen Releases New Process Equipment Solutions Guide

Groen has released a new Process Equipment Solutions Guide which they are making available to food, confectionary, cosmetic, pharmaceutical and chemical manufacturers worldwide. This handy 12-page booklet provides both batch and continuous processing equipment solutions for a wide range of product heating and chilling applications.

"Groen also offers unique continuous heat transfer systems built around multi-tube thin film evaporators; single unit scraped surface heat exchangers, that are sized by throughput volume; and

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fully jacketed continuous screw coaters," stated John Jasper, Groen's director of process equipment sales. "While atmospheric processing with steam heat transfer is popular, we can also provide efficient hot water and hot oil systems, and kettles that use pressure or vacuum for faster heating and cooling."

The Groen Process Equipment mini-catalog includes a handy mixing action selection guide to the broad range of agitator configurations available with Groen's Premier™ and Elite™ lines of hemispheric bottom kettles. This colorful catalog also covers Groen's line of pilot plant and laboratory equipment; a line of flush mounted and in-line sanitary ball valves; and their CapKold® cook-and-chill refrigerated foods production systems.

Groen Process Equipment Group, Elk Grove Village, IL

Simply Affordable Leak Testing for Sealed Liquid-Filled Containers or Packages from Cincinnati Test Systems, Inc.

Cincinnati Test Systems, Inc., has introduced a new Sentinel MD Moisture Detection instrument to accurately evaluate test results and determine leaks utilizing non-destructive methods of controlling and monitoring the atmospheric pressure in a vacuum chamber. This sophisticated instrument has been simplified for operator convenience and packaged for an affordable cost of verifying product integrity (possibly down stream from a liquid fill and seal operation).

Technically it works by controlling and monitoring the evacuation of the test chamber to below the boiling point of the liquid. At this point any leakage from the container will effect the rate of evacuation of the chamber, the retention of vacuum in the chamber and the characteristics of the vacuum response. Total cycle time can be less than 15 seconds depending on the part and leak size, etc.

The Sentinel MD provides three inputs and outputs for interface to PLCs or external devices allowing the flexibility to perform simple leak test functions or economically interface with a PLC operated system. (Inputs: start test, stop test, and one programmable for either remote Auto Cleanup or Part Present to start test. Outputs: accept, reject and one programmable for Seal or External Exhaust.)

Reject values for evacuation pressure, test pressure, and response fit are easily set through the operator panel. The evacuation pressure, test pressure, and response fit are stored for up to 100 parts and can be easily reviewed by the operator or output to a printer or computer via the RS232 port.

Cincinnati Test Systems, Inc., Village of Cleves, OH

Tekmar-Dohrmann Increases Lab Productivity with the AQUATek 70

Laboratories have productivity challenges that must be met to survive in their competitive markets. The AQUATek 70 bined with the 3100 Sample Concentrator is designed to handle beverage samples such as fruit juices, carbonated beverages, water and beer. Virtually all sample preparation of beverage samples is eliminated with automatic sample measurement, automatic standard addition, and high temperature OptiRinse. Performance benefits of the AQUATek 70 include minimized standard usage, excellent precision with automatic standard addition, reduced carryover with high temperature OptiRinse and a vial transport system with proven reliability.

Tekmar-Dohrmann, Cincinnati, OH

Osmonics® UltraFilic® M-Series Membrane Engineered to be “Fouling-Free”

The separation of oil and water by ultrafiltration (UF) is a proven technology, but its widespread utilization for wastewater minimization or recycling applications has three common problems: (1) fouling from “free” oil which overflows from upstream pretreatment; (2) fouling from free oil which de-emulsifies as the feed is concentrated; and (3) fouling and decomposition of the membrane from accidental contamination of the waste stream by aggressive solvents. The new M-Series by Osmonics is a technologically superior UltraFilic membrane element that will resist these obstacles.

M-Series membranes are made of a chemically-modified polyacrylonitrile (PAN) polymer. As opposed to conventional “oil attracting” membranes, these membranes are engineered to be extremely “water attracting.”
which helps prevent fouling from free oils. The membranes are designed with an asymmetric pore morphology that prevents oil and dirt molecules from being trapped in the depths of the pore. Available in a wide range of sizes, the membranes meet the objectives of most applications.

Because of this element’s chemical stability and performance versatility, there is no need to neutralize the waste stream prior to filtration. It is also possible to recycle most aqueous cleaners online at their operating temperatures. M-Series technology may be applied to numerous industrial applications including petroleum, gas, chemical, food, automotive, laundry, metal finishing, pharmaceutical, and textile.

Osmonics, Colorado Springs, CO

New Maximum Free Passage Fulljet® Nozzle from Spraying Systems Co.

The new Maximum Free Passage (MFP) Fulljet nozzle, from Spraying Systems Co., offers the industry’s free passage of any full cone spray nozzle of its type. The nozzle’s maximum solids passage capability translates into consistent coating, cooling, blanching, washing, and rinsing.

The MFP Fulljet nozzle features a patent-pending design that provides maximum spherical diameter free passage with outstanding spray performance. The design results in uniform distribution of liquid throughout the spray pattern for higher performance in spraying applications. The stable spray has consistent edges without fluttering.

The MFP nozzles are available in all 316 stainless steel or a brass body with a 316 stainless steel vane. They feature NPT and BSPT inlet connections from 3/8" to 3" standard spray angles of 60° and 90° wide spray angles of 115°.

Spraying Systems Co., Wheaton, IL

Forty percent stronger than standard magnets, Eriez’ new RE5HP Rare Earth tube magnets, powered by Erium® 3000, provide the highest level of separation efficiency of any tube magnet on the market today. State-of-the-art circuit geometry and increased holding power improve separation of fine and weakly magnetic contaminants in processing applications such as pharmaceutical/chemical powders, liquid lines and food processing.

The higher strength of the RE5HP holds finer contaminants even more tightly to its surface to ensure the removal of fine metal contamination — virtually eliminating wash-off by product flow. Designed with the same dimensional envelope as its predecessors, the RE5HP can retrofit into existing grates and traps to effectively prevent machinery damage and ensure product purity.

“The new RE5HP tube magnet keeps downtime associated with metallic contamination to a minimum. And, it offers increased holding force, higher gauss rating and improved separation efficiency — at no additional cost,” says Dave Heubel, product manager, separation.

Eriez Magnetics, Erie, PA

Molecular Biology Grade Ethanol Increases DNA Yield from Sigma

The broad range of products for molecular biology from Sigma-Aldrich now includes both 95% (190 proof) and 100% (absolute, 200 proof) benzene-free nondenatured alcohol. Use-tested for nucleic acid precipitation, Molecular Biology Grade Ethanol is only available from Sigma-Aldrich.

It has no detectable DNase, RNase, or Nickase activity. This eliminates the need for researchers to worry about contamination or compromising the results of an experiment, thus saving time, aggravation, and money.

Purchasing non-denatured ethanol typically requires separate payment of federal excise tax. Sigma-Aldrich prepays the tax and includes it in the purchase price as a convenience for customers. This eliminates the need for alternative suppliers and allows researchers to purchase Molecular Biology Grade Ethanol, with other products through normal purchasing channels. This makes additional customer record keeping for excise tax purposes unnecessary.

Sigma, St. Louis, MO
Holders of 3-A Symbol Council Authorization as of January 31, 2000

Questions or statements concerning any of the holders' authorizations listed below, model numbers or the equipment fabricated should be addressed to:
Administrative Officer, 3-A Symbol Council, 1500 Second Avenue, SE, Suite 209, Cedar Rapids, IA 52403; Phone 319.286.9211; Fax 319.286.9290

01-07 Storage Tanks for Milk and Milk Products

2 APV Americas – Lake Mills
   100 South CP Ave.
   Lake Mills, WI 53551

117 DCI, Inc.
   P.O. Box 1227, 600 No. 54th Ave.
   St. Cloud, MN 56301

127 Paul Mueller Co.
   1600 W. Phelps St.
   Springfield, MO 65801

410 Scherping Systems
   801 Kingsley St.
   Winsted, MN 55395

31 Walker Stainless Equipment Co., Inc.
   902 - 2nd Main St.
   Elroy, WI 53929-0126

02-09 Pumps for Milk and Milk Products

975 Alfa Laval Pumps Ltd.
   Birch Road
   Eastbourne, East Sussex
   BN23 6PQ, England
   (Not Available in the USA)

976 Alfa Laval Flow
   Birch Road
   Eastbourne, East Sussex
   BN23 6PQ, England
   (Not Available in the USA)

63R APV Americas – Lake Mills
   100 South CP Ave.
   Lake Mills, WI 53551

946 APV Americas – Lake Mills
   100 South CP Ave.
   Lake Mills, WI 53551-1799

568 Allweiler AG, Werk Bottrop
   Kirchhellen Ring 77-79
   D-46244 Bottrop
   Germany

793 Ampco Pumps Co.
   4000 W. Burnham St.
   Milwaukee, WI 53215

212R Babson Brothers Company
   Dairy Systems Division
   20903 West Galc Ave.
   Galesville, WI 54630-0659

999 Blackmer/Mouvex
   1809 Century Ave., SW
   Grand Rapids, MI 49509

923 Bombas Bornemann S.R.L.
   Armenia 2898 (1605)
   Munro, Argentina
   (US Rep.: Bornemann Pumps, Inc.
   P.O. Box 1769
   Matthews, NC 28105)

205R Boumatic
   1919 S. Stoughton Road
   P.O. Box 8050
   Madison, WI 53716

739 CSF Inox S.P.A.
   Strada per Bibbiano
   7 – Montecchio E. (RE)
   Italy
   (US Rep.: Sanchelima Intl.
   1781-83 N.W. 93rd Ave.
   Miami, FL 33172)

709 Conexiones Inoxidables
   De Puebla S.A. de C.V.
   Vicente Guerrero No. 211
   Xicotepec de Juarez
   Edo, Puebla, Mexico
   (US Rep.: Ben Dolphin Consulting
   4735 Lansing Drive
   North Olmsted, OH 44070)
04-04 Homogenizers and Reciprocating Pumps

75 APV Gaulin
500 Research Drive
Wilmington, MA 01887

390 American Lewa, Inc.
132 Hopping Brook Road
Holliston, MA 01760

247 Bran & Luebbe, Inc.
1025 Busch Parkway
Buffalo Grove, IL 60015

05-14 Stainless Steel Automotive
Milk Transportation Tanks for Bulk Delivery and/or Farm Pick-up Service

379 Brenner Tank Mauston, Inc.
N. 3760 Hwy. 12 & 16
Mauston, WI 53948

756 Beall Trailers of CA
1301 South Ave.
Turlock, CA 95380-5108

708 Brenner Tank, Inc.
450 Arlington Ave., P.O. Box 670
Fond du Lac, WI 54936

40 Hills Stainless Steel & Equipment Co., Inc.
505 W. Koehn St.
Luverne, MN 56156

513 Nova Fabricating, Inc.
404 City Road
P.O. Box 213
Avon, MN 56310

847 Polar Tank Trailer, Inc.
Holdingford, MN 56340

653 Tremcar
1, Tougas St.
Iberville, Quebec, J2X 2P7 Canada
(US Rep.: Bay State Tr. & Tr.
527 Winthrop
Rehobeth, MA 02769)

25 Walker Stainless Equip. Co., Inc.
625 State St.
New Lisbon, WI 53950

437 West-Mark
2704 Railroad Ave., P.O. Box 100
Ceres, CA 95307

943 LBT Stainless, Inc.
Route 5, Box 480
Manning, SC 29102
10-03 Milk and Milk Products Filters
Using Disposable Filter Media

593 Filtration Systems
Div. of Mechanical Mfg. Corp.
10304 N.W. 50th St.
Sunrise, FL 33351

435 Sermia International
771 Boul. Industriel
Blainville, Quebec
Canada J7C 3V3
(US Rep.: Edward W. Fox, Jr.
1200 Rolling Ridge Way, #403
Bloomington, IN 47403)

296 L.C. Thomsen, Inc.
1304 43rd St.
Kenosha, WI 53140

711 Kusel Equipment Co.
820 West St.
Watertown, WI 53094

1024 Ultrafilter, Inc.
3560 Engineering Drive
Norcross, GA 30092

1026 Pall Europe Ltd.
Walton Road
Portsmouth, Hampshire PO6 1TD England

35 Tri-Clover, Inc.
P.O. Box 1413
Kenosha, WI 53141-1413

11-05 Plate-type Heat Exchangers
for Milk and Milk Products

880 AGC Engineering
8869 SE 58th St. Ave.
Portland, OR 97266

365 APV Heat Exchanger AS
Platinvej, 8
P.O. Box 329
DK-6000 Kolding
Denmark
(Not available in the USA)

20 APV Americas
395 Fillmore Ave.
Tonawanda, NY 14150

120 Alfa-Laval, Agri, Inc.
11100 No. Congress Ave.
Kansas City, MO 64153

17 Tetra Pak Engineering
101 Corporate Woods Parkway
Vernon Hills, IL 60061

718 Babson Bros. Co.
Dairy Systems Div.
1400 West Gale Ave.
Galesville, WI 54630

30 Waukesha Cherry-Burrell
Process Equipment Division
P.O. Box 35600
Louisville, KY 40232-5600

14 Chester-Jensen Co., Inc.
5th & Tilghman Sts., P.O. Box 908
Chester, PA 19016

791 The Coburn Co., Inc.
834 E. Milwaukee St., Box 147
Whitewater, WI 53190

468 GEA Ecoflex North America, Inc.
7150 Distribution Drive
Louisville, KY 40258-2528

622 ITT Standard
175 Standard Parkway
Cheektowaga, NY 14227

414 Paul Mueller Co.
P.O. Box 828
Springfield, MO 65801

912 Pladot Ein Harod
Kibbutz Ein Harod Meuhad
18965 Israel
(US Rep.: Robert E. Turner
P.O. Box 4595
Gettysburg, PA 17235-4595)

279 The Schluter Company
3410 Bell St., P.O. Box 548
Janesville, WI 53547-0548

650 API Schmidt-Bretten, Inc.
2777 Walden Ave.
Buffalo, NY 14225

670 Flomax International, Ltd.
2 Robert St.
P.O. Box 14537
New Zealand
(US Rep.: Masport, Inc.
6140 McCormick Drive
Lincoln, NE 68507)

1005 Schmidt Thermal Processing Ltd.
P.O. Box 31-247
Milford, Auckland, New Zealand
(US Rep.: Westfalia Dairy Systems, Inc.
1862 Brummel Drive
Elk Grove Village, IL 60007)

658 Thermaline
180-37th St.
Auburn, WA 98001

885 Tranter, Inc. Texas Division
1900 Old Burk Hwy
Wichita Falls, TX 76304

610 Universal Dairy Equipment
11100 N. Congress Ave.
Kansas City, MO 64153

12-05 Tubular Heat Exchangers for Milk
and Milk Products

886 API Ketema Heat Transfer Technology
2300 W. Marshall Drive
Grand Prairie, TX 75051
13-09 Farm Milk Cooling and Holding Tanks

802 Refinox S.A. DE C.V.
Ind. Torreon, Coah, Mexico
(US Rep.: James Read)
M.E. Stainless
601 High Plain Drive
Bel Air, MD 21014)

49R Alfa Laval Agri, Inc.
11100 North Congress Ave.
Kansas City, MO 64153

240 Babson Brothers Company
Dairy Systems Division
P.O. Box 659
Galesville, WI 54630

4R Boul-matic, The Dairy Equipment
Division of DEC, International
1919 S. Stoughton Road
Madison, WI 53708-8050

12R Paul Mueller Co.
1600 W. Phelps, P.O. Box 828
Springfield, MO 65801

611 Universal Dairy Equipment
11100 N. Congress Ave.
Kansas City, MO 64153

16-05 Evaporators and Vacuum Pans for Milk and Milk Products

132 APV Americas
182 Wales Ave.
Tonawanda, NY 14150

277 Contherm, Inc.
P.O. Box 352, 111 Parker St.
Newburyport, MA 01950

500 Dedert Corporation
20000 Governors Drive
Olympia Fields, IL 60461

186R Marriott Walker Corp.
925 E. Maple Road
Birmingham, MI 48011

273 Niro, Inc.
9165 Rumsey Road
Columbia, MD 21045

107R C.E. Rogers Co.
P.O. Box 118
1895 Frontage Road
Mora, MN 55051

299 Stork Food & Dairy Systems, Inc.
P.O. Box 1258
1024 Airport Parkway
Gainesville, GA 30503
17-09 Formers, Fillers and Sealers of Single Service Containers for Fluid Milk and Fluid Milk Products

1031 ACMA USA, INC. 501 Southlake Blvd. Richmond, VA 23236 (US Rep.: AUTOPROD Inc. 5355 115th Ave. North Clearwater, FL 33760)

939 BWI KP Aerofill 807 West Kimberly Road Davenport, IA 52808-3848

382 SIG Combibloc, Inc. 4800 Roberts Road Columbus, OH 43228

192 Evergreen Packaging 2400 6th St. S.W., P.O. Box 3000 Cedar Rapids, IA 52406

488 BWI Fords Holmatic, Inc. 1750 Corporate Drive, Suite 700 Norcross, GA 30093

1009 Federal Manufacturing Company 201 West Walker St. Milwaukee, WI 53204-0215

1029 FORMSEAL 1 rue de l'Epee Royale 14700 FALaise France (US Rep.: AUTOPROD INC. 5355-115th Ave. No. Clearwater, FL 33760)

619 Hassia Verpackungsmaschinen GmbH Heerweg 19 D-63691 Rastadt Germany (US Rep.: Hassia USA, Inc. 1210 Campus Drive West Morganville, NJ 07751)

735 Kvalitetsproduktion AB S-693 29 Degerfors, Sweden (US Rep.: Flowtech, Inc. 1900 Lake Park Drive, Suite 345 Smyrna, GA 30080)

330 Miliken Packaging P.O. Box 736 White Stone, SC 29353

442 Miliken Packaging P.O. Box 736 White Stone, SC 29386

137 Elopak, Inc. 30000 South Hill Road New Hudson, MI 48165

941 Oden Corporation 255 Great Arrow Ave. Buffalo, NY 14207-3024

989 PACK LINE, Ltd. 4, Hapatish St. Holon 58815 Israel

1015 ProTherm Engineering Company 3475 W. Shaw Ave., Suite 106 Fresno, CA 93711

281 Purity Packaging Corp. 800 Kaderly Road Columbus, OH 43228

967 RAPAK 20939 Cabot Blvd. Hayward, CA 94545

1001 REMY Equipment 50 Ave. describes Fenots 28109 Droux, France (US Rep.: SIDEL, INC. 5000 Sun Court Norcross, GA 30092)

924 Robert Bosch GmbH P.O. Box 1127 D-71301 Waiblingen, Germany (US Rep.: Robert Bosch Corporation 9890 Red Arrow Hwy Bridgman, MI 49106)

482 Serac, Inc. 300 Westgate Drive Carol Stream, IL 60188

681 Shikoku Kakoki Co., Ltd. No. 10-01 Nishinokawa Tarohachi, Kitajima-Cho Itanogun, Tokushima, Japan (US Rep.: Elopak, Inc. 30000 South Hill Road New Hudson, MI 48165)

220 Tetra Rex, Inc. 451 East Industrial Blvd. Minneapolis, MN 55413

1020 Tetra Rex, Inc. 909 Asbury Drive Buffalo Grove, IL 60089

351 Tetra Pak, Inc. 3300 Airport Road Denton, TX 76207

694 IPFO International, Inc. 275 Fountainebleau Blvd., Suite 247 Miami, FL 33172

19-04 Batch and Continuous Freezers for Ice Cream, Ices, and Similarly Frozen Dairy Foods, as Amended

141 Waukesha Cherry-Burrell P.O. Box 35600 Louisville, KY 40232-5600

146 Waukesha Cherry-Burrell Corp. P.O. Box 35600 Louisville, KY 40232-5600
286 Tetra Pak Hoyer, Inc.
P.O. Box 280
Lake Geneva, WI 53147

355 Emery Thompson Machine & Supply Co.
1349 Inwood Ave.
Bronx, NY 10452

22-07 Silo-type Storage Tanks
for Milk and Milk Products

154 APV Americas – Lake Mills
100 South CP Ave.
Lake Mills, WI 53551

173 DCI, Inc.
P.O. Box 1227, 600 No. 54th Ave.
St. Cloud, MN 56301

312 Feldmeier Equipment, Inc.
6800 Town Line Road
P.O. Box 474
Syracuse, NY 13211

439 JV Northwest, Inc.
390 S. Redwood St.
Canby, OR 97013

155 Paul Mueller Co.
1600 W. Phelps, P.O. Box 828
Springfield, MO 65801

503 Ripley Stainless, Ltd.
RR #3, Suite 41
Summerland, British Columbia V0H 1Z0
Canada

479 Scherping Systems
801 Kingsley St.
Winsted, MN 55395

675 Stainless Fabrication, Inc.
4455 W. Kearney
Springfield, MO 65803

165 Walker Stainless Equipment Co., Inc.
625 State St.
New Lisbon, WI 53950

23-02 Equipment for Packaging
Viscous Dairy Products

174 APV Crepaco
A Division of APV North America, Inc.
100 South CP Ave.
Lake Mills, WI 53551-1799

902 A.T.S. Engineering, Inc.
7270 Torbram Road, Unit 23
Mississauga, Ontario
Canada L4T 3Y7
(US Rep.: L and A Package Sales
356 Millstone Road
Clarksburg, New Jersey 08510
And Packaging Specialist
4500 Greenville Ave.
Dallas, TX 75206)

366 AUTOPROD, Inc.
5355 - 115th Ave. N
Clearwater, FL 33760

96 BENHIL-GASTI Verpack
Ungsmaschinen GmbH
Jagenberstrasse 1
D-41468 Neuss
Germany

965 BENHIL-GASTI Verpack
Ungsmaschinen GmbH
Jagenberstrasse 1
Germany
(US Rep.: Autoprod, Inc.
5355 - 115th Ave. N
Clearwater, FL 34620)

868 Cryovac-Sealed Air Corporation
P.O. Box 464
Duncan, SC 29223-0464

853 Elmar Industries
200 Gould Ave., P.O. Box 245
Buffalo, NY 14043-0245

1030 FORMSEAL
1 rue de l’Epec Royale
14700 Falaise, France
(US Rep.: Autoprod Inc.
5355 115th Ave. North
Clearwater, FL 33760)

674 Hayssen Manufacturing
225 Spartangreen Blvd.
Duncan, SC 29333

447 GEI International, Inc.
700 Pennsylvania Drive
Exton, PA 19341-0439

942 Oden Corporation
255 Great Arrow Ave.
Buffalo, NY 14207-3024

870 Machinery Engineering & Technology LLC
4634 Case Drive, P.O. Box 1467
Janesville, WI 53546

343 Tetra Pak Hoyer, Inc.
P.O. Box 280
Lake Geneva, WI 53147

679 Consolidated Biscuit Co.
312 Rader Road
McComb, OH 45858

635 Interbake Dairy Ingredients Div.
2821 Emerywood Parkway, Suite 210
Richmond, VA 23294

760 Jordan Manufacturing, Inc.
1688 Country Road 192
Crossville, Ala 35962

537 Osgood Industries, Inc.
601 Burbank Road
Oldsmar, FL 34677

990 PACK LINE, Ltd.
4, Hapatish St.
Holon 58815
Israel
(US Rep.: Rabbeco, Inc.
2601 Miles Road
Warrensville Heights, OH 44128)

RapidPak
2530 West Everett St.
Appleton, WI 54914-4958
24-02 Non-Coil-Type Batch Pasteurizers

158 APV Americas – Lake Mills
100 South CP Ave.
Lake Mills, WI 53551-1799

187 DCI, Inc.
P.O. Box 1227, 600 No. 54th Ave.
St. Cloud, MN 56302

166 Paul Mueller Co.
P.O. Box 828
Springfield, MO 65801

1025 Pladot Ein Harod
Kibbutz Ein Harad
Meuhad 18965 Israel
(US Rep.: Robert E. Turner
P.O. Box 4595
Gettysburg, PA 17235-4595)

878 Walker Stainless Equipment
625 State St.
New Lisbon, WI 53950

25-02 Non-Coil-Type Batch Processors
for Milk and Milk Products

159 APV Americas – Lake Mills
100 South CP Ave.
Lake Mills, WI 53551-1799

188 DCI, Inc.
P.O. Box 1227, 600 No. 54th Ave.
St. Cloud, MN 56301

725 Inox-Tech, Inc.
6705 Route 132
Ville Ste-Catherine
Quebec, Canada JOL 1EO
(US Rep.: Michael Ripka, Pres.
Bionex
1261 E. Meridian Ave.
Payallup, WA 98373)

710 Lee Industries, Inc.
514 West Pine St.
Phillipsburg, PA 16866

167 Paul Mueller Co.
P.O. Box 828
Springfield, MO 65801

687 SANIFAB
528 North St.
Stratford, WI 54484

448 Scherping Systems
801 Kingsley St.
Winsted, MN 55395

26-03 Sifters for Dry Milk and Dry Milk Products

752 Andritz Sprout-Bauer
35 Sherman St.
Muncy, PA 17756

363 Kason Corp.
67-71 East Willow St.
Milburn, NJ 07041

430 Midwestern Industries, Inc.
915 Oberlin Road, P.O. 810
Massillon, OH 44648-0810

185 Rotex, Inc.
1230 Knowlton St.
Cincinnati, Ohio 45223

656 Separator Engineering, Ltd.
810 Ellingham St.
Pointe Claire, Quebec, Canada H9R 3S4
(US Rep.: Kason Corp.
1301 E. Linden Ave.
Linden, NJ 07036)

172 Sweco, Inc.
(Division of Emerson Electric Company)
7120 Bufferton Road
Florence, KY 41042

27-04 Equipment for Packaging Dry Milk and Dry Milk Products

352 All-Fill, Inc.
418 Creamery Way
Exton, PA 19341

935 Bossar S.A.
Poligono Industrial Roca
C/. San Marti s/n.
08100 Martorelles
(Barcelona)
Spain
(US Rep.: Hayssen Manufacturing Co.
225 Spartangreen Blvd.
Duncan, SC 29344)

831 Custom Equipment Design
1057 Hwy 80 East, P.O. Box 4807
Monroe, LA 71203

618 Yamato Scale Co., Ltd.
5-22 Saemba-Cho
Akashi, Hyogo 673-8788 Japan
28-03 Flow Meters for Milk and Milk Products

270 ABB Instrumentation, Inc.
125 E. County Line Road
Warminster, PA 18974

272 Accurate Metering Systems, Inc.
1651 Wilkening Court
Schaumburg, IL 60173

253 Badger Meter, Inc.
4545 W. Brown Deer Road
P.O. Box 23099
Milwaukee, WI 53223

884 Bailey-Fischer & Porter GmbH
Dranfeld Strasse, Gottingen 37079
Germany
(US Rep.: Bailey-Fischer & Porter
125 E. County Line Road
Warminster, PA 18974)

956 Blancett Fluid Flow Meters
100 E. Felix St. South, Suite 190
Fort Worth, TX 76115-3548

979 Bopp & Reuther Messtechnik GmbH
Carl-Reuther Strasse 1
D-68305 Mannheim
Germany
(US Rep.: Metron Technology
2005 - 10th St.
Boulder, CO 80302)

359 Brooks Instrument Division
407 W. Vine St.
Hatfield, PA 19440

660 Danfoss A/S
DK-6430
Nordborg, Denmark
(US Rep.: Danfoss Electronics
2995 Eastrock Drive
Rockford, IL 61109)

950 Delta M Corp.
1003 Larsen Drive
Oak Ridge, TN 37830

692 Endress & Hauser Flowtec AG
Kägenstrasse 7
CH - 4153 Reinach, Switzerland
(US Rep.: Endress & Hauser, Inc.
2350 Endress Place
Greenwood, IN 46143)

226 Bailey Fischer & Porter Co.
125 E. County Line Road
Warminster, PA 18974

477 Flowdata, Inc.
1817 Firman Drive
Richardson, TX 75081-1826

506 Flow Technology, Inc.
4250 East Broadway Road
Phoenix, AZ 85040

224 The Foxboro Company
35 Commercial St.
Foxboro, MA 02035

717 Gemu Valves, Inc.
3800 Camp Creek Parkway
Ste. 102 Bldg. 2400
Atlanta, GA 30331

649 Geo Technology Corporation
12312 E. 60th St.
Tulsa, OK 74146

1035 GRUPPO ISOIL S.p.A.
Via F.lli Gracchi 27
20092 Cinsello Balsamo
Milano, Italy
(US Rep.: Liquid Controls, LLC
105 Albrecht Drive
Lake Bluff, IL 60044-2242)

661 Alfa Laval Flow, Inc.
G & H Division
8201 - 10th St., P.O. Box 581909
Pleasant Prairie, WI 53158-0909

630 Halliburton Services
Drawer 1431
Duncan, OK 73523-0346

574 Aaliant
150 Venture Blvd.
P.O. Box 4584
Spartanburg, SC 29305

512 Hoffer Flow Controls, Inc.
107 Kitty Hawk Lane
Elizabeth City, NC 27909-4585
Honeywell IAC  
1100 Virginia Drive  
Fort Washington, PA 19034

Honeywell, Inc.  
1100 Virginia Drive  
Fort Washington, PA 19034-3260

Flow Automation  
9303 Sam Houston Parkway South  
Houston, TX 77099-5298

FMC Invalco, Inc.  
(An FMC Corporation Subsidiary)  
P.O. Box 1183  
Hutchinson, KS 67504

Yokogawa Industrial Automation America Inc.  
4 Dart Road  
Newnan, GA 30265-1040

KOBOOLD Instr. Inc.  
1801 Parkway View Drive  
Pittsburgh, PA 12050

KOBOOLD Instr. Inc.  
1801 Parkway View Drive  
Pittsburgh, PA 12050

KROHNE, Inc.  
7 Dearborn Road  
Peabody, MA 01960

Liquid Controls, LLC  
105 Albrecht Drive  
Lake Bluff, IL 60044-2242

Liquid Controls, LLC  
105 Albrecht Drive  
Lake Bluff, IL 60044-2242

Magnetrol Intl., Inc.  
5300 Belmont Road  
Downers Grove, IL 60515

Micro Motion, Inc.  
7070 Winchester Circle  
Boulder, Colorado 80301

Nitto Seiko Co., Ltd.  
623 Japan, 30  
Nobu-Chô  
Ayabe Shô  
Kyoto

Liquid Controls, LLC  
105 Albrecht Drive  
Lake Bluff, IL 60044-2242

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105 Albrecht Drive  
Lake Bluff, IL 60044-2242

Magnetrol Intl., Inc.  
5300 Belmont Road  
Downers Grove, IL 60515

Micro Motion, Inc.  
7070 Winchester Circle  
Boulder, Colorado 80301

Nitto Seiko Co., Ltd.  
623 Japan, 30  
Nobu-Chô  
Ayabe Shô  
Kyoto

Accurate Metering Systems, Inc.  
1651 Wilkening Court  
Schaumburg, IL 60173

Alfa Laval Flow, Inc.  
G & H Division  
8201 - 104th St., P.O. Box 581909  
Pleasant Prairie, WI 53158-0909

Scheping Systems  
801 Kingsley St.  
Winsted, MN 55395

Krebs Engineers  
5505 West Gillette Road  
Tuscon, AZ 85743

Doiry, Food and Environmental Sanitation - FEBRUARY 2000
32-02 Uninsulated Tanks for Milk and Milk Products

397 APV Americas - Lake Mills
100 South CP Ave.
Lake Mills, WI 53551

268 DCl, Inc.
600 No. 54th Ave., P.O. Box 1227
St. Cloud, MN 56301

708 Lee Industries, Inc.
P.O. Box 688
Phillipsburg, PA 18666

844 Paul Mueller Co.
1600 West Phelps St.
Springfield, Missouri 65801

354 C.E. Rogers Co.
1895 Frontage Road P.O. Box 118
Mora, MN 55051

683 SANIFAB
A Division of A&B Process Systems Corp.
P.O. Box 86
Stratford, WI 54484

441 Scherping Systems
801 Kingsley St.
Winsted, MN 55395

852 Viatec, Inc.
1220 State St.
Hastings, MI 49058

339 Walker Stainless Equip. Co., Inc.
625 State St.
New Lisbon, WI 53950

33-01 Polished Metal Tubing for Dairy Products

310 Allegheny Bradford Corp.
P.O. Box 200 Route 219 South
Bradford, PA 16701

812 A.T.I. s.r.l.
Viale Resegone 7
22036 Erba (Como)
Italy

964 Schroder Gmbh & Co. KG
Falkenstr. 51-57
D-23564, Lubeck
Germany

(US Rep.: Schroder N.A. Corp.
12780 Westlinks Drive
Fort Myers, FL 33913)

361 Terlet N.V.
P.O. Box 62
7200 AB Zutphen
Netherlands
(US Agent Manning & Lewis-NJ)

368 Rodger Industries Inc.
P.O. Box 186, R.R. 1
Blenheim, Ontario
Canada NOP 1A0

776 TGPRO
Bangkok, Thailand
(US Rep.: Kurt Orban Partners
Kurt Orban
450 Kings Road
Brisbane, CA 94005)

869 ADMIX, Inc.
234 Abby Road
Manchester, NH 03103-3332

527 Arde Barinco, Inc.
500 Walnut St.
Norwood, NJ 07648

590 Chemineer, Inc.
125 Flagship Drive
North Andover, MA 01845

813 FMC Corp.
Fran Rica Systems
P.O. Box 30127
Stockton, CA 95213-0127

365 Terlet N.V.
P.O. Box 62
7200 AB Zutphen
Netherlands
(US Agent Manning & Lewis-NJ)

736 Kvalitetsproduktion AB
S-693 29 Degerfors, Sweden
(US Rep.: Flowtech, Inc.
1900 Lake Park Drive, Ste. 345
Smyrna, GA 30080)

308 Rath Manufacturing Co., Inc.
2505 Foster Ave.
Janesville, WI 53545

368 Rodger Industries Inc.
P.O. Box 186, R.R. 1
Blenheim, Ontario
Canada NOP 1A0

34-02 Portable Bins

916 Custom Metalcraft, Inc.
2332 East Division
P.O. Box 10587 GS
Springfield, MO 65808

647 Thomas Conveyor Company
Tote System Division
P.O. Box 2916
Fort Worth, TX 76113-2916

869 ADMIX, Inc.
234 Abby Road
Manchester, NH 03103-3332

527 Arde Barinco, Inc.
500 Walnut St.
Norwood, NJ 07648

590 Chemineer, Inc.
125 Flagship Drive
North Andover, MA 01845

417 Waukesha Cherry-Burrell
Process Equipment Division
P.O. Box 35600
Louisville, KY 40232-5600

825 GEI International, Inc.
700 Pennsylvania Drive
Exton, PA 19341
914 International Mixing Tech. S.a.r.l.
469 Ave. Louis Herbeaux
F-59240 Dunkerque
France
(US Rep.: I.M.T. USA
6946 Paseo Laredo
San Diego, CA 92037)
642 Mondomix B.V.
Reeweg 13
P.O. Box 98
1394 ZH Nederhorst den Berg
The Netherlands
(US Rep.: Mondomix
1 West IL St., Suite 300
St. Charles, IL 60174)
1027 Polar Process Inc.
P.O. Box 190
92 Albert St. E.
Plattsville, Ontario, Canada J0J 1S0
680 Quadro Engineering, Inc.
613 Colby Drive
Waterloo, Ontario, Canada J2V 1A1
(US Rep.: Quadro, Inc.
55 Bleeker St.
Milburn, NJ 07041-1414)
766 Semi-Bulk
159 Cassens Court
Fenton, MO 63026-2543
724 Silverson Machines, Inc.
P.O. Box 589
355 Chestnut St.
E. Longmeadow, MA 01028

36-00 Colloid Mills
808 Boston Shearpump, Inc.
170 Linden St.
Wellesley, MA 02181-7919
846 IKA Works, Inc.
2635 North Chase Parkway, S.E.
Wilmington, NC 28405-7499
915 IKA Works, Inc.
2635 North Chase Parkway, S.E.
Wilmington, NC 28405-7499
608 Kinematica, Inc.
19 Normandy Road
Newton, MA 02166
293 Waukesha Cherry-Burrell
611 Sugar Creek Road
Delavan, WI 53115

38-00 Cottage Cheese Vats
541 Kusel Equipment Co.
820 West St.
Watertown, WI 53094
385 Stoelting, Inc.
502 Hwy 67
Kiel, WI 53042-1600

40-01 Bag Collectors for Dry Milk
and Dry Milk Products
381 Marriott Walker Corp.
925 E. Maple Road
Birmingham, MI 48809
456 C.E. Rogers Co.
P.O. Box 118
Mora, MN 55051

41-01 Mechanical Conveyors
631 Flexicon Corp
1375 Strykers Road
Phillipsburg, NJ 08865
894 Spiroflow-Orthos Systems, Inc.
2806 Gray Fox Road
Monroe, NC 28110

42-01 In-Line Strainers
855 Flowtech Inc.
1701 Spincks Drive S.E.
Marietta, GA 30067-8925
655 Tri-Clover, Inc.
P.O. Box 1413
Kenosha, WI 53141-1413
1023 Ultrafilter, Inc.
3560 Engineering Drive
Norcross, GA 30092
606 Waukesha Cherry-Burrell
611 Sugar Creek Road
Delavan, WI 53115

44-02 Air Hydraulically or Mechanically Driven
Diaphragm Pumps
958 American LEWA, Inc.
132 Hopping Brook Road
Holliston, MA 01746-1499
959 American LEWA, Inc.
132 Hopping Brook Road
Holliston, MA 01746-1499
937 Versa-Matic Pump Co.
6017 Enterprise Drive
Export, PA 15632-8969
1012 Versa-Matic Pump Co.
6017 Enterprise Drive
Export, PA 15632-8969
713 Warren Rupp, Inc., A Unit of IDEXX Corp.
800 North Main St.
P.O. Box 1568
Mansfield, OH 44905
833 Wilden Pump & Engineering Com
22069 Van Buren St.
Grand Terrace, CA 92313-5651
805 Tri-Clover
P.O. Box 1413
Kenosha, WI 53141-1413
45-00 Cross Flow Membrane Modules
807 CeraMem Separations
20 Clematis Ave.
Waltham, MA 02154
786 North Carolina SRT, Inc.
221 James Jackson Ave.
Cary, NC 27513

46-01 Refractometers and Optical Sensors
981 AW Company
8809 Industrial Drive
Franksville, WI 53126-9337
785 Bran & Lubbe, Inc.
1025 Busch Parkway
Buffalo Grove, IL 60089
955 Brimrose Corp. of America
5020 Campbell Blvd.
Baltimore, MD 21236-4968
859 The Electron Machine Corp.
15820 CR 450 West
P.O. Box 2345
Umatilla, FL 32784
800 Epsilon Industrial Inc.
2215 Grand Ave. Parkway
Austin, TX 78728
783 James C. Camp
dba Advantec Process Systems
95 Wyngate Drive
Newnan, GA 30265
940 K-Patents OY
P.O. Box 77
Fin-01511
Vantaa, Finland
(US Rep.: K-Patents, Inc.
1804 Centre Pointe Circle, Suite 106
Naperville, IL 60563
697 Liquid Solids Control, Inc.
P.O. Box 259
Farm St.
Upton, MA 01568
751 Maselli Measurements, Inc.
Via Baganza, 43100
Parma, Italy
(US Rep.: Maselli Measurements, Inc.
P.O. Box 7571
Stockton, CA 95267
921 optek-Danulat Inc.
279 South 17th Ave., Suite 10
West Bend, WI 53095
767 Foss NIR Systems, Inc.
12101 Tech Road
Silver Spring, MD 20904
750 PT Papertech, Inc.
#301 - 2609 Westview Drive
North Vancouver
B. C. Canada V7N 4M2
(US Rep.: BD Services Corp.
300 North Commercial St.
Bellingham, WA 98227

919 Foss NIR Systems, Inc.
12101 Tech Road
Silver Spring, MD 20904
742 Reflectronics, Inc.
3009 Montavesta Road
Lexington, KY 40502

47-00 Pumps for Cleaning and Sanitizing Solutions
897 Ampco Pumps Co.
4000 West Burnham St.
Milwaukee, WI 53215

50-00 Level Sensing Devices
705 Bindicator Co.
1915 Dove St.
Port Huron, MI 48060

51-00 (Formerly 08-17R) Plug-Type Valves
787 Cipriani, Inc.
Tassalini S.P.A
23195 LaCadina Drive, Suite 103
Laguna Hills, CA 92653
772 Alfa Laval Flow, Inc.
G & H Division
8201 - 104th St., P.O. Box 581909
Pleasant Prairie, WI 53158-0909
780 L.C. Thomsen, Inc.
1303 - 43rd St.
Kenosha, WI 53140
239 LUMACO
9 - 11 East Broadway
Hackensack, NJ 07601
788 Puriti, S.A. De C.V.
Alfredo Nobel No. 39
Fracc. Inc. Pte. De Vigas
Tlanepanaha, MX
(US Rep.: Waukesha Cherry-Burrell
611 Sugar Creek Road
Delavan, WI 53115
781 Robert James Sales, Inc.
699 Hertel Ave., Suite 260
Buffalo, NY 14207
357 Tanaco Products
3860 Loomis Trail Road
Blaine, WA 98230
777 Tech Control Ent.
3725 N. Murray Road
Otis Orchard, WA 99027
790 Tri-Clover, Inc.
P.O. Box 1413
Kenosha, WI 53141-1413
759 VNE Corp.
1149 Barbary Drive
Janesville, WI 53545

FEBRUARY 2000 – Dairy, Food and Environmental Sanitation 155
<table>
<thead>
<tr>
<th>Code</th>
<th>Company Name</th>
<th>Address</th>
<th>City, State, Zip Code</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>761</td>
<td>Waukesha Cherry-Burrell</td>
<td>611 Sugar Creek Road</td>
<td>Delavan, WI 53115</td>
<td></td>
</tr>
<tr>
<td>907</td>
<td>LAUFER International AG</td>
<td>Finkenweg 2</td>
<td>D-88709 Meersburg, Germany</td>
<td>(US Rep.: M. G. Newell Corporation 115 N. 20th St. Tampa, FL 66505)</td>
</tr>
<tr>
<td>577</td>
<td>Ralet-Defay</td>
<td>66, Blvd. Poincare</td>
<td>1070 Brussels, Belgium</td>
<td>(US Agent GENICANAN, Chazy, NY)</td>
</tr>
<tr>
<td>484</td>
<td>APV Americas - Lake Mills</td>
<td>100 South CP Ave.</td>
<td>Lake Mills, WI 53551-1799</td>
<td></td>
</tr>
<tr>
<td>952</td>
<td>APV Fluid Handling-America</td>
<td>100 South CP Ave.</td>
<td>Lake Mills, WI 53551-1799</td>
<td></td>
</tr>
<tr>
<td>730</td>
<td>APV Americas - Lake Mills</td>
<td>100 South CP Ave.</td>
<td>Lake Mills, WI 53551-1799</td>
<td></td>
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<tr>
<td>552</td>
<td>APV Americas - Lake Mills</td>
<td>100 South CP Ave.</td>
<td>Lake Mills, WI 53551-1799</td>
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<tr>
<td>245</td>
<td>Babson Brothers Co. Dairy System Division</td>
<td>P.O. Box 659</td>
<td>20903 West Gale Ave.</td>
<td>Galesville, WI 54630</td>
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<tr>
<td>443</td>
<td>Badger Meter, Inc.</td>
<td>6116 East 15th St.</td>
<td>Tulsa, OK 74112</td>
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<tr>
<td>686</td>
<td>Bardiani Valvole S.R.L. Via G. Vittorio, 30/B</td>
<td>43045 Fornovo (PR) Italy</td>
<td>(US Rep.: Sancho Int. 1763 Northwest 93rd Ave. Miami, FL 33172)</td>
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<tr>
<td>1010</td>
<td>Candigра/CIA, S.A. c/Telers, 54-Aptdo 174</td>
<td>17820 Banyoles, Spain</td>
<td>(Not available in the USA)</td>
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<tr>
<td>538</td>
<td>Cipriani, Inc.-Tassalina S.P.A. 23195 La Cadena Dr., Suite 103</td>
<td>Laguna Hills, CA 92653</td>
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<td>716</td>
<td>Conexiones Inoxdables</td>
<td>de Puebla S.A.de C.V.</td>
<td>Vincente Guerrero No. 211 Xicotencpec de Juarez Edo, Puebla Mexico</td>
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<td>376</td>
<td>52-01 (Formerly 08-17H) Thermoplastic Plug Type Valves</td>
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<td>530</td>
<td>Alfa Laval Flow, Inc. G &amp; H Division</td>
<td>8201 - 104th St., P.O. Box 581909 Pleasant Prairie, WI 53158-0909</td>
<td></td>
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<tr>
<td>607</td>
<td>FLOWSERVE Corporation</td>
<td>510 Parkway View Dr. Pittsburgh, PA 15205-1410</td>
<td></td>
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<tr>
<td>570</td>
<td>LUMACO</td>
<td>9-11 East Broadway</td>
<td>Hackensack, NJ 07601</td>
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<tr>
<td>881</td>
<td>MTX Milichtechnik AG</td>
<td>Saint Galler Strasse 19 SH-9042 Speicher AR Switzerland</td>
<td>(US Rep.: Mr. James Lucas Lucas &amp; Associates 642 Alvarado St., #306 San Francisco, CA 94114)</td>
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<tr>
<td>551</td>
<td>Puriti, S.A. de C.V. Alfredo Nobel 39 Fracc. Inc. Puente de Vigas Tlalnepantla, Mexico</td>
<td>(Not available in the USA)</td>
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<tr>
<td>581</td>
<td>Pierre Guerin SA BP.12-79210 Mauze-Sur-Le-Mignon France</td>
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<td>149R</td>
<td>53-01 (Formerly 08-17A) Compression Type Valves</td>
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<td>149R</td>
<td>Q-Controls Subsidiary of Cesco Magnetics 93 Utility Court</td>
<td>Rohnert Park, CA 94928</td>
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<td>978</td>
<td>Relco Unisystems Corp. 2281 · 3rd Ave. S.W., P.O. Box 1689</td>
<td>Willmar, MN 56201</td>
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<tr>
<td>748</td>
<td>Richards Industries Valve Group 3170 Wasson Road</td>
<td>Cincinnati, OH 45209-2381</td>
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<tr>
<td>944</td>
<td>Samson Controls, Inc. 4111 Cedar Blvd.</td>
<td>Baytown, TX 77520</td>
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<td>762</td>
<td>Stainless Products, Inc. 1649 - 72nd Ave.</td>
<td>Somers, WI 53171-0169</td>
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<td>Page</td>
<td>Company Name</td>
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<td>806</td>
<td>Steri Technologies, Inc.</td>
<td>857 Lincoln Ave. Bohemia, NY 11716</td>
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<td>804</td>
<td>Sudmo North America, Inc.</td>
<td>6918 Forest Hills Road Rockford, IL 61111</td>
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<tr>
<td>823</td>
<td>Sudmo North America, Inc.</td>
<td>6918 Forest Hills Road Rockford, IL 61111</td>
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<td>954</td>
<td>Taylor Valve Technology</td>
<td>8300 S.W. 8th St. Oklahoma City, OK 73128</td>
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<tr>
<td>542</td>
<td>L.C. Thomsen, Inc.</td>
<td>1303 - 43rd St. Kenosha, WI 53140</td>
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<tr>
<td>34A</td>
<td>Tri-Clover, Inc.</td>
<td>P.O. Box 1413 Kenosha, WI 53141-1413</td>
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<tr>
<td>467</td>
<td>Tuchenhagen North America, Inc.</td>
<td>9165 Rumsey Road Columbia, MD 21045</td>
<td></td>
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<tr>
<td>1008</td>
<td>UNIVALVE S.A.</td>
<td>Z.A. du Mittelfeld 1, rue Alfred Kastler F67300 Schiltigheim, France (Not available in the USA)</td>
<td></td>
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<tr>
<td>561</td>
<td>VACU-PURG, Inc.</td>
<td>214 West Main St. P.O. Box 159 Fredericksburg, IA 50630</td>
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<tr>
<td>584</td>
<td>Valvinox, Inc.-SGRM Division</td>
<td>650 lere Rue. Iberville-QUE-Canada J2X 3B8</td>
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<tr>
<td>796</td>
<td>VNE Corp.</td>
<td>1149 Barberry Drive Janesville, WI 53547</td>
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<td>555</td>
<td>Waukesha Cherry-Burrell</td>
<td>611 Sugar Creek Road Delavan, WI 53115</td>
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<td>54-02</td>
<td>(Formerly 08-17B) Diaphragm-Type Valves</td>
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<td>565</td>
<td>APV Americas - Lake Mills</td>
<td>100 South CP Ave. Lake Mills, WI 53551-1799</td>
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<td>877</td>
<td>APV Americas - Lake Mills</td>
<td>100 South CP Ave. Lake Mills, WI 53551-1799</td>
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<tr>
<td>980</td>
<td>APV Americas - Lake Mills</td>
<td>100 South CP Ave. Lake Mills, WI 53551-1799</td>
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<tr>
<td>615</td>
<td>AsepCo</td>
<td>1101 San Antonio Road, #301 Mountain View, CA 94043</td>
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<td>814</td>
<td>Burkert Contromatic Corp.</td>
<td>2602 McGaw Ave. Irvine, CA 92714</td>
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<td>953</td>
<td>Burkert Contromatic Corp.</td>
<td>2602 McGaw Ave. Irvine, CA 92714</td>
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<td>745</td>
<td>Cashco, Inc.</td>
<td>P.O. Box 6, Hwy. 140 West Elsworth, KS 67439-006</td>
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<tr>
<td>617</td>
<td>Defontaine of America, Inc.</td>
<td>16720 W. Victor Road New Berlin, WI 53151</td>
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<tr>
<td>856</td>
<td>Flowtech, Inc.</td>
<td>1900 Lake Park Drive, #345 Smyrna, GA 30080</td>
<td></td>
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<tr>
<td>637</td>
<td>Genu Valves, Inc.</td>
<td>3800 Camp Creek Parkway Bldg 2600, Suite 110 Atlanta, GA 30331</td>
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<tr>
<td>514</td>
<td>H.D. Bauman Inc.</td>
<td>35 Mirona Road Portsmouth, NH 03801-5317</td>
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<tr>
<td>203R</td>
<td>ITT Engineered Valves</td>
<td>33 Centerville Road Lancaster, PA 17603-2064</td>
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<tr>
<td>494</td>
<td>Tri Clover Inc.</td>
<td>Division of Alfa Laval P.O. Box 1413 Kenosha, WI 53141-1413</td>
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<tr>
<td>55-01</td>
<td>Boot Seal Valves for Milk &amp; Milk Products</td>
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<tr>
<td>821</td>
<td>Keofitt A/S</td>
<td>Snaremosvej 27 Fredericia Denmark (SU Rep.: Keofitt, Inc. c/o Leman 2920-3000 Wolff St. Racine, WI 53404)</td>
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<tr>
<td>56-00</td>
<td>(Formerly 08-17E) Inlet and Outlet Leak-Protector Plug Valve</td>
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<tr>
<td>34E</td>
<td>Tri-Clover, Inc.</td>
<td>P.O. Box 1413 Kenosha, WI 53141-1413</td>
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<tr>
<td>57-01</td>
<td>(Formerly 08-17F) Tank Outlet Valve</td>
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<tr>
<td>531</td>
<td>Alfa Laval Flow, Inc.</td>
<td>G &amp; H Division 8201 - 104th St., P.O. Box 581909 Pleasant Prairie, WI 53158-0909</td>
<td></td>
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<tr>
<td>534</td>
<td>Lumaco</td>
<td>9-11 East Broadway Hackensack, NJ 07601</td>
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<tr>
<td>643</td>
<td>Paul Mueller Co.</td>
<td>1600 West Phelps Springfield, MO 65801</td>
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</table>
58-00 (Formerly 08-17M) Vacuum Breakers and Check Valves

843 APV Americas-Lake Mills
100 South CP Ave.
Lake Mills, WI 53551

968 SINMAG FITTING CORP.
6F, No. 23, Wu-Chuang 6th Road
Wu-Ku Hsiang
Taipei Hsien, Taiwan
(US Rep.: MarketNet
2241 Quebec Ave. S.
St. Louis Park, MN 55426)

59-00 (Formerly 08-17D) Automatic Positive Displacement Sampler

291 Accurate Metering Systems Inc.
1650 Wilkening Court
Schaumburg, IL 60173

60-00 (Formerly 08-17G) Rupture Discs

407 Continental Disc Corp.
3160 W. Heartland Drive
Liberty, MO 64068

843 APV Americas-Lake Mills
100 South CP Ave.
Lake Mills, WI 53551

986 CME
No. 21, Alley 6, Lane 71
Lin-Sen Rd.
Taoyuan, Taiwan
(US Rep.: Bradford Cast Metals
P.O. Box 33
Elm Grove, WI 53122)

968 SINMAG FITTING CORP.
6F, No. 23, Wu-Chuang 6th Road
Wu-Ku Hsiang
Taipei Hsien, Taiwan
(US Rep.: MarketNet
2241 Quebec Ave. S.
St. Louis Park, MN 55426)

59-00 (Formerly 08-17D) Automatic Positive Displacement Sampler

291 Accurate Metering Systems Inc.
1650 Wilkening Court
Schaumburg, IL 60173

60-00 (Formerly 08-17G) Rupture Discs

407 Continental Disc Corp.
3160 W. Heartland Drive
Liberty, MO 64068

854 Fike Metal Prod.
Div. Fike Corp.
704 South 10th St.
Blue Springs, MO 64015

858 Fike Metal Prod.
Div. Fike Corp.
704 South 10th St.
Blue Springs, MO 64015

991 Komax Systems, Inc.
508 East E St.
Wilmington, CA 90744

874 Q-Jet DSL, Inc.
704 Powell Lane, P.O. Box 350
Lewiston, NY 14092-350

560 Pick Heaters, Inc.
P.O. Box 516
West Bend, WI 53095

874 Q-Jet DSL, Inc.
704 Powell Lane, P.O. Box 350
Lewiston, NY 14092-350

560 Pick Heaters, Inc.
P.O. Box 516
West Bend, WI 53095

874 Q-Jet DSL, Inc.
704 Powell Lane, P.O. Box 350
Lewiston, NY 14092-350

61-00 (Formerly 08-17I) Steam Injected Heaters

728 APV Americas
Heat Transfer Division
395 Fillmore Ave.
Tonawanda, NY 14150

1014 Check-All Valve Manufacturing Co.
1800 Fuller Road
Des Moines, IA 50265

728 APV Americas
Heat Transfer Division
395 Fillmore Ave.
Tonawanda, NY 14150

811 Hydro-Thermal Corporation
400 Pilot Court
Waukesha, WI 53188

913 JGB Enterprises, Inc.
115 Metropolitan Drive
Liverpool, NY 13088

811 Hydro-Thermal Corporation
400 Pilot Court
Waukesha, WI 53188

913 JGB Enterprises, Inc.
115 Metropolitan Drive
Liverpool, NY 13088

62-01 (Formerly 08-17L) Hose Assemblies

795 Able Hose & Rubber, Inc.
2307 E. Hennepin Ave.
Minneapolis, MN 55413

758 Crouch Supply Co.
P.O. Box 1413
Elm Grove, WI 53122

795 Able Hose & Rubber, Inc.
2307 E. Hennepin Ave.
Minneapolis, MN 55413

758 Crouch Supply Co.
P.O. Box 1413
Elm Grove, WI 53122

913 JGB Enterprises, Inc.
115 Metropolitan Drive
Liverpool, NY 13088

721 Dixon Valve & Coupling Co.
800 High St.
Chesterstown, MD 21620-1196

913 JGB Enterprises, Inc.
115 Metropolitan Drive
Liverpool, NY 13088

721 Dixon Valve & Coupling Co.
800 High St.
Chesterstown, MD 21620-1196

913 JGB Enterprises, Inc.
115 Metropolitan Drive
Liverpool, NY 13088

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800 High St.
Chesterstown, MD 21620-1196

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115 Metropolitan Drive
Liverpool, NY 13088

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800 High St.
Chesterstown, MD 21620-1196

913 JGB Enterprises, Inc.
115 Metropolitan Drive
Liverpool, NY 13088

721 Dixon Valve & Coupling Co.
800 High St.
Chesterstown, MD 21620-1196

913 JGB Enterprises, Inc.
115 Metropolitan Drive
Liverpool, NY 13088
<table>
<thead>
<tr>
<th>Company Name</th>
<th>Address</th>
<th>City, State, Zip</th>
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<tbody>
<tr>
<td>Sanitary Couplers, Inc.</td>
<td>275 South Pioneer Blvd.</td>
<td>Springsboro, OH 45066</td>
</tr>
<tr>
<td>Titan Industries, Inc.</td>
<td>P.O. Box 1007</td>
<td>11121 Garfield Ave. South Gate, CA 90280-7590</td>
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<tr>
<td>63-02 (Formerly 08-17R) Sanitary Fittings</td>
<td>1018 Advance Fittings Corporation 218 West Centralia St. Elkhorn, WI 53121</td>
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<tr>
<td>Allegheny Bradford Corp.</td>
<td>P.O. Box 200 Route 219 South Bradford, PA 16701</td>
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<tr>
<td>APV Americas - Lake Mills</td>
<td>100 South CP Ave.</td>
<td>Lake Mills, WI 53551-1799</td>
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<tr>
<td>Andron Stainless, Ltd.</td>
<td>6170 Tomken Road Mississauga, Ontario Canada 51T 1X7</td>
<td>(US Rep.: Andron Stainless Corp. 8901 Farrow Road, #101 Columbia, SC 29223)</td>
</tr>
<tr>
<td>APN, Inc.</td>
<td>921 Industry Road</td>
<td>Caledonia, MN 55921</td>
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<tr>
<td>APV Americas - Lake Mills</td>
<td>100 South CP Ave.</td>
<td>Lake Mills, WI 53551-1799</td>
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<tr>
<td>ARMATURENWERK</td>
<td>HOTENSLEBEN GmbH</td>
<td>39393 Holensleben Germany (US Rep.: VNE Corporation 1149 Barberry Drive Janesville, WI 53547)</td>
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<tr>
<td>CIVACON</td>
<td>416 E. Alondra Blvd.</td>
<td>Gardena, CA 90248</td>
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<tr>
<td>CIVACON</td>
<td>416 E. Alondra Blvd.</td>
<td>Gardena, CA 90248</td>
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<tr>
<td>Andron Stainless, Ltd.</td>
<td>6170 Tomken Road Mississauga, Ontario Canada 51T 1X7</td>
<td>(US Rep.: Andron Stainless Corp. 8901 Farrow Road, #101 Columbia, SC 29223)</td>
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<tr>
<td>APN, Inc.</td>
<td>921 Industry Road</td>
<td>Caledonia, MN 55921</td>
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<td>APV Americas - Lake Mills</td>
<td>100 South CP Ave.</td>
<td>Lake Mills, WI 53551-1799</td>
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<tr>
<td>ARMATURENWERK</td>
<td>HOTENSLEBEN GmbH</td>
<td>39393 Holensleben Germany (US Rep.: VNE Corporation 1149 Barberry Drive Janesville, WI 53547)</td>
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<tr>
<td>CIVACON</td>
<td>416 E. Alondra Blvd.</td>
<td>Gardena, CA 90248</td>
</tr>
<tr>
<td>Andron Stainless, Ltd.</td>
<td>6170 Tomken Road Mississauga, Ontario Canada 51T 1X7</td>
<td>(US Rep.: Andron Stainless Corp. 8901 Farrow Road, #101 Columbia, SC 29223)</td>
</tr>
<tr>
<td>APN, Inc.</td>
<td>921 Industry Road</td>
<td>Caledonia, MN 55921</td>
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<tr>
<td>APV Americas - Lake Mills</td>
<td>100 South CP Ave.</td>
<td>Lake Mills, WI 53551-1799</td>
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<td>CIVACON</td>
<td>416 E. Alondra Blvd.</td>
<td>Gardena, CA 90248</td>
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**FEBRUARY 2000 – Dairy, Food and Environmental Sanitation 159**
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<thead>
<tr>
<th>Company Name</th>
<th>Address</th>
<th>City, State, ZIP</th>
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<tbody>
<tr>
<td>Herrli AG</td>
<td>3210 Kerzers, Switzerland</td>
<td>Switzerland</td>
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<tr>
<td>(US Rep.: VNE Corp.</td>
<td>P.O. Box 1698</td>
<td>Janesville, WI 53547)</td>
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<td>Irving Polishing &amp; Mfg., Co., Inc.</td>
<td>5704 46th St.</td>
<td>Kenosha, WI 53144-1899</td>
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<td>Jensen Fittings Corp.</td>
<td>107-111 Goundry St. North Tonawanda, NY 14120-5998</td>
<td>North Tonawanda</td>
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<tr>
<td>King Lai International Co., Ltd.</td>
<td>No. 10, The 6th St.  Youth Industrial Zone</td>
<td>Tachia, Taichung</td>
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<tr>
<td>(Not Available in the USA)</td>
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<td>Taiwan ROC</td>
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<tr>
<td>Lee Industries, Inc.</td>
<td>P.O. Box 688</td>
<td>Philipsburg, PA 16866</td>
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<tr>
<td>Parker Hannifin Corp.</td>
<td>UHP Products Division 1005 A Cleaner Way Huntsville, AL 35805</td>
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<tr>
<td>Puriti, S.a.de C.V.</td>
<td>Alfredo Nobel 39 Industrial Puente de Vagas Tihapantla, Mexico</td>
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<td>Robert James Sales, Inc.</td>
<td>699 Hertel Ave., Suite 260</td>
<td>Buffalo, NY 14207</td>
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<tr>
<td>Rodger Industries, Inc.</td>
<td>P.O. Box 186</td>
<td>Blenheim, Ontario</td>
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<td>(US Rep.: Waukesha Cherry-Burrell 611 Sugar Creek Road Delavan, WI 53115)</td>
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<tr>
<td>(US Rep.: Steve Byskosh 500 Berwick Court Schaumburg, IL 60193)</td>
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<tr>
<td>(US Rep.: Westfalia Dairy Systems, Inc. 1862 Brummel Drive Elk Grove, IL 60007)</td>
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<tr>
<td>64-00 (Formerly 08-17N) Pressure Reducing and Back Pressure Regulating Valve</td>
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<tr>
<td>CASHCO, Inc.</td>
<td>P.O. Box 6</td>
<td>Ellsworth, KS 67439-0006</td>
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<tr>
<td>Alfa Laval Flow, Inc.</td>
<td>G &amp; H Division 8201 · 104th St., Box 581909</td>
<td>Pleasant Prairie</td>
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<tr>
<td>Richards Industries Valve Group</td>
<td>3170 Wasson Road</td>
<td>Cincinnati, OH 45209-2381</td>
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</tbody>
</table>
65-00 Sight &/or Light Windows & Sight Indications and Back Pressure Regulating Valve

1. Jacoby TarBox Division of Clark Reliance Corp.
   16633 Foltz Industrial Parkway
   Strongsville, OH 44136

2. J.M. Canty, Inc.
   6100 Donne Road
   Lockport, NY 14096

3. Darrell A. Beer
   d.b.a. SHAE Industries
   P.O. Box 1268
   121 W. North St.
   Healdsburg, CA 95448

4. L.J. Star Inc.
   P.O. Box 1116
   2201 Pinnacle Parkway
   Twinsburg, OH 44087

5. Moisture Systems
   117 South St.
   Hopkinton, MA 01748

6. SINMAG FITTING CORP.
   6F, No. 23, Wu-Chuang 6th Road
   Wu-Ku Hsiang
   Taipei Hsien, Taiwan
   (US Rep.: MarketNet
   2241 Quebec Ave. S.
   St. Louis Park, MN 55426)

7. Steel & O’Brien Mfg., Inc.
   12850 Rt 39
   Sardinia, NY 14134

8. Tri-Clover, Inc.
   P.O. Box 1413
   Kenosha, WI 53141-1413

68-00 Ball-Type Valves

1. Bowlswich USA, Inc.
   6580 Valley Center Drive
   Radford, VA 24141

2. Bradford Castmetals, Inc.
   P.O. Box 33
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3. Fluid Transfer
   Division of Lees Ind., Inc.
   514 W. Pine St.
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4. LUMACO
   9-10 East Broadway
   Hackensack, NJ 07601

73-00 Shear Mixers, Mixers and Agitators

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   234 Abby Road
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74-00 Sensors and Sensor Fittings and Connections

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   125 E. County Line Road
   Warminster, PA 18974

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   125 E. County Line Road
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3. Alloy Engineering Co., Inc.
   304 Seaview Ave.
   Bridport, CT 06607

4. Ametek Test and Calibration Instruments Division
   8600 Somerset Drive
   Largo, FL 34643

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   820 Pennsylvania Blvd.
   Feasterville, PA 19053

6. Anderson Instrument Co., Inc.
   156 Auriesville Road
   Fultonville, NY 12072

7. ARI Industries, Inc.
   381 ARI Court
   Addison, IL 60101

8. Bindicator Co.
   1915 Dove St.
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10. BOURDON - SEDEME S.A.
    125, rue de la Marre
    B.Pb 214 41103
    Vendome Cedex
    France
    (US Rep.: Rawson & Co., Inc.
    P.O. Box 924288
    Houston, TX 77292-4288

    11 Commerce Blvd.
    Middleboro, MA 02346

12. Brooks Instrument Division
    407 W. Vine St.
    Hatfield, PA 19440

    10201 Bren Road, East
    Minnetonka, MN 55343

    600 S. Sunset, Unit D
    Longmont, CO 80501

15. CEMCO Mfg., Inc.
    1120 North Parma
    Tulsa, OK 74106-4904
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<td>Tuchenhagen North America, Inc.</td>
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<td>Rosemount, Inc.</td>
<td>12001 Technology Drive Eden Prairie, MN 55344</td>
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<td>SensorTec, Inc.</td>
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<td>Valmet Automation</td>
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<td>Wahl Instruments, Inc.</td>
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<td>Tri-Clover, Inc.</td>
<td>P.O. Box 1413 Kenosha, WI 53141-1413</td>
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Phone: 800.369.6337; 515.276.3344
Fax: 515.276.8655
Mail: 6200 Aurora Avenue, Suite 200W, Des Moines, IA 50322-2863
Web site: www.foodprotection.org

The early registration deadline is June 30, 2000. After June 30, late registration fees are in effect. Registration materials may be picked up on site at the Hilton Atlanta and Towers.

Refund/Cancellation Policy
Registration fees, less a $50 administration fee and any applicable bank charges, will be refunded for written cancellations received by July 14, 2000. No refunds will be made after July 14; however, the registration may be transferred to a colleague with written notification. Refunds will be processed after August 14, 2000. Additional tickets purchased are nonrefundable.

Exhibit Hours
Sunday, August 6, 2000 — 8:00 p.m. - 10:00 p.m.
Monday, August 7, 2000 — 9:30 a.m. - 1:30 p.m.
3:00 p.m. - 6:30 p.m.
Tuesday, August 8, 2000 — 9:30 a.m. - 1:30 p.m.
Attendee Registration Form  
August 6-9, 2000, Atlanta, Georgia

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| Title |
| Employer |
| Mailing Address (Please specify: ☐ Home ☐ Work) |
| City |
| State/Province |
| Country |
| Postal/Zip Code |
| Telephone |
| Fax |
| E-mail |
| First time attending meeting ☐ |
| Member since: ____________________ |
| ☐ Regarding the ADA, please attach a brief description of special requirements you may have. |

REGISTER BY JUNE 30, 2000 TO AVOID LATE REGISTRATION FEES

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<th>NONMEMBERS</th>
<th>TOTAL</th>
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<tr>
<td>Registration (Awards Banquet included)</td>
<td>$ 260 ($310 late)</td>
<td>$395 ($445 late)</td>
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<tr>
<td>Association Student Member*</td>
<td>$ 45 ($ 55 late)</td>
<td>Not Available</td>
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</tr>
<tr>
<td>Retired Association Member*</td>
<td>$ 45 ($ 55 late)</td>
<td>Not Available</td>
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<tr>
<td>One Day Registration: ☐ Mon. ☐ Tues. ☐ Wed.</td>
<td>$ 145 ($170 late)</td>
<td>$200 ($225 late)</td>
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<td>Spouse/Companion (Name): ____________________</td>
<td>$ 40 ($ 40 late)</td>
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<tr>
<td>Children 15 &amp; Over (Names): ____________________</td>
<td>$ 25 ($ 25 late)</td>
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<tr>
<td>Children 14 &amp; Under (Names): ____________________</td>
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* Awards Banquet not included

EVENTS:
- Golf Tournament (Sunday, 8/6) | $ 90 ($105 late) | # OF TICKETS |       |
- Student Luncheon (Sunday, 8/6) | $ 5 ($ 10 late) | |       |
- Monday Night Social, Fernbank Museum (Monday, 8/7) | $ 39 ($ 44 late) | |       |
- Dinner at Stately Oaks (Tuesday, 8/8) | $ 34 ($ 39 late) | |       |
- Children 14 and under | $ 60 ($ 65 late) | |       |
- Awards Banquet (Wednesday, 8/9) | $ 40 ($ 45 late) | |       |

DAYTIME TOURS:
- Pop Topics (Sunday, 8/6) | $ 56 ($ 61 late) | |       |
- Peach Buzz (Monday, 8/7) | $ 53 ($ 58 late) | |       |
- Diaries of the South (Tuesday, 8/8) | $ 65 ($ 70 late) | |       |

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(See page 176 of this issue for a membership application)
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The Third Annual Foundation Fund Silent Auction will be held at the 87th Annual Meeting in Atlanta, Georgia, August 6-9, 2000.

Why donate an item to the auction?
Last year's auction raised over $2,000 for the Foundation Fund. Promote your state or organization by donating items now to help the Foundation exceed its goal of $15,000. The Foundation benefits the Local Administrator Developing Scientist Competition, Individual Library, and co-sponsorship of the Annual Award. It also provides support for IAFP/GFIS journals to developing countries.

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Notification of donated items must be received by June 15, 2000 to be listed in the Program and Abstract Book.

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State or Province

Postal Code/Zip + 4

Country

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Description of auction items:

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Coming Events

MARCH

• 3, Baking Industry Sanitation Standards Committee (BISSC) 2000 Annual Membership Meeting, at the Chicago Marriott Hotel, Chicago. For more information, contact Bonnie Sweetman, Executive Director, BISSC, 1400 W. Devon Ave., Suite 422, Chicago, IL 60660; Phone: 773.761.4100; Fax: 773.274.3242; E-mail: bakesan@aol.com.

• 7-8, Basic Food Microbiology Seminar, Holiday Inn - Portland Airport, Portland, OR. Designed for those who work with food processing, preparation, or sanitation, but have a limited background in microbiology. For additional information, contact Jack Brook, Science Division, Mt. Hood Community College, 26000 SE Stark St., Gresham, OR 97030; Phone: 503.491.7473; E-mail: brookj@mhcc.cc.or.us.

• 7-10, 25th International Food and Beverage Exhibition, at the Nippon Convention Center (Makuhari Messe), Japan. For further information, contact The Secretariat of FOODEX JAPAN; Phone: 81.3.3434.8116; Fax: 81.3.3434.8076; or Web site: www.jma.or.jp/FOODEX/.

• 9-11, International Fresh-cut Produce Association's 13th Annual Conference and Exhibition, "Dallas 2000: the Future is Now," Dallas, TX. This conference will provide fresh-cut processors, their suppliers, and their customers with an in-depth understanding of internal and external factors that will change the industry as it enters the twenty-first century. For more information, call Sherry Greenwood at 703.299.6282.

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

• 15-16, Carolinas Association of Milk, Food and Environmental Sanitarians. For additional information, contact Joe Neely, SCDHEC Division of Environmental Health, 2600 Bull St., Columbia, SC 29204; Phone: 803.935.7890.

• 20-22, Principles of Quality Assurance Seminar, Manhattan, KS. This seminar will review basic HACCP principles to help you understand the concepts and their practical uses. The hands-on workshop assists participants in developing a HACCP program and reviewing its strengths and weaknesses. For more information, contact AIB, 1213 Bakers Way, PO Box 3999, Manhattan, KS 66505-3999; Phone: 785.537.4750; Fax: 785.537.1493.

• 21-23, 2nd Annual Food Safety Summit Conference, Washington, D.C. Sponsored by The National Food Processors Association. The program focuses on real-world food safety and QA strategies offering practical solutions. For additional information, contact Scott Stein, 800.746.9646, ext. 105; E-mail: sstein@eatonhall.com.

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APRIL

• 3-4, Advanced HACCP Workshop, Manhattan, KS. Participants will learn how to confirm prerequisite programs, review the HACCP manual, verify implemented HACCP systems, and validate the HACCP plan. For additional information, contact AIB, 1213 Bakers Way, PO Box 3399, Manhattan, KS 66505-3999 or Phone: 785.537.4750; Fax: 785.537.1493.

• 4-6, Missouri Milk, Food & Environmental Health Association Annual Meeting, Ramada Inn, Columbia, MO. For additional information, contact Stephen St. Clair at 573.221.1166.

• 6-9 IAFIS Annual Conference, The Westin LaPaloma, Tucson, AZ. For further information, contact Dorothy Brady at 703.761.2600.

• 7-12, 2000 Conference for Food Protection, Hyatt Regency Hotel, Milwaukee, WI. For additional information, contact Trevor Hayes, CFP Executive Secretary, 1085 Denio Ave., Gilroy, CA 95020-9206; Phone/Fax: 408.848.2255; E-mail: TWGilyov@aol.com.

• 12, Metropolitan Association of Dairy, Food and Environmental Specialists Annual Spring Conference, Victorian Manor, Edison, NJ. For further information, contact Fred Weber at 609.584.7677.

• 12-14, Michigan Environmental Health Association 55th Annual Conference, Kewadin Conference Center, Sault Ste. Marie, MI. For additional information, contact Leslie Askwith at 906.635.3624.

• 13, Kansas Association of Sanitarians Spring Meeting, at Mount Conference Center, Atchison, KS. For additional information, contact Chris McVey at 316.342.4846.

• 16-19, Foodborne Pathogens 2000: Perspectives and Interventions, Crowne Plaza, Ar-
MAY

7-11, 8th World Salt Symposium Salt 2000, in The Hague. Participants will be informed of the developments that are important for their respective activities in relation to salt. For further information, contact Dr. Justus M. de Jong, Phone: 31.74.2443908; Fax: 31.74.2443272; E-mail: Salt.2000@inter.NL.net.

• 7-12, 3rd Sanitary Standards Annual Committee Meetings, Four Point Sheraton Hotel, Milwaukee, WI. For additional information, contact Philomena Short at 703.761.3174. For further information, contact Eugene Frey at 717.397.0719.

13-17, Dietary Fibre – 2000, Dublin, Ireland, Berkeley Court Hotel, Dublin. For additional information, contact Amy Hope, American Association of Cereal Chemists, 3340 Pilot Knob Road, St. Paul, MN 55121-2097; Phone: 651.454.7250; Fax: 651.454.0766; E-mail: aacc@scisoc.org.

• 16-17, Pennsylvania Assn. of Milk, Food & Environmental Sanitarians Meeting at the Nittany Lion Inn, State College, PA. For further information, contact Eugene Frey at 717.397.0719.

JUNE

• 5-7, Texas Assn. of Milk, Food & Environmental Sanitarians, Holiday Inn South, Austin, TX. For further information, contact Ron Richter at 409.845.4409.

• 7-8, Associated Illinois Milk, Food & Environmental Sanitarians Field Representative Meeting. For further information, contact Tom Gruetzmacher at 815.395.8797.
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