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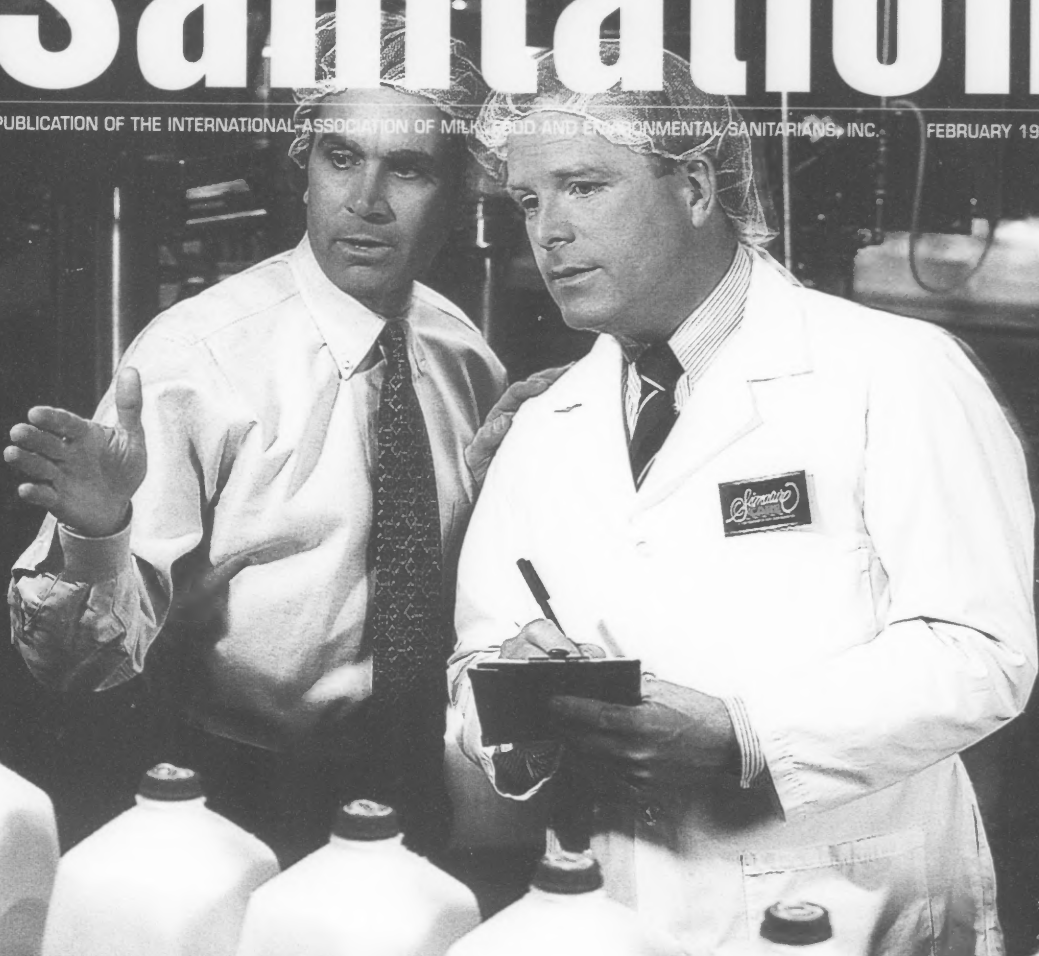
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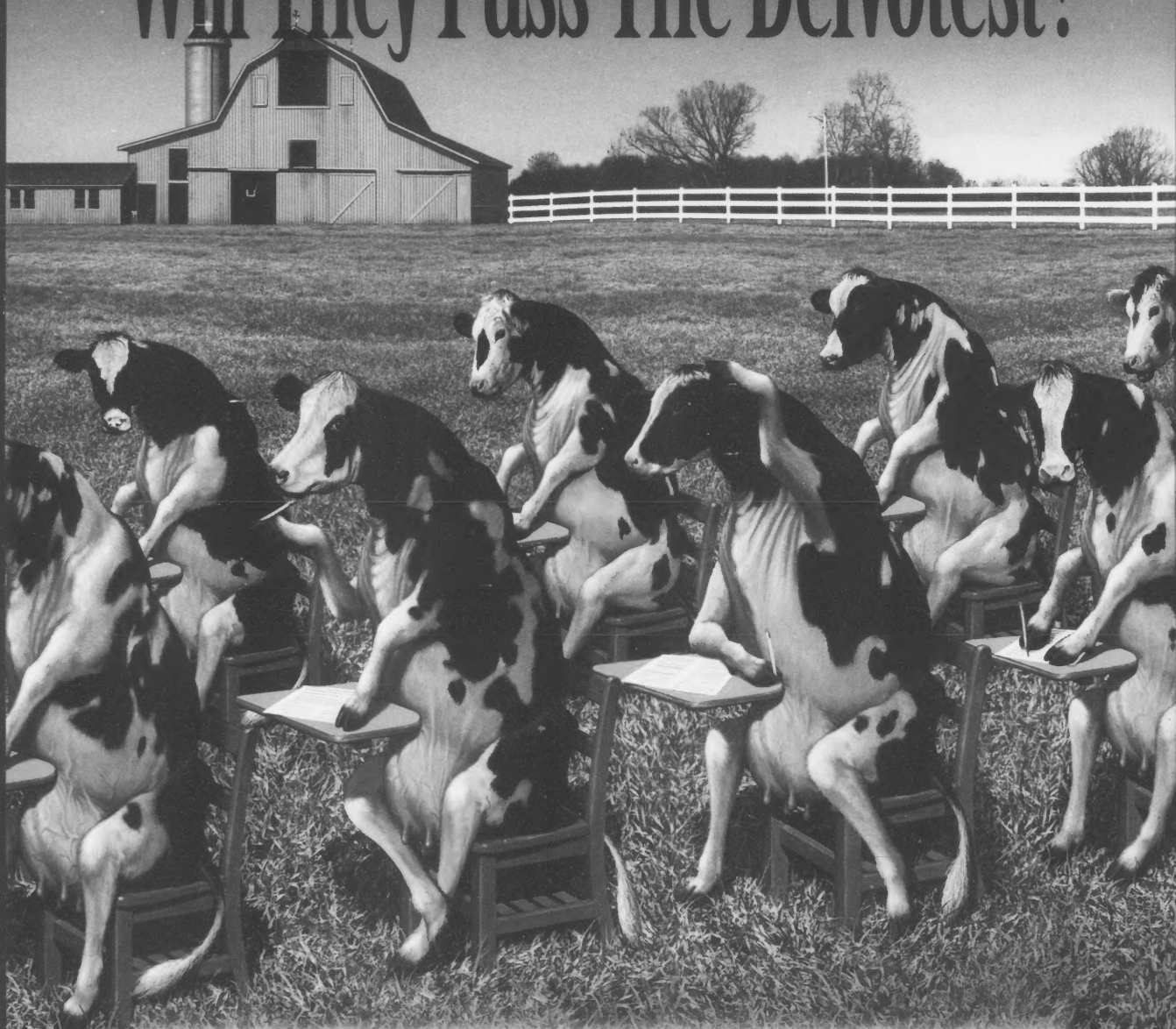
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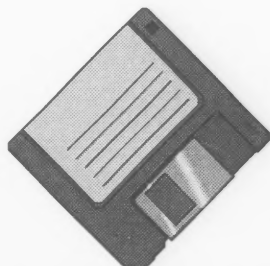
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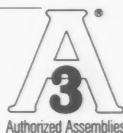
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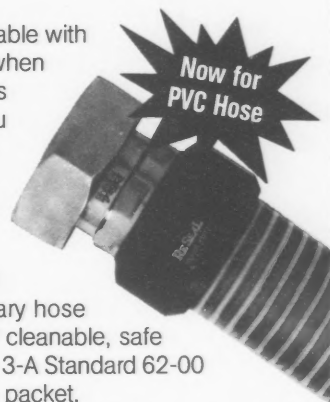
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The cover photo displays a Copesan's trained and certified Intergrated Pest Management Specialist providing an evaluation of a dairy plant for pest management services.

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ARTICLES

- Application of HACCP by Small-Scale and Medium-Scale Meat Processors** 74
Christopher C. Kukay, Larry H. Holcomb, John N. Sofos, J. Brad Morgan, J. Daryl Tatum, R. Paul Clayton, and Gary C. Smith
- Vanilla and Other Flavored Milk Shakes Purchased in Consumer Containers from Fast-Food Outlets in Pennsylvania** 81
Sidney E. Barnard, Rodney Smeltz, Ruth Bicher, Barbara Miller, and Annie Pipenhagen
- First Things First: Supermarket Inspection Priorities** 84
Kermit M. McKemie

ASSOCIATION NEWS

- Sustaining Members 67
- Thoughts From the President 70
- Perspectives From the Executive Director 72
- New IAMFES Members 108
- Affiliate News 109

DEPARTMENTS

- Federal Register 107
- Updates 110
- News 112
- Industry Products 114
- Business Exchange 117
- Coming Events 118
- Advertising Index 121

EXTRAS

- Book Review 87
- IAMFES Secretary Nominations 88
- 3-A Holder's List 89
- IAMFES 83rd Annual Meeting Preview 122
- IAMFES Booklet Form 131
- IAMFES Membership Application 132

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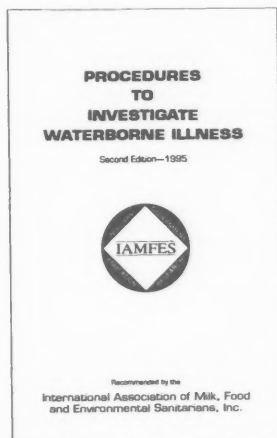
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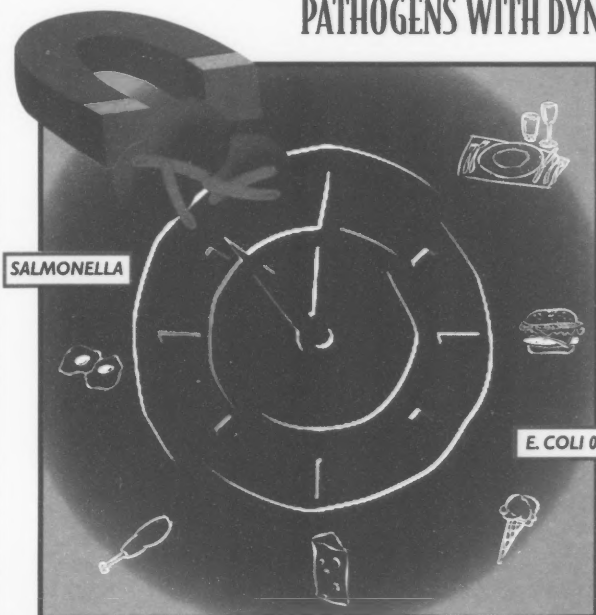
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THOUGHTS

FROM THE PRESIDENT



By F. ANN DRAUGHON,
IAMFES President

“Thinking ahead...”

For me, one of the most enjoyable aspects of belonging to IAMFES is looking forward to the Annual Meeting. Each year, I eagerly look over the educational program and think about the friends and colleagues with whom I will have the opportunity to visit.

It is easy to forget the tremendous amount of work which the IAMFES volunteers and staff put into the planning and execution of the Annual Meeting. Each year the IAMFES programs seem to get bigger and better. I hear people say over and over “This IAMFES program is really great. From now on this is the meeting for me.” This year we will have over 200 topics presented. That’s no accident. I believe the improvement in educational programs can be directly traced to the IAMFES Program Advisory Committee (PAC) and the involvement of our enthusiastic members. This year’s talented PAC is expertly chaired by Dr. John Cerveny and vice-chaired by Dr. Jeff Farber. We are very fortunate to have individuals of this calibre volunteering hundreds of hours to make our program a success. Another major factor which has contributed to the success of our annual meetings is the IAMFES professional development groups, task forces and committees. There were 18 symposia submitted for this year’s Annual Meeting, most of which came from one of these groups within IAMFES. This group involvement gives us a vital and dynamic environment in which to learn; an environment that is hard to find elsewhere. If you’ve not attended an IAMFES Annual Meeting, I hope you’ll plan to join us in Seattle. If you have, I know you’ll be there if at all possible. Please check this issue and upcoming issues of *Dairy, Food and Environmental Sanitation* for program information.

It gives me great pleasure to welcome Bill LaGrange, choice of

the *Dairy, Food and Environmental Sanitation* Management Committee and confirmed by the Board for the position of Scientific Editor for DFES to our team. He officially began his duties as Scientific Editor of DFES January 1st, 1996. He has many ideas for improvement of the journal and is working with our IAMFES staff to implement them.

As many of you know, John Sofos was selected as Scientific Co-Editor of the *Journal of Food Protection* and his appointment was announced at the Annual Meeting in Pittsburgh; however, John officially took office January 1st, 1996. In September of 1995, John began working with Larry Beuchat, who has been our Scientific Co-Editor since 1994. John succeeds Lloyd Bullerman, who was our Scientific Editor for over eight years. During this time, the *Journal of Food Protection* has gained recognition as the foremost journal in the world on food safety. I would like to welcome Bill and John as they join Larry in continuing to increase the size and quality of our journals and express our appreciation in recognition of the arduous task they have undertaken on behalf of IAMFES.

Thank you! Thank you! I have received an abundance of mail on World Wide Web interest and addresses, and I am currently putting the information together so that we can publish a Networking address book in DFES on Food Safety. We will continue to update so please send more as they become available. Thank you for your support.

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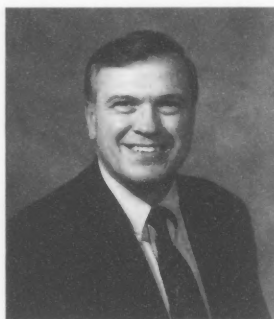
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PERSPECTIVES...

From the Executive Director



By DAVID M. MERRIFIELD,
IAMFES Executive Director

“We have no other mission than to implement the will of our members”

I feel as if I'm taking a sip of water from a fire hose. There's so much coming all at once and there's only so much that can be taken in at one time. I don't know how else to explain how it feels to take over as the new IAMFES Executive Director. To top it off, a board member remarked that they haven't even turned on the hydrant yet!

Officially, I started December 1st, just in time to enjoy the holidays in a new job. Unofficially, and mentally, I

started the job the day I applied. During my job search, there were only a few positions I truly wanted and this one topped the list.

If there's one thing that my experience has taught me, it's that the lifeblood of a professional association is its membership. It exists because the membership desires its existence. We, the staff, have no purpose without those professionals who band together to create a forum in which to make a difference for their profession. We have no other mission than to implement the will of our members. Membership is our highest priority.

Another high priority is wise and prudent fiscal management. It's often easier to implement programs in a piecemeal fashion than try to see the big picture. Looking at a project over the long term usually proves to be more cost effective even if there may be a greater initial outlay. As a staff we must continually remind ourselves to think of the long term in all we do.

As an educational association, the publication of quality, refereed journals is imperative as well. The more highly regarded the publication, the greater the benefit to our members. IAMFES publications have evolved into respected, authoritative publications which serve the profession well. But there is always room for improvement and our goal must be to continually improve and refine. We can't do this in a vacuum; we need your help.

Finally, a major endeavor for IAMFES should be to expand our involvement in countries that desperately need food safety and sanitation. Taking the lead in this endeavor is vital to our mission and will allow us to provide a true worldwide forum for food safety. This is an ambitious undertaking, but there is abundant talent among our mem-

bers to devise and implement such a project. We need only to find those willing to serve, then organize and fund the effort.

Through strong IAMFES leadership and staff teamwork, we can seize the moment. I intend to do my part to build yet a stronger organization that will continue to always put membership first. A dedicated staff can only do so much for an association and what distinguishes a strong association from a weak one is its leadership. If you haven't already realized it, your elected board members are great leaders; dedicated to the profession and to you, the member. You have entrusted them with the power to make critical decisions regarding the association's impact on the profession. When decisions are made promptly, decisively, and with resolve, what emerges is a strong and focused organization. Leadership requires making sound decisions, then taking decisive action. It extends down through the entire staff.

As I move up the learning curve, I know I'm going to need your help. I will need your help in educating me as to the directions you want your association to take. The best ideas almost always come from members, and I intend to listen. Call me or write me. I want to hear from you.

A final note: I recently attended the Program Advisory Committee meeting in Orlando. What a great group of professionals you have planning the program for the Annual Meeting in Seattle, June 30th-July 3rd! Of the 142 submitted abstracts, 138 were provisionally accepted to be offered as oral or poster presentations, with one session dedicated to nontechnical subjects related to food safety education. Additionally, there will be 17 symposia as well as workshops, a general session, business meeting, awards banquet, and gala. Don't miss this one!

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Application of HACCP by Small-Scale and Medium-Scale Meat Processors

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SUMMARY

The objective of the project reported here was to train personnel of two red-meat processing plants, one of small-scale and the other of medium-scale, and county extension agents in the principles and in the development of hazard analysis critical control point (HACCP) protocols for meat products. As part of the hazard analysis process, samples of products from the two plants were analyzed for chemical residues (e.g., pesticides, hormones, antibiotics) and microbial contamination. Chemical residue levels were nondetectable or nonviolative, while aerobic mesophilic bacterial counts and total coliform counts varied with plant, product, and sanitary practices. No *Salmonella* spp. or *Listeria monocytogenes* were detected in the 44 samples analyzed. The study team assisted the processors in learning about the possible hazards associated with their products, how they could contribute to control or prevention of these hazards, and how they could develop and implement HACCP-based food safety programs in their own plants. The HACCP plans developed for one plant applied to beef slaughter and ground beef production, while the plans for the second plant were for bacon, ham, Canadian bacon, and sausage manufacture. Two training workshops were held to introduce and explain the principles, techniques and advantages of the HACCP system to plant personnel and area agricultural extension agents. The three most common areas of concern identified for all of the products considered were (a) employee hygiene, (b) cross-contamination, and (c) control of heating and storage temperatures. Complete HACCP model plans and record-keeping forms were designed for use by these and other meat plants that may be interested in implementing a comparable program.

INTRODUCTION

Hazard analysis critical control point (HACCP) protocols are science-based, preventive, food safety assurance programs that use critical control points (CCP) to prevent, reduce, or potentially eliminate identified hazards in food products (5, 8, 9, 12-14, 16). Application of the HACCP approach involves thorough analysis of the process involved in producing a product so that any point at which a food safety hazard might occur has been identified as a CCP. Unlike most traditional food inspection activities, the HACCP approach is based on an understanding of the factors that contribute to potential outbreaks of foodborne illness. Information gathered through applied research is used to control the presence, multiplication and inactivation of foodborne pathogens or the presence of chemical or physical hazards at each CCP.

The Food Safety and Inspection Service (FSIS) of the United States Department of Agriculture (USDA) has been involved in activities leading to establishment of HACCP protocols as a part of the meat inspection system for several years (8). There are concerns, however, that HACCP systems will be easily implemented by large meat companies, but that

small-scale and medium-scale meat processors will have difficulty complying with such regulations (17). For this reason, the objective of the present project was to develop a program to train meat plant personnel and extension agents in the principles of HACCP and to assist small-scale and medium-scale meat processors in development of HACCP models for implementation in their plants.

EXPERIMENTAL

Description of plants

Plant-1

This small-scale plant was a privately owned meat company that slaughtered approximately 600 beef animals, 1200-1400 hogs, and 700-800 lambs per year. The plant also produced annually in excess of 13,600 kg of processed meats. Processed products consisted mostly of summer sausage made from wild game and beef, but also included jerky, salami and pepperoni. About 90% of the processed products were custom processed for the local community, or for big game hunters from all parts of the United States that hunt in the Rocky Mountains of Colorado and Wyoming. This plant also sold frozen beef, pork, lamb and processed meats to the public, and to local restaurants. Although some animals were bought and slaughtered for retail sale, the retail section of the operation was supplied mainly with boxed meat and carcasses purchased from outside suppliers. The operations for which HACCP plans were designed in this plant were the slaughter of animals and the production of ground beef.

Plant-2

This medium-scale processing facility, a division of a larger parent company, produced approximately 140 different cooked and cured, pork and beef products. They produced more than 680,000 kg of product per month, including sausage products, hams and bacon. The bacon, and some of the hams, were sliced and packaged after processing, and most products were vacuum packaged. All product ingredients were shipped to the

plant from their suppliers. The products produced at this plant were packaged, boxed and shipped to retail and food-service establishments in the same geographic area as the plant. The products produced in this plant for which HACCP plans were developed include vacuum-packaged smoked bacon, Canadian bacon, vacuum-packaged cooked sausage and vacuum-packaged, smoked honey-glazed ham.

Microbiological and chemical analyses

Samples of beef trimmings (2 samples), ground beef (2 samples), pork fat (2 samples), bacon (11 samples), sausage (9 samples), ham (9 samples) and Canadian bacon (9 samples), collected from the storage coolers of both plants, were analyzed for microbiological contaminants (aerobic mesophilic plate counts, total coliform counts, *Salmonella* spp., and *Listeria* spp.), while 1-3 samples of each product were analyzed for chemical residues. Analyses for chemical residues included heavy metals (lead and cadmium); hormones (zeranol and melengestrol acetate); tetracyclines; sulfa-drugs; and a series of pesticides, which have been of concern as present in foods, and include hexachlorobenzene (HCB), lindane, heptachlor, aldrin, dichlorodiphenyldichloroethane (DDE), endrin, dichlorodiphenyltrichloroethane (DDT), mirex, ethyl parathion, malathion, ronnel, trithion, pirimphos-methyl, alpha-benzene hexachloride (BHC), beta-BHC, delta-BHC, heptachlor epoxide, dieldrin, tetrachlorodiphenylethane (DDD), methoxychlor, diazinon, methyl parathion, disyston, ethion and chlorpyrifos. These analyses were conducted as part of the hazard analysis process of HACCP and in order to teach and demonstrate to plant personnel the value of sanitation, hygiene and ingredient quality in meat processing operations. The microbiological testing and most of the chemical residue analyses were performed at Warren Analytical Laboratory (Greeley, CO). The heavy metal analyses were performed by Green Mead-

ows Laboratory (Fort Collins, CO), and the hormone, tetracycline and sulfa-drug analyses were performed at Western Scientific Laboratory (Denver, CO).

The meat products (25 samples) were analyzed for aerobic plate counts by the spiral plating method on plate count agar (PCA) (Difco Laboratories, Detroit, MI). The duplicate plates were incubated at 25 °C for 48 h and counted using a laser bacteria colony counter, model 500A with a computer assisted spiral bio-assay data processor with bacterial enumeration program E 2.0 (2, 3, 4, 15). Petrifilm™ (3M Company, St. Paul, MN) coliform plates were used to analyze the meat products for total coliforms, which were then confirmed in lauryl sulfate tryptose broth and 2% brilliant green bile lactose broth (15). Detection of *Salmonella* spp. involved use of a micro-ELISA (*Salmonella* spp.-Tek, Organon Teknika Corp., Durham, NC) method. Any positive results from this test were confirmed with the official culturing method (4). *Listeria* spp. analysis was conducted using detection and isolation methodology from the *Bacteriological Analytical Manual* (4).

The lead and cadmium residue levels were determined by graphite furnace atomic absorption spectrometry (GFAAS) and quantified using the method of standard additions (11). Synthetic hormones (zeranol and melengestrol acetate), tetracycline, and sulfa-drug residues were analyzed using solid phase extraction with high performance liquid chromatography (HPLC) analysis (7, 10, 11, 24). The meat samples were analyzed for 25 different pesticide residues using gel permeation chromatography and dual column gas chromatography for final confirmation, with electron capture detection to the limit of 0.05 parts per million (ppm) (1).

RESULTS AND DISCUSSION

Training

A project team was developed and members of the team (university professors, graduate students and

quality control personnel from a large meat processor and a commercial testing laboratory) worked with personnel from the two cooperating plants. Each plant was visited 2-5 times in order to establish flow charts for each product or process selected and to determine areas of concern. In addition, two training workshops (at the beginning and 6 months after initiation of the project) were conducted to teach personnel of each meat processing plant and the agricultural extension specialists/agents to design, implement and monitor HACCP systems specific for each operation. As part of the training process, the trainees visited a large meat processing operation and a commercial laboratory, where they were presented with HACCP activities associated with those operations. Furthermore, model plans were developed for use by agricultural extension personnel in Colorado and in other interested states to assist small-scale and medium-scale meat processors in implementing the HACCP system in food safety assurance programs. The HACCP plans designed for the products selected in each operation were based on models developed and published by the FSIS-USDA and the meat industry and on the uniqueness of each plant studied. A manual was also developed (14) to summarize the work done in this area of food safety.

Results of analyses

The microbial counts from plant-1 were notably higher than those for plant-2. The stored samples analyzed from plant-1 were bacon, fresh beef trimmings, ground beef, and pork fat. The bacon samples had an aerobic mesophilic plate count of 5.6×10^5 colony forming units (CFU)/g, the beef trimmings had a count of 2.7×10^8 CFU/g, the ground beef had a count of 1.2×10^8 CFU/g, and the pork fat had 4.5×10^6 CFU/g. Although sampling was limited, these results were considered typical for the operation (plant-1) which involved one or two individuals performing several tasks which might lead to product cross-contamination. Even if this was merely an isolated incident, these bacterial counts indi-

cated a definite need for improvement in the manner in which product was handled. However, none of the samples analyzed had a detectable level of total coliforms, *Salmonella* spp., or *Listeria* spp.

The chemical residue results were collected from analyses of two samples of pork fat and one sample of beef trimmings (plant-1). The first pork fat sample was analyzed only for pesticides because they accumulate in the adipose tissue, while the beef trimmings sample was tested for heavy metals, hormones, tetracyclines, and sulfa-drugs. The hormones, tetracyclines, and sulfa-drugs were all undetectable at the detection limit of 1 ppm. Residues of one pesticide, endrin, were detected in both pork fat samples but only at the nonvolatile level of 0.07 ppm. The pork fat samples contained 0.045 ppm of lead and 0.0068 ppm of cadmium, compared with the beef trimmings which contained 0.57 ppm of lead and 0.04 ppm of cadmium.

Three samples of each product, at three different sampling periods, were analyzed microbiologically from plant-2. The bacon had aerobic plate counts ranging from 2.0×10^2 to 8.0×10^3 CFU/g, while all samples contained less than 1.0×10^1 CFU/g of coliforms and were negative for *Salmonella* spp. and *Listeria* spp. The sausage product had slightly higher aerobic plate counts, ranging from 1.4×10^2 to 1.2×10^4 CFU/g. Plate counts for ham ranged from less than 2.0×10^2 CFU/g to 4.0×10^2 CFU/g; while those for packaged Canadian bacon ranged from less than 2.0×10^2 to 1.4×10^4 CFU/g and were highly variable (among sampling times) suggesting potential undercooking and/or post-cooking contamination. No total coliforms, *Salmonella* spp. or *Listeria monocytogenes* were detected in sausage, ham or Canadian bacon samples. One sample of Canadian bacon was positive for *Listeria* spp., but it was not the pathogenic species of *L. monocytogenes*.

Three samples of each product from plant-2 were analyzed for chemical residues including heavy metals, synthetic hormones, tetracyclines, sulfa-drugs, and pesticides. The re-

sults for all products were below the detection limits for residues of hormones, tetracyclines and pesticides. Residues of the heavy metals, lead and cadmium, were consistently very low, with the highest levels being 0.09 ppm of lead in Canadian bacon, and 0.1 ppm of cadmium in one sample of ham.

Development of the HACCP models

Important parts of a HACCP plan are the critical control points. CCPs are defined as steps or procedures at which control can be applied to prevent, avoid, eliminate or reduce the severity of food safety hazards. The CCP may also be defined as any point in the chain of food production and processing, from raw materials to finished product, at which loss of control can result in an unacceptable food safety risk. In general, CCP deal only with product safety and may apply to sanitation, formulation, control of cross-contamination, cooking, chilling, and employee hygiene. The International Commission on Microbiological Specifications for Foods (ICMSF) has defined two types of CCP (6,18). These include CCP1, which should assure control of a hazard, and CCP2, which minimize the risk, but cannot assure complete control of a hazard. Others divide CCP into process-CCP and CCP, at which action can be taken to avoid deviation. In general, the term CCP has been used more loosely in recent years than it was intended originally, when the HACCP concept was first developed, and CCP meant complete elimination or control of the hazard. The terminology used is not important, but application of the HACCP principles to accomplish the objective of safe food is important. HACCP is a concept based on a logical set of principles; it is not a "canned recipe" for widespread application without modifications or adjustments to fit specific situations or industries (13). Therefore, to avoid confusion, we did not emphasize designating a step in the process as CCP as much as we emphasized the importance of applying the appropriate process controls for production of safe products.

Based on existing FSIS-USDA HACCP models (19-23) and the

uniqueness of each of the two plants and the products/processes examined, we developed HACCP plans along with forms for monitoring and recording the important points in each process. The detailed models and monitoring/record-keeping forms are included in a manual developed as a part of this study (14).

Fresh meat

A common CCP identified for both beef slaughter and ground beef production was pre-operational and operational sanitation. Equipment surfaces should be clean and free of microorganisms and chemical residues. The water used for cleaning following pre-rinsing should be 55-65 °C, and used in combination with, or followed by application of, bactericidal sanitizers on a daily basis. Care should be taken to thoroughly rinse all equipment, and to rotate the sanitizers being used.

Beef slaughter: The steps identified in the slaughtering process included:

Animal holding pens → *Pre-operational and operational sanitation* → *Immobilization* → *Sticking and bleeding* → *Skinning or dehiding* → *Evisceration* → *Carcass splitting* → *Final carcass trimming and washing* → *Carcass chilling*

Clean animal holding pens are important to reduce the dirt and fecal material and other contamination carried into the plant on the animal hide. The first point of concern identified inside the plant was the pre-operational and operational sanitation of the work environment. Sticking (bleeding) was considered important because of the possibility of allowing contaminants to enter the blood stream through a contaminated knife. The next two critical points of concern were identified as removal of the hide and evisceration of the animals due to the possible introduction of soil and fecal-borne pathogens onto the carcass. By limiting carcass exposure to the contaminated side of the hide, and by keeping the viscera intact, the incidence of contamination can be greatly reduced. The only carcass washing performed involved

spraying with tap water through a hose. Splitting the carcass can result in cross-contamination, which can be limited by applying hot water to the saw, while contamination can also be removed during the final trimming/washing step. Chilling should be prompt to minimize growth of contaminants.

Ground beef production: Major steps identified in the process of producing ground beef were:

Pre-operational and operational sanitation → *Assembling/pre-weighing meat* → *Grinding* → *Packaging* → *Storage*

The first point of concern was the pre-operational and operational sanitation of the equipment and work environment, especially when grinding took place on several occasions during the same day. Employee hygienic practices before resuming meat handling and grinding are also important. In addition, raw materials should be continuously evaluated for visual quality, odor, appearance and temperature, with unacceptable product being discarded. The room temperature must be kept below 10°C and product temperature should remain at less than 5°C to inhibit microbial growth. In addition, cross-contamination between products from different species should be avoided. Therefore, packaging and storage of the ground beef product were also seen as being very important to product identity and quality. In order to maximize shelf life of ground beef, the processor was instructed to chill the product to less than 5°C and store it cold (<5 °C) within two h of processing.

Processed meats

The processed meats studied in plant-2 were vacuum-packaged smoked bacon, vacuum-packaged cooked sausage, smoked vacuum-packaged honey-glazed ham, and Canadian bacon. Steps common in the processing of each of these products were raw material receiving, weighing, packaging/boxing, storage, and shipping. Raw material receiving is very important because the plant has no control over product handling

and microbial integrity prior to arrival of raw material. The meat should be organoleptically evaluated, and its condition and temperature recorded upon arrival. The product received should have an internal temperature of 5°C or below and immediately be stored at 5°C or below, and it should be held for no more than four days before being used, in order to minimize bacterial growth and/or chemical deterioration. The processors should obtain letters of guaranty from the suppliers for all ingredients used in the formulation of their products. Unwarrantable ingredients should not be used in processing.

The weighing, packaging/boxing, storage and shipping of these products were all very important points of concern due to the increased amount of product handling during these steps, which increases the potential for contamination and temperature abuse. The weighing and packaging of the bacon are important because they are the last areas where contamination of the product could occur directly. The temperature in the work areas should not exceed 10°C, and proper employee hygiene is essential. Storage temperatures should be kept below 5°C, with storage lasting no longer than 14 days. These procedures should be monitored to eliminate cross-contamination, product mishandling, and temperature abuse. Specific points and concerns for each of the products are discussed below.

Vacuum-packaged smoked bacon:

The steps involved in bacon manufacturing at the particular plant studied include:

Receiving raw materials → *Soaking of bellies* → *Skinning/trimming* → *Pumping/hanging* → *Smoking* → *Blasting/chilling/tempering* → *Pulling combs* → *Sorting (grading)* → *Pressing* → *Slicing/grading* → *Weighing* → *Packaging* → *Boxing* → *Storage* → *Shipping*

The receiving and handling of raw materials (pork bellies) was determined to be a very important point of concern, because heating of bellies during bacon processing is only

minimal. Belly soaking is a process unique to bacon which is important to monitor. Soaking the belly is intended to raise the product temperature to the proper level needed for pumping and curing. However, it also creates an environment that may allow growth of microorganisms while increasing the chance for cross-contamination. Therefore, it was recommended that soaking time be limited to less than 3 h; the water should be flowing continuously; and the product should not exceed a temperature of 8°C in order to minimize growth of spoilage and pathogenic bacteria. Cross-contamination is a possibility during skinning and trimming of the belly, while brine pumping is of major importance. During pumping, it is essential that the brine does not contain a violative amount of nitrite in order to prevent nitrosamine formation or a direct chemical hazard from excess nitrite in the final bacon product. This is accomplished by verifying that the nitrite concentration in the solution is correct, brine mixing is thorough, and that the belly is pumped to the proper level.

The blasting/chilling/tempering step was seen as a very crucial point of concern. Bacon was smoked to an internal product temperature of 42°C, which is not adequate to inactivate pathogenic bacteria. In fact, the increase in product temperature to 42°C could be considered an incubation period for bacteria proliferation if that temperature is reached slowly. For this reason, it was recommended that the time to achieve the desired smoking temperature should not exceed 2 h. After cooking or smoking, it is essential to reduce the product temperature quickly to inhibit potential growth of bacteria. The time the product is held in the blast chiller can be up to 12 h at a temperature of less than -2°C. Tempering should be done at a temperature between -4 and -2°C, and should not exceed one week. The sanitation of the cooler is of vital importance at this point because the high air movement in the blast chiller can distribute airborne contamination of psychrotrophic bacteria.

The possible presence of metal-comb teeth in the finished bacon

product (that is possible because combs are brittle, and semi-frozen bellies are hard to penetrate) called for visual inspections and metal detector scanning. Cross-contamination during combing, slicing, and to a lesser extent during sorting, should be avoided at all times. Bacterial contamination from the exterior surfaces of the bacon, the slicing equipment, the employees, and even from isolated abscesses that occasionally occur in the pork belly, can be spread throughout the product during these processes. To prevent and inhibit the growth of the bacteria being spread, the room temperature should be maintained below 10°C; product temperature should be maintained at -4°C (time should be controlled); equipment should be sanitized; employees should use proper hygienic practices; and slicing should be monitored to detect abscesses.

Vacuum-packaged cooked sausage: The processing of vacuum-packaged cooked sausage involved:

Receiving raw materials → *Batching* → *Receiving spice materials* → *Formulating spice mix* → *Grinding* → *Blending* → *Holding overnight* → *Stuffing* → *Cooking* → *Cold showering* → *Blast chilling* → *Cutting* → *Packaging* → *Boxing* → *Storage* → *Shipping*

Points of concern for microbiological contamination were established at receiving and storage, along with the point at which batching of the raw materials occurs. Increased product handling during these two stages can result in increased bacterial proliferation and the possibility of cross-contamination. Along with proper employee hygiene, the room temperature should be kept below 10°C, and the internal product temperature should not exceed 5°C for newly received product and should not exceed 8°C for product rework. If these conditions are met, the product will maintain its quality and cooking will be effective in reducing or eliminating contamination.

The potential for accidental inclusion of non-food grade materials in the spice mix resulted in this step being a point of concern. It is imprac-

tical for companies to monitor the quality of all received spices, however, periodic tests should be conducted to verify their acceptability. Additionally, letters of guaranty from the suppliers, including certificates of analyses, and conditions for use may also be required.

Blending, overnight holding, stuffing and cooking could also lead to microbiological concerns due to increased handling by employees, which can raise microbial loads. Work area temperatures were recommended to be below 10°C, and cooler temperatures between -1 and 1°C, with storage time no longer than 12 h. Proper sanitation and treatment of equipment and casings is of vital importance during stuffing to minimize contamination. Casings should be kept dry before use; they should be rehydrated in cold water; and they should be used within a short (less than 2 h) period of time to avoid microbial proliferation. Cooking is the most important microbiological CCP if the strict definition of critical control point is followed (8, 9, 13, 14). The critical limit of at least 68°C internal final temperature should be in place to ensure the destruction of pathogenic microorganisms in the product.

Cold showering is a step useful in reducing product temperature before blast chilling. It is essential to decrease the product temperature as quickly as possible to inhibit growth of any microorganisms that were not totally destroyed during heat treatment. For this reason, a -6 to -2°C chill temperature for up to 12 h was suggested to limit microbial growth. The major concern during the peeling and cutting process was post-processing contamination because the product had already been cooked. Equipment sanitation, employee hygiene and a temperature constraint of 10°C in the work area should be enforced to inhibit growth of microorganisms that do reach the product through cross-contamination. Packaging/boxing, storage and shipping were also identified as points of temperature/time control to avoid microbial multiplication.

Smoked vacuum-packaged honey-glazed ham: Processing of this product followed the sequence of:

Receiving raw materials → *Formulating and mixing brine* → *Pumping and macerating* → *Tumbling* → *Holding overnight* → *Formulating and chopping emulsion* → *Mixing* → *Stuffing and racking* → *Cooking* → *Chilling* → *Packaging* → *Boxing* → *Storage* → *Shipping*

Raw material receiving was identified as a point of concern as it had been for other products. Formulating and mixing the brine were labeled as points of concern for chemical hazards, while pumping and macerating were labeled as processing steps with the potential of introducing physical hazards. As with bacon, it is very important to ensure proper formulation and mixing of the brine solution to eliminate formation of nitrosamines in the final product. Processing involved maceration with sharp metal teeth which penetrate the muscle, making it possible for metal objects to break off and be present in the product, undetectable by visual inspection. It is crucial to inspect the macerator blades on a regular basis to ensure that they are intact, as well as to expose the product to a metal detector at some point in the process.

The product is held overnight after tumbling, creating another microbiological concern dealing with airborne contamination and/or temperature abuse. This can be controlled by confirming the sanitary condition of the cooler and enforcing a time and temperature constraint during the holding process. The cooler temperature should be kept below 0°C, and the product should not be held for more than 12 h.

Formulating, chopping and cooking, as well as chilling, were identified as points of concern due to potential microbiological contamination. The room temperature in the formulation room should be kept below 10°C, while the meat emulsion temperature during incorporation of trimming and rework should not exceed 5°C. The internal product temperature should reach at least

68°C during heat treatment to ensure destruction of vegetative pathogenic microorganisms. This particular product was glazed with honey, which has the potential for being contaminated with *Clostridium botulinum* spores. The heat treatment received during the cooking process does not destroy these spores, so it is important that the product not be temperature abused. Product temperature should be reduced rapidly during chilling in order to inhibit the growth of those bacteria not destroyed during the heat treatment. Blast-chilling at temperatures below -2°C, followed by holding temperatures of 3 to 4°C for less than 12 h, is an effective method of retarding microbial proliferation. As with the bacon and vacuum packaged sausage, packaging/boxing, storage and shipping were identified as microbiological points of concern relative to potential for temperature abuse.

Canadian bacon: Steps identified in processing of Canadian bacon were:

Receiving raw materials → *Defrosting/tempering* → *Trimming* → *Grinding* → *Mixing* → *Holding overnight* → *Batching and chopping emulsion* → *Mixing* → *Stuffing and hanging* → *Cooking* → *Chilling* → *Peeling* → *Slicing* → *Weighing* → *Packaging/boxing* → *Storage* → *Shipping*

The act of receiving raw materials was again labeled as a point of concern. Defrosting, trimming, grinding, mixing, overnight holding, batching, mixing, and stuffing steps were seen as concerns due to the increased handling, and the temperature changes incurred during each procedure. The cooking, chilling, peeling, slicing and weighing steps were also identified as microbiologically important due to increased handling and the possibility of cross-contamination. Internal product temperature during cooking should reach at least 68°C, followed by blast-chilling to quickly reduce the internal temperature to <5°C in a period not exceeding 12 h. Avoidance of cross-contamination during the peeling, slicing and weighing processes can be achieved by ensuring the personal

hygiene of employees; confirming the sanitary condition of equipment through pre-operational inspections; and maintaining work area temperatures below 10°C to inhibit growth of microorganisms. Packaging, boxing, storage and shipping were again identified as points for sanitation, temperature and time control.

CONCLUSION

The causative agents of bacterial foodborne illness attributable to the consumption of meat or meat products are normally those found in the environment of the living meat animal, on the animal's body, or in the alimentary tract of the animal, with the muscle tissues of the healthy living animal being virtually sterile. Sanitary slaughtering operations with antemortem and postmortem veterinary inspection for pathological conditions cannot eliminate bacteria, but are essential in limiting the contamination of the raw meat supply. Therefore, proper hygiene and temperature control should be practiced by everyone from the producer to the consumer to minimize further incorporation of bacteria into the product. Education of food handlers is another vital step in preventing the spread of bacteria in meat products, as is applying new technologies in microbial ecology to avoid the problems related to pathogens.

There are many potential risks and hazards associated with the preparation and storage of foods throughout the supply chain from production to consumption. If these hazards are not identified, shelf life of products will be shortened, and foodborne illness may occur. HACCP is a common sense system that can be used to control any point in this chain that could contribute to a hazardous situation—whether it be a process, a contaminant, or a pathogen. The aim of this project was to help processors of small-scale to medium-scale meat plants and county extension agents learn: (a) about HACCP's benefits, (b) about possible hazards associated with meat products, (c) how to control or prevent these hazards, and (d) how they could implement a HACCP.

based food safety program in a meat plant.

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Vanilla and Other Flavored Milk Shakes Purchased in Consumer Containers from Fast-Food Outlets in Pennsylvania

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SUMMARY

Over a period of three years, 808 vanilla and other flavored milk shakes were purchased, just as any consumer would buy them, from fast-food outlets. Within 24 h, these shakes were tested in Penn State's Creamery Laboratory. Evaluations were performed in accordance with *Standard Methods for the Examination of Dairy Products*.

Thirty-nine percent of the milk shakes sampled showed less than 1 coliform per g, while 42% contained more than the 10 coliforms per g permitted by regulations of the Pennsylvania Department of Agriculture. In regard to standard plate count, 34% of the samples contained fewer than 1,000 organisms per g, but 26% of the milk shakes exceeded the regulatory maximum of 50,000 organisms per g.

These results would seem to indicate that at least one-third of the freezer barrels had been washed the previous day and sanitized the day of purchase, but at least one-fourth of the freezer barrels probably had not been cleaned for one or more days.

It became obvious that Pennsylvania regulations requiring licensing, inspection, and testing of monthly samples, even when enforced by magistrate citations and cash penalties, do not necessarily lead to a high level of compliance. Late-evening part-time employees must be provided with the know-how and motivated to drain, disassemble, and clean freezer barrels.

INTRODUCTION

Bacterial quality of milk shakes, soft-serve, and yogurt products as purchased from fast-food outlets has been of concern to regulatory agencies and the dairy industry for decades.

Results of monthly regulatory testing, along with surveys conducted by the public media, and an occasional survey by an educational institution have all confirmed the need for concern about the bacterial quality of the product sold to consumers. In many cases the consuming public has not been getting a quality dairy product, and all the educational and punitive programs have seemed to do little to improve the situation.

At Penn State we decided to look at the bacterial quality of milk shakes available to consumers from fast-food outlets, because of complaints and an awareness that some were not up to standard. As we were already visiting many of the geographical areas of the Commonwealth in routine conduct of meetings, assisting processors and dairy producers, and buying milk and dairy products for quality determination and flavor evalua-

tion, we could visit a number of fast-food outlets without significant expenditures of time, travel, or funds.

Pennsylvania is one of those states with a program, as outlined below, in the Foods Division of its Department of Agriculture. Division personnel know of the high level of noncompliance, because they have decades of experience with violations and subsequent punitive actions involving citations and fines levied by local magistrates.

Division regulations involve a program of annual licensing and monthly sampling with testing by approved commercial laboratories. These functions reflect the Commonwealth's intention to gain vendor compliance with bacterial standards of less than 10 coliforms per g, and a standard plate count (SPC) of not more than 50,000 organisms per g.

PURCHASING AND TESTING

We purchased 194 milk shakes from fast-food outlets the first year, in the same way any consumer would purchase a shake. Without a regulator's badge, or identification as an employee of the commercial laboratory paid by the vendor to sample and test, we found out that it was impossible to get a sterile sampling container filled from the outlet valve of the freezer barrel.

Therefore, we settled for milk shakes in paper containers with plastic lids, just as if purchased by a customer. At first, attempts were made to tape over the potential straw hole, and to tape the cover in place. But it was found that the heavy paper trays provided by fast-food outlets for their customers to carry multiple shakes worked very well, keeping the milk shakes upright in the insulated cases. Ice packed around the containers kept the shakes cold. Vanilla and chocolate or one other flavor were the usual purchases from each fast food outlet.

Within 24 h, the milkshakes were delivered to the University Creamery Laboratory for testing. All tests were performed by laboratory director/supervisory personnel or by trained students. Each was experienced in

Table 1. Coliform counts of milk shakes from fast-food operations

(808 samples. Three ranges [coliforms per g])

Year	<1	1-10	>10	Total
1988	61	34	99	194
1989	195	108	198	501
1990	51	15	47	113
Total	307 (39%)	57 (19%)	344 (42%)	808

Table 2. Standard plate counts of milk shakes from fast-food operations

(808 samples. Four ranges in [1,000 organisms per g])

Year	<1	1-10	11-50	>50	Total
1988	68	36	32	58	194
1989	164	156	61	120	501
1990	42	26	14	31	113
Total	274 (34%)	218 (27%)	107 (13%)	209 (26%)	808

working with *Standard Methods for the Examination of Dairy Products*.

Samples for coliform counts or other spoilage bacteria were plated at 1:1 and 1:10 dilutions, while experience quickly confirmed that it was necessary to do SPCs at dilutions from 1:10 to 1:10,000. All samples were weighed out, even though milkfat content would have been in the normal range of milk.

Coliform counts were not confirmed because red pigmented colonies were frequently accompanied by spoilage-type bacteria. The objectives of this study were to determine if the samples were contaminated, to determine compliance, and identify public health hazards.

Not more than two of the total of 808 milk shakes came from the same fast-food outlet. Samples were purchased throughout the year; however, only about one-third were purchased during the warm summer months.

RESULTS AND DISCUSSION

This is a typical survey. Many hundreds of driving hours were spent to purchase sufficient numbers of milk shakes to be of significance to any reader, regulatory agency, or anyone in the dairy industry. Results, because they reflect compliance or non-compliance with regulatory standards, are summarized in Tables 1 and 2.

Fast-food operations with milk shakes containing less than one coliform per g and less than 1,000 SPC per g would appear to have been doing an ideal job of handling mix and cleaning and sanitizing freezer barrels. Because more than one-third of the samples were of ideal bacterial quality, it was believed that milk shakes sold in consumer containers capped with a lid, were similar in bacterial quality to samples drawn directly from the outlet valve of the freezer barrel. Therefore, the sam-

pling procedure would seem to have had little influence on results.

Nor did possible container and lid contamination appear to influence results. The same applies to the SPCs, where one-third of the milk shakes were of ideal bacterial quality, indicating that the freezers sampled had probably been cleaned the previous evening and sanitized that morning. There was some improvement over the three years during which these studies were being conducted.

The challenge to fast-food operators and the dairy industry is to convince management and especially freezer operators that each barrel of every freezer must be emptied, disassembled, and cleaned every day after use. Frequently this means working with school-age and inexperienced employees, who usually will comply with required procedures if they understand the necessity for them. Failure to adequately educate and motivate fast-food workers in regard to the microbiology involved exposes the customers to potential foodborne illness, and the operator to costly lawsuits. The final step is to examine parts and gaskets for cleanliness and condition while assembling each barrel and sanitizing before use each morning, a task usually performed by older workers.

There is plenty of printed and visual material telling people how to clean and sanitize a freezer. It is available from most fast-food chains and fast-food equipment manufacturers.

If there is one thing that some of it lacks, it is the microbiological reasons that support careful sanitizing. At least two videotapes (Taylor Freezer Company and McDonalds) have been produced.

With the help of dairy industry representatives, corporate staff of fast-food franchises, and regulatory agency sanitarians, the script for a training video has been completed. It has never been produced because of the concern about its distribution through regulatory agencies or fast-food chains and the efforts necessary to see that it would be shown to fast-food employees. The script emphasizes the reasons why and the how-to of handling mix, and cleaning and sanitizing a freezer; the current bacterial situation; and why prompt corrective action is necessary.

CONCLUSIONS AND RECOMMENDATIONS

The results of a sanitation survey of dairy products dispensed from freezers in fast-food operations should be published. Data regarding bacterial quality of milk shakes from fast-food outlets is generally unavailable because it is in the hands of regulatory agencies and used to determine compliance with public-health requirements.

The corrective actions are relatively simple, but getting them put into practice requires the coopera-

tive action of all involved parties and persons.

Mix must be kept at 40°F or colder and used before the open date marked on the container. All employees must be convinced that disassembly and scrubdown of all freezer barrels after store closing is absolutely essential. Usually this involves young people who are working at after-school jobs, as opposed to older employees who work during school hours. Likewise, before store opening the following day, each freezer barrel must be reassembled and sanitized.

If these operations, though relatively simple, are faithfully carried out, they will prevent unacceptable bacteria counts in fast-food dairy products from freezer barrels, except in the rare instance when contaminated mix is used.

The secret to getting these practices put into action is know-how and motivation. The information required is available, at minimal cost, in most educational media.

Regulatory agencies should take whatever action is necessary to obtain compliance. If monetary fines and bad publicity don't work, then regulatory authorities, in the interests of public health safety, have little choice but to temporarily shut down the dispensing of dairy products from that fast-food operation.

**Author 2 is a former research assistant and student in the Department; authors 3, 4, and 5 are former students in Food Science.*

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First Things First: Supermarket Inspection Priorities

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INTRODUCTION

The "Pareto Principle" states that in love, work, and other things, only about 20% of what we do really matters very much: "the first things." The other 80%—which we often do simply from habit or because we have a little more skill in that area—should be put off until the first things are accomplished.

Or, "first things first." The German poet Goethe remarked, "Things which matter most must never be at the mercy of things which matter least."

Figuratively speaking, you have to capture and tame the elephants—the first things problem resolution—before chasing after the mice. There are certain inspection techniques that are effective and help bring store staff into the inspection process. The purpose of this article is to share this experience.

Rationale

Some health department inspectors may not want store managers tagging along, asking a lot of questions, and possibly slowing them down during the inspection. These inspectors may feel obligated to complete the visit in the 14 minutes or so of time that some managers believe appropriate.

Unfortunately, these health officials often end up marking a few easy to find items such as broken floor tiles or something in the refrigerator not covered. They may accomplish little in the way of meaningful consumer health protection.

Other health department inspectors are confident in their interpersonal skills (2). They have operation-relevant food safety knowledge to share.

They will bring store managers into the inspection process to do a better inspection and help resolve problems when noticed. By combining experience and food safety risk analysis, these health professionals recognize the store practices and conditions—the first things—that deserve more attention (4, 10).

Supermarket Survey Suggestions

Jurisdiction surveys are solidly based upon retail food code regulations and inspection priorities. To provide uniformity, certain areas and practices are covered in a consistent manner for each department. However, the inspection is not limited to these areas when significant violations of other code items are encountered.

"Point and ask" techniques are utilized to establish food safety knowledge and base-lines of sanitation in the store departments.

Deli Department

The deli needs to be inspected first due to the variety of food handled, including the scratch preparation of barbecued chicken and other items. There is some epidemiological association of foodborne illness such as listeriosis to delicatessen items (6).

Ask the manager to point out the location of the department's hand wash sink. If the sink is not blocked and works, personally use the lavatory and demonstrate good hand-washing techniques. If they haven't got a sink at all or they point to a scrap of hand soap above a utensil sink, you now have a first things problem to resolve. The manager may state that health inspector after health inspector has "grandfathered" this lack of a lavatory, and besides, everyone washes their hands at home, don't they?

One possible approach: comment that any further grandfathering, and possible consequences have to be reviewed in light of current knowledge of hepatitis A incidence and transmission (9, 12).

Request that they send to the chief medical officer of your jurisdiction a detailed plan on how a serious disease outbreak would be handled, including public warnings and medical treatment such as prophylaxis injections to employees and customers. Would a cash bond be posted to

defray possible medical costs in the event of a disease outbreak?

At first, this may seem strange. However, if the store owner really thinks this through, the notion of installing a hand wash sink and encouraging its good use becomes important. Congratulations, you've just captured an elephant!

Our next point and ask inspection step relates to prepared hot-hold items. Point to the chicken in the display. Ask how safe food cooking and holding temperatures are determined. You can even ask staff to demonstrate their safety checks with deli thermometers. If staff are doing a satisfactory job, compliment them. Seldom do store employees receive feedback on good food protection habits.

Explore the potential for cross-contamination with suitable inspection and questions. In addition to checking where the raw chicken is stored in the walk-in refrigerator (not above the potato salad, we hope), ask where it is rinsed and cut. Have staff point out specific sinks, counters and rubber gloves used.

Do you see *any* hand washing going on in the deli? Do they practice good use of disposable gloves?

Since bacteria, such as *Listeria*, can grow at fairly cold temperatures, check displays and ask about stock rotation of luncheon meats and similar foods. If they say, "When it turns green, we trash-can it," you have a 20% problem. Fortunately, the new Food and Drug Administration Food Code has stock rotation criteria.

Don't forget the store salad bar. When does the store use up items such as dressings and clean the salad bar stocking containers?

Point to a product such as tuna salad in the display case and ask, "How do you clean the tuna salad pan?" Follow the employee to the sink to see just how it is cleaned and what chemicals are used.

Point to other pieces of equipment such as the slicer or cutting boards and carefully ask questions on the cleaning and sanitizing, as if it was the first time you have ever seen this equipment. This should elicit in their

own words just what the procedure really is in the department. You won't make inaccurate assumptions when you use this technique.

An inspector might say at this point, "Hey, we don't have time to ask all these questions on food preparation. We have the meat, liquor, and all the other departments still to cover before the hour on the parking meter runs out."

Our response might be, "You've just covered Pareto's important 20%. The other 80% can wait—maybe until the next inspection—until you get the deli's first things resolved."

Meat Department

Assuming that the jurisdiction's bean counter gives you more time for the inspection, continue the survey with the meat department. But before starting your inspection, wash your hands at the department's hand wash sink. If this isn't possible, you have a "20% problem."

If the department carries raw shellfish, point to display items and ask to see the certification tags. These are to be kept for 90 days. Note if the shell stock (and other ready-to-eat items) are stored and displayed so as to minimize cross-contamination from raw items such as finfish or chicken.

For the few remaining days fresh fish have when they arrive at the store, a very cold holding temperature is important. Otherwise, your nose will point and inspect! Dr. Robert Price, Ph.D., University of California, Davis in his book *A Guide to California Seafood* recommends for chilled seafoods an *ideal temperature* of 30°F (3, 7).

Point to the crab salad bowl and ask where and how is it washed. Are the white polyethylene cutting boards flipped over at night and their back-sides brushed? How often is that big Hobart grinder-mixer in the walk-in disassembled and cleaned? Is it done according to the equipment manual? With all the *Escherichia coli* O157:H7 concerns, attention *must* be directed to satisfactory equipment cleaning and cross-contamination prevention (1).

Produce Department

Again, first things first. Find the hand wash sink and use it.

Target chemicals in the produce section. Some produce workers will bring *anything* to the back to kill the pesky fruit flies. These and other strange chemicals end up stored near food preparation areas.

If there is a water spray system over the produce, check it out. Look at the nozzle ends. If not cleaned, they can have ugly, slime-like material hanging out. For the benefit of the manager you could point and make this comparison: "These dirty nozzles are just like little kids with bad colds and runny noses. Each time the kid sneezes, germs spray out. Each time the water spray system turns on, a similar thing happens, with particles of algae and other contaminants sneezed onto the lettuce."

This graphically communicates the importance of a cleaning and sanitizing schedule. There are some ultrasound "fog" systems that need even more attention due to past association with Legionnaire's disease.

The number of potentially hazardous foods (PHF) found in the produce section is on the increase. PHF examples include sprouts, tofu in tub packs, and cut cantaloupes (11). Use your jurisdiction's food code or guide to identify relevant PHF products for temperature checks.

When the produce section prepares items such as salad or fruit trays, we should expect food equipment to have adequate design to be cleanable. The old bathtub placed on concrete blocks just doesn't make it as a produce sink!

Point to equipment used to cut fruit and ask how and where it is cleaned. Some stores have identified attractive salad and fruit packs as high-profit convenience items and have set up exemplary department preparation and display areas. Pass out compliments for well-maintained areas.

Some stores use juice extraction machines to offer fresh orange juice to customers. A very few will use the equipment to get rid of rotten or damaged culls, don't rinse the exterior of fruit in potable water, and may not clean the equipment thoroughly.

Bakery Department

Find the hand wash sink and use it.

Identify what may be PHF products and follow with point and ask techniques on equipment cleaning and temperature control. Sometimes pathogen growth barrier review (pH, A_w , and/or preservative control) is needed to identify if the cream-like filling or pumpkin pie is PHF.

Check the bags of flour for tiny moving creatures (any added protein has to be declared on the label) or mice nests. Occasionally, the crumb boxes of bulk self-service displays have motile "six-legged poppyseeds." Open up and inspect the units.

General Display

First, go to the flour section and inspect the back areas of the gondola shelving for old, excess spillage and vermin activity. Borrow a grocery cart to help remove bags for access. Check out the storage of pasta, rice, and coconut. Why coconut? If there is **anything** at all in the store that a little mouse will run to, it is shredded coconut—they love the stuff!

Review the frozen food displays. Items should be hard to the squeeze, with no high stacking over the load-line mark. Inspect representative stock of packaged deli items to be sure they are cold and not old with mold.

Spot check the canned foods, particularly the large #10 cans, for

swells and leakers. Stores should exercise care with mark-downs to discard severely damaged packages and to exclude toxic items such as hair coloring or insect spray aerosols.

If you dare, check out the open, smelly, leaking dumpster. If it is maggot infested, it catches the 20% first things to be resolved.

We should inspect the employee restrooms. Well-furnished, clean facilities reflect an important management regard for worker welfare and store sanitation. Maybe this should be the first place to start the supermarket inspection!

Closing Thoughts

We have attempted to exchange part of our habit of walking around with a flashlight and check list to that of more involvement with people and food handling.

Certainly, our first things suggestions are not intended to be inclusive. There are other ways to orient inspection focus and cover problem areas. We haven't even mentioned the HACCP (Hazard Analysis Critical Control Point) word (5, 8).

Last, if you listen and are sincere, people will be responsive. You will feel a lot better about yourself and your work.

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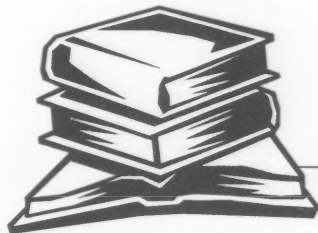


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Des Moines, IA 50322-2863

Book reviewed by: Bill LaGrange, Ph.D., Iowa State University, Ames IA

Book Review



"Dairy Foods Safety 1994: A Compendium of Abstracts"

Elmer H. Marth

Wisconsin Center for Dairy Research

Dr. Elmer Marth has compiled a very useful set of abstracts on dairy foods safety as influenced by several pathogenic microorganisms into a 273 page soft cover book. Most of the abstracts in the book are from articles published during 1994, a few were published in 1990-1993.

The abstracts cover these subjects: *Aeromonas hydrophila*, aflatoxin, *Bacillus cereus*, *Brucellae*, *Campylobacter jejuni*, *Clostridium botulinum*, *Coxiella burnetti*, *Escherichia coli*, *Listeria monocytogenes*, *Mycobacteria/tuberculosis*, *Mycobacteria paratuberculosis*, salmonellae, *Staphylococcus aureus*, Streptococci, and *Yersinia enterocolitica*. Each of these subjects is divided into areas such as dairy foods, other foods, control, testing methods, growth and virulence and other appropriate sub-topics. The first 17 pages of the book include a one sentence review of each of the numbered abstracts in the order they appear under the 15 subjects. Besides being a good review of the literature on the subject of microbiologi-

cal influenced safety of dairy foods, this book is an extremely handy reference not only because of its completeness but also because of the way in which it is formatted.

On page three, for instance, under the heading *Campylobacter jejuni*, the reader finds under item one; "during 1981-1990, in the U.S., 20 outbreaks of campylobacteriosis, with 458 cases, occurred in 11 states as a consequence of drinking raw milk during youth activities." Then turning to page 55 under the heading *Campylobacter jejuni*, and to CJ1, the complete abstract of the article on this topic that was published in the *Journal of the American Medical Association* in 1992 appears. An individual can read a one line summary of the abstract then read the entire abstract. If more information is desired, the reader knows immediately where to find the original article. *Dairy Foods Safety 1994: A Compendium of Abstracts* is a very useful reference for those interested in dairy foods safety.

For copies of "Dairy Foods Safety 1994: A Compendium of Abstracts":

Mail requests to: Sarah Quinones, Outreach Program Manager, Wisconsin Center for Dairy Research, 1604 Linden Dr., Madison, WI 53706; phone (608) 262-5970 • fax (608) 262-1578.

IAMFES Secretary Candidates



John J. Guzewich

John J. Guzewich has been chief of the food protection section in the Bureau of Community Sanitation and Food Protection of the New York State Department of Health since 1983. From 1991-1993 he served as director of training for the Center of Environmental Health. In his twenty-five year career he has also worked as assistant director of the Bureau of Food Protection, health program administrator coordinating nursing home inspections, regional sanitarian, and public health sanitarian. He is in the process of being appointed as assistant professor in both the Epidemiology and the Environmental Health and Toxicology Departments in the Graduate School of Public Health, State University of New York at Albany.

Jack developed, and has directed, the department's foodborne disease surveillance program and launched the use of HACCP in their food service program. As training director he led a team that conducted a training needs assessment for all environmental health staff in the state. He then led the development of master training plans for various environmental health titles, and standardized curriculum and lecture outlines for the Basic Environmental Health course.

Jack became a member of IAMFES in 1971. He has served on the IAMFES Program Advisory Committee and Committee on Communicable Diseases Affecting Man where he has participated in the development of all the procedure booklets available through IAMFES.

Jack is a member of other various professional organizations including the New York Society of Professional Sanitarians. He has authored 16 scientific publications, presented numerous papers, lectured at several state and federal training courses, testified at Congressional Subcommittees and mentors graduate students.



Charles D. Price

Charles D. Price serves as senior regional milk specialist for the U.S. Food and Drug Administration (FDA), Midwest region. He is responsible for the administration of the Cooperative State/FDA Program for Certification of Interstate Milk Shipments in the upper seven midwestern states. He conducts audits of Grade A dairy farms and milk processing plants, trains and changes state dairy regulatory and rating officers, provides technical assistance to regulatory agencies and the dairy industry, and evaluates dairy processing equipment for compliance with sanitary design criteria and public health controls. He serves as chairperson of the FDA Milk Specialist, Processing Plant Technical Committee and the committee to set up the 1996 FDA Milk Specialist Training Conference.

Professional involvement for Charles includes being a registered sanitarian since 1970, member of National Mastitis Council, Dairy Practices Council, Chicago Dairy Technology Society, North Central Association of Food and Drug Officials and the Association of Food and Drug Officials. He has also served two terms on the board of Associated Illinois Milk, Food and Environmental Sanitarians (AIMFES), was president in 1978 and 1992, board advisor since 1992, and is newsletter editor.

Charles has been a member of IAMFES since 1971 and has attended all but five annual meetings. He has served as affiliate council chair in 1994, IAMFES national award's chair in 1995, By-laws committee member, and farm methods committee. He also served as local arrangements co-chair for the 1976 and 1990 annual meetings. He received the IAMFES Certificate of Merit in 1989 and the Sanitarian of the Year Award in 1994.

Holders of 3-A Symbol Council Authorization on February 1996

Questions or statements concerning any of the holder's authorizations listed below, model numbers or the equipment fabricated, should be addressed to: Administrative Officer, 3-A Symbol Council, 3020 Bluff Rd., Columbia, SC 29209; Phone (803) 783-9258; Fax (803) 783-9265.

01-07 Storage Tanks for Milk and Milk Products

2	APV Crepaco, Inc. 100 South CP Ave. Lake Mills, Wisconsin 53551	(5/1/56)	793	Ampco Pumps Co. 4000 W. Burnham St. Milwaukee, Wisconsin 53215	(9/14/94)
28	Waukesha Cherry-Burrell (A United Dominion Company) 575 E. Mill St. Little Falls, New York 13365	(10/3/56)	214R	Ben H. Anderson Manufacturers Box A Morrisonville, Wisconsin 53571	(5/20/70)
117	DCI, Inc. P.O. Box 1227, 600 No. 54th Ave. St. Cloud, Minnesota 56301	(10/28/59)	212R	Babson Brothers Company Dairy Systems Division 1400 West Gale Galesville, Wisconsin 54630	(2/20/70)
76	Damrow Company (A Div. of DEC Int'l., Inc.) 196 Western Ave., P.O. Box 750 Fond du Lac, Wisconsin 54935-0750	(10/31/57)	205R	Boumatic 1919 S. Stoughton Rd. P.O. Box 8050 Madison, Wisconsin 53716	(5/22/69)
127	Paul Mueller Co. P.O. Box 828 Springfield, Missouri 65801	(6/29/60)	739	CSF Inox S.P.A. Strada per Bibbiano 7 - Montecchio E. (RE) Italy (U.S. Rep: Sanchelima Intl. 1781-83 N.W. 93rd Avenue Miami, Florida 33172)	(6/25/93)
440	Scherping Systems 801 Kingsley St. Winsted, Minnesota 55395	(3/1/85)	709	Conexiones Inoxidables de Puebla S.A. de C.V. Vicente Guerrero No. 211 Xicotepec de Juarez Edo, Puebla, Mexico (U.S. Rep: Ben Dolphin Consulting, 4735 Lansing Drive North Olmsted, Ohio 44070)	(1/18/93)
571	Viatic Process/Storage Systems 500 Reed St. Belding, Michigan, 48809	(8/21/89)			
31	Walker Stainless Equipment Co., Inc. Elroy, Wisconsin 53929	(10/4/56)			

02-08 Pumps for Milk and Milk Products

63R	APV Crepaco, Inc. 100 South CP Ave. Lake Mills, Wisconsin 53551	(4/29/57)	820	Drum Industries, Inc. 2501 Constant Comment Place Louisville, Kentucky 40299 (Mfg. by: Alfa Laval Pumps, LTD Easbourne East Sussex England BN 23 6PQ)	(3/17/95)
830	APV Fluid Handling-Americas 100 South CP Avenue Lake Mills, Wisconsin 53551-1799	(5/5/95)	671	Flowtech, Inc. 1900 Lake Park Drive Smyrna, Georgia 30080	(4/1/92)
858	APV Fluid Handling-Americas 100 South CP Avenue Lake Mills, Wisconsin 53551-1799	(10/30/95)	466	Fluid Metering, Inc. 29 Orchard St. Oyster Bay, New York 11771	(1/10/86)
636	Abel Pumps Corporation 79 North Industrial Park 511 North Avenue Sewickley, Pennsylvania 15143-2339 (Mfr: Abel Pumps, Buchen, Germany)	(7/10/91)			

828	Flux Pumps Corp. 4430 Commerce Circle Atlanta, Georgia 30336 (Mfg. by: Flux Gerate GmbH Talweg 12 D75433 Maulbronn Germany)	(4/13/95)	400	Netsch Incorporated 119 Pickering Way Exton, Pennsylvania 19341-1393	(8/15/83)
306	Fristam Pumps, Inc. 2410 Parview Road Middleton, Wisconsin 53562	(5/2/78)	810	O.M.A.C. SRL Pompe Via G. Bernini 4, I-42043 Rubiera (RE) Italy (U.S. Rep: Sanchelima International Inc. 1783 N.W. 93rd Avenue Miami, Florida 33172	(1/2/95)
65R	G & H Products Corp. 7600-57th Avenue P.O. Box 1199 Kenosha, Wisconsin 53141	(5/22/57)	827	PACKO Diksmuide NV Cardijnlaan 10 B8600 Diksmuide, Belgium (Not available in the USA)	(4/14/95)
325	Johnson Pumps (U.K.) Ltd. Highfield Industrial Estate Edison Road, Eastbourne East Sussex, England BN23 6PT (U.S. Rep: Johnson Pump of America, Inc. 4825 Scott Street, Suite 306 Schiller Park, Illinois 60176)	(8/16/90)	684	PCM.POMPES 17 Rue Ernest Laval B. P. 35 - 92173 Vanves Cedex, France (U.S. Rep: Alfa Laval Pumps, Inc. 9201 Wilmot Road Kenosha, Wisconsin 53141-1426)	(7/9/92)
145R	ITT Jabsco Products 1485 Dale Way Costa Mesa, California 92626 (Mfg. by: ITT Jabsco, England)	(11/20/63)	701	Pierre Guerin SA BP. 12 - 79210 Mauze-Sur-Le-Mignon France (U.S. Rep: Alfa Technical Group, Inc. 601 Thompson Road N. Syracuse, New York)	(10/27/92)
502	Inoxpa, s.a. C/. Telers, 54 17820 Banyoles Gerona, Spain	(9/16/92)	241	Puriti, S.A. de C.V. Alfredo Nobel 39 Industrial Puente de Vigas Tlalnepantla, Mexico (U.S. Rep: Waukesha Cherry-Burrell 611 Sugar Creek Road Delavan, WI 53115)	(9/12/72)
314	Len E. Ivarson, Inc. 3100 W. Green Tree Rd. Milwaukee, Wisconsin 53209	(12/22/78)	148R	Moyno Industrial Products A Division of Robbins & Myers, Inc. 1895 W. Jefferson St. Springfield, Ohio 45501-0960	(4/22/64)
603	Johnson Pumps (U.K.) Ltd. Highfield Industrial Estate Edison Road, Eastbourne East Sussex, England BN23 6PT (U.S. Rep: Johnson Pump of America 4825 Scott St. Schiller Park, Illinois 60176)	(8/16/90)	364	Roper Pump Company P.O. Box 269 Commerce, Georgia 30529	(7/28/82)
604	Johnson Pumps (U.K.), Ltd. Highfield Industrial Estate Edison Road, Eastbourne East Sussex, England BN23 6PT (Not available in the U.S.A.)	(8/16/90)	595	Scepex, Inc. (Formerly Pumpen-und Maschinenbau) 1834 Valley Street Dayton, Ohio 45405	(3/16/90)
841	Johnson Pumps (U.K.), Ltd. Highfield Industrial Estate Edison Road, Eastbourne East Sussex, England BN23 6PT (Not available in the U.S.A.)	(8/18/90)	568	Shanley Pump & Equipment, Inc. 2525 S. Clearbrook Dr. Arlington Heights, Illinois 60005 (Mfg. by: Allweiler, West Germany)	(5/15/89)
792	KSB. Inc. 4415 Sarellen Road Richmond, VA 23231 (Mfg. by: KSB AK Tiengesellschaft Frankenthal, Germany)	(9/14/94)	678	Shanley Pump & Equipment, Inc. 2525 S. Clearbrook Dr. Arlington Heights, Illinois 60005 (Mfg. by Allweiler, West Germany)	(5/11/92)
673	Alfa Laval Pumps, Inc. 9201 Wilmot Road Kenosha, Wisconsin 53141-1426	(4/16/92)	507	Sine Pump c/o Sundstrand Fluid Handling 14845 West 64th St. Arvada, Colorado, 80004	(7/21/87)
654	Mono Pumps Ltd., Dresser Pump Div. Martin Street Audenshaw, Manchester England M34 5DQ (U.S. Rep: MonoFlo, Dresser Pump Division Dresser Industries 821 Live Oak Drive Chesapeake, Virginia 23320-2601)	(10/22/91)	567	Stainless Products, Inc. 1649-72nd Ave. P.O. Box 169 Somers, Wisconsin 53171	(4/4/89)
			860	Sudmo North America 4403 First Avenue SE, Suite 500 Cedar Rapids, Iowa 52402 (Mfg. by: Sudmo Schleicher AG Industiestr. 7 D-73469, Reisburg Germany)	(11/28/95)

- 72R L.C. Thomsen Inc. (9/14/57)
1303-43rd St.
Kenosha, Wisconsin 53140
- 26R Tri-Clover, Inc. (9/29/56)
9201 Wilmot Road
Kenosha, Wisconsin 53141
- 609 Tuthill Corp. (12/12/90)
Tuthill Pump Division
12500 S. Pulaski Road
Alsip, Illinois 60658
- 52R Viking Pump, Inc. (12/31/56)
A Unit of IDEXX Corporation
406 State St., P.O. Box 8
Cedar Falls, Iowa 50613
(Mfg. by: Johnson Pump
Highfield Ind. Estate, Edison Road
Eastbourne, E. Sussex
UK BN 23 6PT)
- 29R Waukesha Cherry-Burrell (10/3/76)
611 Sugar Creek Road
Delavan, Wisconsin 53115

**04-03 Homogenizers and High Pressure Pumps
of the Plunger Type**

- 37 APV Crepaco, INC. (10/19/56)
100 South CP Ave.
Lake Mills, Wisconsin 53551
- 75 APV Gaulin, Inc. (6/26/57)
500 Research Dr.
Wilmington, Massachusetts 01887
- 309 APV Homogenizer, Div., Rannie Prod. (7/19/78)
(Formerly APV Rannie, Inc.)
445 Etna Street, Suite 57
St. Paul, Minnesota 55106
- 722 APV Rannie AS (3/23/93)
Roholmsvej 8, DK-2620
Albertslund, Denmark
(U.S. Rep: APV Crepaco, Inc.
100 South CP Avenue
Lake Mills, Wisconsin 53551)
- 390 American Lewa, Inc. (6/9/83)
132 Hopping Brook Road
Holliston, Massachusetts 01760
(Mfg. by: Lewa, Germany)
- 247 Bran & Luebbe, Inc. (4/14/73)
1025 Busch Parkway
Buffalo Grove, Illinois 60015
- 486 Fowler Products Company (11/18/86)
150 Collins Industrial Blvd.
P.O. Box 80268
Athens, Georgia 30608-0268
- 657 Microfluidics Corp. (11/4/91)
P.O. Box 9101
30 Ossipee Road
Newton, Massachusetts 02164-9101
- 558 Niro Soavi S.p.A. (1/3/89)
43100 Parma (Italy)
VIA M. Da Erba Edoari, 29/A
Distributed in the U.S. by
Niro Hudson, Inc.
1600 Country Road F
Hudson, Wisconsin 54016
- 847 Stork Food Machinery (9/7/95)
Airport Parkway
Box 1258
Gainesville, Georgia 30503

- (Mfg. by: Stork Amsterdam B.V.
Ketelstraat 2
021 JX Amsterdam
The Netherlands)
- 770 Tetra Pak Processing Systems (6/13/94)
8400 Lakeview Parkway, Ste. 500
Pleasant Prairie, Wisconsin 53158
(Mfg. by: Tetra Pak-Stainless Equipment AB
Lund, Sweden)
- 714 Union Homogenizer (2/25/93)
4600 W. Dickman Road
Battle Creek, Michigan 49015
- 87 Waukesha Cherry-Burrell (12/29/57)
(Fluid Handling Division)
611 Sugar Creek Road
Delavan, Wisconsin 53115

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

- 379 Bar-Bel Fabricating Co., Inc. (3/15/83)
N. 3760 Hwy. 12 & 16
Mauston, Wisconsin 53948
- 756 Beall Trailers of California (2/21/94)
9801 Moffat Blvd.
Manteca, California 95336
- 70R Brenner Tank, Inc. (8/5/57)
450 Arlington Ave., P.O. Box 670
Fond du Lac, Wisconsin 54936
- 40 Hills Stainless Steel & Equipment
Co., Inc. (10/20/56)
505 W. Koehn Street
Luverne, Minnesota 56156
- 201 Paul Krohnert Mfg. Ltd. (4/1/68)
811 Steeles Ave., P.O. Box 126
Milton, Ontario, Canada L9T 2Y3
(Not available in U.S.A.)
- 513 Nova Fabricating, Inc. (8/24/87)
404 City Rd.
P.O. Box 231
Avon, Minnesota 56310
- 85 Polar Tank Trailer, Inc. (12/20/57)
Holdingford, Minnesota 56340
- 653 Tremcar (10/10/91)
1, Tougas Street
Iberville, Quebec, Canada J2X 2P7
(U.S. Rep: Bay State Tr. & Tr.
527 Winthrop
Rehobeth, Massachusetts 02769)
- 25 Walker Stainless Equip. Co., Inc. (9/28/68)
625 State Street
New Lisbon, Wisconsin 53950
- 623 Walker Stainless Eq. Co., Inc. (3/28/91)
560 E. Burleigh Blvd.
P.O. Box 358
Tavares, Florida 32778
- 437 West-Mark (11/30/84)
2704 Railroad Ave., P.O. Box 418
Ceres, California 95307

**09-09 A1 Instrument Fittings and Connections Used
on Milk and Milk Products Equipment**

- 32 AB3 Kent-Taylor, Inc. (10/4/56)
(Formerly Taylor Instruments)
P.O. Box 20550
Rochester, New York 14602-0550

- | | | | | | |
|-----|---|------------|---|--|------------|
| 428 | ARI Industries, Inc.
381 ARI Court
Addison, Illinois 60101 | (9/12/84) | 444 | Tuchenhagen North America, Inc.
196 Western Avenue
Fond du Lac, Wisconsin 54936-1458 | (6/17/85) |
| 747 | Alloy Engineering Co., Inc.
304 Seaview Avenue
Bridgeport, Connecticut 06607 | (1/11/94) | 836 | Valmet Automation
30 Thomas Drive
Westbrook, Maine 04092
(Mfg. by: Valmet-Finland
P.O. Box 237 SF-33101
Tampere, Finland) | (7/2/95) |
| 321 | Anderson Instrument Co., Inc.
156 Auriesville Road
Fultonville, New York 12072 | (6/14/79) | 612 | Viatran Corp & Haenni Druckmittler
300 Industrial Drive
Grand Island, New York 14072 | (12/13/90) |
| 851 | Chicago Stainless Equipment
511 Weston Ridge Drive
Naperville, Illinois 60563 | (9/28/95) | 779 | Wahl Inst., Inc.
5750 Hannum Ave.
Culver City, California 90231 | (8/10/94) |
| 586 | Diversey Equipment Tech.
151 Harvey West Blvd.
Santa Cruz, California 95060 | (12/14/89) | 522 | Weed Instrument Company, Inc.
707 Jeffrey Way
Round Rock, Texas 78664 | (12/28/87) |
| 315 | Burns Engineering, Inc.
10201 Bren Rd., East
Minnetonka, Minnesota 55343 | (2/5/79) | | | |
| 763 | EG & G Berthold Laboritorium Prof.
Berthold GmbH & Co. KG Calmbacher Str. 22
D-7547 Bad Wildbad 1, Germany
(U.S. Rep: Berthold Systems, Inc.
101 Corporation Drive
Aliquippa, Pennsylvania 15001-4863) | (4/21/94) | 10-03 Milk and Milk Products Filters Using Disposable
Filter Media, as Amended | | |
| 206 | The Foxboro Company
33 Commercial Street
Foxboro, Massachusetts 02035 | (8/11/69) | 593 | Filtration Systems
Div. of Mechanical Mfg. Corp.
10304 N.W. 50th St.
Sunrise, Florida 33351 | (3/2/90) |
| 592 | Claud S. Gordon Co.
5710 Kenosha St.
P.O. Box 500
Richmond, Illinois 60071 | (2/27/90) | 704 | Pall Trinity Micro Corp.
3643 State Route 281
Cortland, New York 13045-0930 | (11/6/92) |
| 620 | Larad Equipment
26 Pearl Street
Bellingham, Massachusetts 02019 | (2/25/91) | 720 | R-P Products
Box 388, 407 Jefferson Street
Three Rivers, Michigan 49093 | (3/19/93) |
| 794 | Leeds and Northrup Co.
795 Horsham Road
P.O. Box 1010
Horsham, Pennsylvania 19044-8010 | (9/14/94) | 435 | Sermia International
740-212 Boul. Industrial
Blainville, Quebec
Canada J7C 3V4
(U.S. Rep: United Dairy
Machinery Corp.
301 Meyer Road
Buffalo, New York 14224) | (11/27/84) |
| 588 | Minco Products, Inc.
7300 Commerce Lane
Minneapolis, Minnesota 55432 | (12/20/89) | 296 | L. C. Thomsen, Inc.
1303 43rd St.
Kenosha, Wisconsin 53140 | (8/25/77) |
| 487 | Pyromation, Incorporated
5211 Industrial Road
Fort Wayne, Indiana 46825 | (12/16/86) | 35 | Tri-Clover, Inc.
9201 Wilmot Road
Kenosha, Wisconsin 53141 | (10/15/56) |
| 367 | RDF Corporation
23 Elm Ave.
Hudson, New Hampshire 03051 | (10/2/82) | | | |
| 495 | Rosemount Analytical Division
2400 Barranca Pkwy.
Irvine, California 92714 | (2/13/87) | 11-05 Plate-type Heat Exchangers for
Milk and Milk Products | | |
| 826 | Rosemount, Inc.
12001 Technology Drive
Eden Prairie, Minnesota 55344 | (4/6/95) | 365 | APV Heat Exchanger AS
Platinvej, 8
P.O. Box 329
DK-6000 Kolding
Denmark
(Not available in U.S.A.) | (9/8/82) |
| 732 | SensorTec, Inc.
16335-7 Lima Road
Huntertown, Indiana 46748 | (5/18/93) | 20 | APV Crepaco, Inc.
395 Fillmore Ave.
Tonawonda, New York 14150 | (9/4/56) |
| 420 | Stork Food Machinery, Inc.
P.O. Box 1258/Airport Parkway
Gainesville, Georgia 30503 | (4/17/84) | 120 | Alfa-Laval, Agri, Inc.
11100 No. Congress Ave.
Kansas City, Missouri 64153 | (12/3/59) |
| 32 | ABB Kent-Taylor
1175 John Street
P.O. Box 20550
Rochester, New York 14602-0550 | (10/4/56) | 17 | Tetra Pak Processing
8400 Lake View Parkway
Pleasant Prairie, Wisconsin 53158 | (7/28/82) |
| 690 | Texas Thermowell, Inc.
P.O. Box 1535
Hwy. 96 North
Silsbee, Texas 77656 | (8/25/92) | | | |

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|-----|---|------------|-----|---|------------|
| 718 | Babson Bros. Co.
Dairy Systems Div.
1400 West Gale Avenue
Galesville, Wisconsin 54630 | (3/8/93) | 248 | Allegheny Bradford Corp.
P.O. Box 200, Route 219 South
Bradford, Pennsylvania 16701 | (4/16/73) |
| 30 | Cherry-Burrell Corp.
Process Equipment Division
P.O. Box 35600
Louisville, Kentucky 40232-5600 | (10/2/56) | 243 | Babson Brothers Company
Dairy Systems Division
140 West Gale
Galesville, Wisconsin 54630 | (10/31/72) |
| 14 | Chester-Jensen Co., Inc.
5th & Tilghman Sts., P.O. Box 908
Chester, Pennsylvania 19016 | (8/15/56) | 734 | The Diversified-Berdell Group, Inc.
1710 Flushing Ave.
Ridgewood, New York 11385 | (5/19/93) |
| 791 | The Coburn Co., Inc.
834 E. Milwaukee St., Box 147
Whitewater, Wisconsin 53190
(Mfg. by: Elmega S./L.
Apartado De Cerros, 1
Camino Vrejo De Mourelle, S/N
15840 [Santa Comba] La Coruna
Spain) | (9/14/94) | 605 | Cherry-Burrell
Process Equipment Division
P.O. Box 35600
Louisville, Kentucky 40232-5600 | (8/30/90) |
| 468 | Niro, Inc. Evaporator Division
9165 Rumsey Road
Columbia, Maryland 21045-1991 | (2/2/86) | 103 | Chester-Jensen Co., Inc.
5th & Tilghman Sts., P.O. Box 908
Chester, Pennsylvania 19016 | (6/6/58) |
| 622 | ITT Standard
175 Standard Parkway
Cheektowaga, New York 14227
P.O. Box 1102
Buffalo, New York 14240-1102 | (2/25/91) | 824 | DASI Industries, Inc.
1414 - 5th Ave. SE
Decatur, Alabama 35601
(Mfg. by: Sacome Incapsa
30001 Murcia Spain) | (3/17/95) |
| 15 | Kusel Equipment Co.
820 West St., P.O. Box 87
Watertown, Wisconsin 53094 | (8/15/56) | 613 | Efref Corp.
11 Kitty Hawk Drive
Pittsford, New York 14534-1620 | (12/27/90) |
| 360 | Laffranchi Wholesale Co.
P.O. Box 1273
Ferndale, California 95536 | (7/12/82) | 712 | Enerquip, Inc.
611 North Road
P.O. Box 368
Medford, Wisconsin 54451 | (2/24/93) |
| 414 | Paul Mueller Co.
P.O. Box 828
Springfield, Missouri 65801 | (12/13/83) | 298 | Feldmeier Equipment, Inc.
6800 Town Line Road
P.O. Box 474
Syracuse, New York 13211 | (1/28/85) |
| 279 | The Schlueter Company
3410 Bell Street, P.O. Box 548
Janesville, Wisconsin 53547-0548
(Mfg. by: Samuel Parker, New Zealand) | (8/30/76) | 307 | G & H Products Corp.
7600-57th Avenue
P.O. Box 1199
Kenosha, Wisconsin 53141 | (5/2/78) |
| 650 | Schmidt-Bretten, Inc.
20475 Woodingham Drive
Detroit, Michigan 48221 | (10/3/91) | 217 | Girton Manufacturing Co.
Millville, Pennsylvania 17846 | (1/31/71) |
| 670 | Skellerup Engineering, Ltd.
2 Robert Street
P.O. Box 11-020
Ellerslie, Auckland 5
New Zealand
(U.S. Rep: Masport, Inc.
6140 McCormick Drive
Lincoln, Nebraska 68507) | (4/1/92) | 616 | ITT Standard
175 Standard Pkwy
P.O. Box 1102
Buffalo, New York 14240-1102 | (1/4/91) |
| 658 | Thermaline
180-37th Street
Auburn, Washington 98001 | (11/15/91) | 711 | Kusel Equipment Co.
820 West Street
Watertown, Wisconsin 53094 | (2/24/93) |
| 610 | Universal Dairy Equipment
Auckland, New Zealand
11100 N. Congress Avenue
Kansas City, Missouri 64153
(Mgr. Skellerup Engineering,
Ellerslie, Auckland 5,
New Zealand) | (12/13/90) | 238 | Paul Mueller Co.
P.O. Box 828
Springfield, Missouri 65801 | (6/28/72) |
| | | | 96 | C. E. Rogers Co.
So. Hwy #65, P.O. Box 118
Mora, Minnesota 55051 | (3/31/64) |
| | | | 532 | Scherping Systems
801 Kingsley St.
Winsted, Minnesota 55395 | (6/8/88) |
| | | | 392 | Stork Food Machinery, Inc.
(Mfg. by: Stork, Netherlands)
P.O. Box 1258/Airport Parkway
Gainesville, Georgia 30503 | (6/9/83) |
| | | | 614 | Tetra Pak Processing Systems
P.O. Box 179
8400 Lake View Parkway, Suite 500
Pleasant Prairie, Wisconsin 53158
(Mfg. by: Tetra Pak Stainless Equipment AB,
P.O. Box 64
Bruggaregatan 23, S-221 00
Lund, Sweden) | (12/27/90) |

**12-05 Tubular Heat Exchangers
for Milk and Milk Products**

- | | | |
|-----|---|------------|
| 438 | APV Heat Transfer Tech.
395 Fillmore Avenue
Tonawanda, New York 14150 | (12/10/84) |
|-----|---|------------|

- 591 Thermotech/Div. of Fristam Pumps, Inc. (2/8/90)
2410 Parview Rd.
Middleton, Wisconsin 53562
- 632 Yula Corporation (6/4/91)
330 Bryant Avenue
Bronx, New York 10474

13-09 Farm Milk Cooling and Holding Tanks

- 802 Agroecucpos Heker, S.A. (11/10/94)
De C.V.
Ind. Torreón, Coah, MEXICO
(U.S. Rep: James Read
M. E. Stainless
601 High Plain Dr.
Bel Air, Maryland 21014)
- 49R Alfa Laval Agri, Inc. (12/5/56)
11100 North Congress Ave.
Kansas City, Missouri 64153
- 240 Babson Brothers Company (9/6/72)
Dairy Systems Division
1400 West Gale
Galesville, Wisconsin 54630
- 4R Dairy Equipment Co. (6/15/56)
1919 S. Stoughton Rd.
Madison, Wisconsin 53716
- 179R Heavy Duty Products (Preston) Ltd. (3/8/66)
1261 Industrial Rd.
Cambridge (Preston)
Ontario, Canada N3H 4W3
(Not available in U.S.A.)
- 12R Paul Mueller Co. (7/31/56)
1600 W. Phelps, P.O. Box 828
Springfield, Missouri 65801
- 611 Universal Dairy Equipment (12/13/90)
11100 N. Congress Avenue
Kansas City, Missouri 64153

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

- 132 APV Anhydro (10/26/60)
182 Wales Ave.
Tonawanda, New York 14150
- 277 Contherm, Inc. (8/19/76)
P.O. Box 352, 111 Parker St.
Newburyport, Massachusetts 01950
- 500 Dedert Corporation (4/9/87)
20000 Governors Drive
Olympia Fields, Illinois 60461
- 186R Marriott Walker Corp. (9/6/66)
925 E. Maple Rd.
Birmingham, Michigan 48011
- 273 Niro Evaporators, Inc. (5/20/76)
(Formerly Niro Atomizer
Food and Dairy)
9165 Rumsey Road
Columbia, Maryland 21045
- 639 Niro-Sterner, Inc. (7/10/91)
421-6th Street South
Winsted, Minnesota 55395
- 107R C.E. Rogers Co. (7/31/58)
So. Hwy #65, P.O. Box 118
Mora, Minnesota 55051
- 299 Stork Food Machinery, Inc. (11/16/77)
P.O. Box 1258, Airport Parkway
Gainesville, Georgia 30503

17-07 Formers, Fillers and Sealers of Single Service Containers for Milk and Milk Products

- 366 Autoprod, Inc. (9/15/82)
5355 115th Avenue N.
Clearwater, Florida 34620
- 382 Combibloc, Inc. (4/15/83)
4800 Roberts Rd.
Columbus, Ohio 43228
(Mfg. by: Jagenberg, West Germany)
- 192 Evergreen Packaging (1/3/67)
2400-6th St. S.W., P.O. Box 3000
Cedar Rapids, Iowa 52406
- 488 Fords Holmatic, Inc. (12/22/86)
1750 Corporate Dr., Suite 700
Norcross, Georgia 30093
- 619 Hassia Verpackungsmaschinen GmbH (2/22/91)
63691 Ranstadt 1/Hessen Germany
(Hassia U.S.A., Inc. 39 Plymouth St.
Fairfield, New York 07007)
- 473 International Paper Company (6/12/86)
Extended Shelf-Life Division
4020 Stirrup Creek Drive, Bldg. B200
Durham, North Carolina 27703
- 735 Kvalitetsproduktion AB (6/11/93)
S-693 29 Degerfors, Sweden
(U.S. Rep: Flowtech, Inc.
1900 Lake Park Drive, Ste. 345
Smyrna, Georgia 30080)
- 731 LIEDER-Maschinenbau GmbH & Co. KG (5/18/93)
Postfach 1252/Im Laab 3
3033 Schwarmstedt, Germany
- 743 Liqui-Box Corporation (11/16/93)
6950 Worthington-Galena Road
Worthington, Ohio 43085
- 330 Milliken Packaging (8/26/80)
White Stone, South Carolina 29353
(Mfg. by: Chubbukikai, Japan)
- 442 Milliken Packaging (2/21/85)
White Stone, South Carolina 29386
- 137 Elopak, Inc. (10/17/62)
30000 South Hill Road
New Hudson, Michigan 48165
- 281 Purity Packaging Corp. (11/8/76)
800 Kaderly Road
Columbus, Ohio 43228
- 723 James River Corporation (3/26/93)
One Better Way Road
Milford, Ohio 45150
(Mfg. by: Thimonner, France)
- 746 Septipack, Inc. (1/11/94)
2313 Benson Mill Rd.
Sparks, Maryland 21152
(Mfg. by: Remy Equipment, Druex, France)
- 848 Septipack, Inc. (9/24/95)
2313 Benson Mill Road
Sparks, Maryland 21159
(Mfg. by: ARCII
4, avenue de l'europe
ZAC des Hawks de Chatou
78402 Chatou Cedex, France)
- 482 Serac, Inc. (8/25/86)
300 Westgate Drive
Carol Stream, Illinois 60188

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|-----|---|-----------|-----|---|-----------|
| 681 | Shikoku Kakoki Co., Ltd.
No. 10-01 Nishinokawa
Tarohachisu, Kitajima-Cho
Itanogun, Tokushima, Japan
(U.S. Rep: Elopak, Inc.
30000 South Hill Road
New Hudson, Michigan 48165) | (6/8/92) | 439 | JV Northwest, Inc.
28120 S.W. Boberg Rd.
Wilsonville, Oregon 97070 | (1/22/85) |
| 351 | Tetra Pak, Inc.
909 Asbury Drive
Buffalo Grove, Illinois 60089
(Mfg. by: A. B. Tetra, Italy) | (1/7/82) | 702 | Paul Krohnert Manufacturing, Ltd.
P.O. Box 126
811 Steeles Avenue
Milton, Ontario, Canada L9T 2Y3
(Not available in the U.S.A.) | (11/6/92) |
| 220 | Tetra Rex Packaging Systems
(Formerly TetraPak/EquipUS)
909 Asbury Drive
Buffalo Grove, Illinois 60090 | (4/24/71) | 155 | Paul Mueller Co.
1600 W. Phelps, P.O. Box 828
Springfield, Missouri 65801 | (2/10/65) |
| 694 | IPS
7700 Camino Real, Suite 202, Bldg. D
Miami, Florida 33143
(Mfg. by: Time Pack
GmbH, Weissensburg
Germany) | (9/23/92) | 503 | Ripley Stainless, Ltd.
RR #3, Site 41
Summerland, British Columbia V0H 1Z0
(Not available in U.S.A.) | (5/1/87) |
| | | | 479 | Scherping Systems
801 Kingsley Street
Winsted, Minnesota 55395 | (8/3/86) |
| | | | 675 | Stainless Fabrication, Inc.
4455 W. Kearney
Springfield, Missouri 65803 | (4/22/92) |
| | | | 165 | Walker Stainless Equipment Co., Inc.
Elroy, Wisconsin 53929 | (4/26/65) |

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

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|-----|---|------------|
| 141 | APV Crepaco, Inc.
100 South CP Ave.
Lake Mills, Wisconsin 53551 | (4/15/63) |
| 146 | Cherry-Burrell Corp.
P.O. Box 35600
Louisville, Kentucky 40232-5600 | (12/10/63) |
| 286 | Tetra Laval Food Hoyer, Inc.
7711 95th St., P.O. Box 0902
Pleasant Prairie, Wisconsin 53158-0902
(Mfg. by: O. G. Hoyer A/S, Denmark) | (12/8/76) |
| 465 | Leon's Frozen Custard
3131 S. 27th Street
Milwaukee, Wisconsin 53151 | (12/17/85) |
| 573 | Processing Machinery & Supply Co.
1108 Frankford Ave.
Philadelphia, Pennsylvania 19125
(Mfg. by: PMS Italiana, Italy) | (9/28/89) |
| 355 | Emery Thompson Machine & Supply Co.
1349 Inwood Ave.
Bronx, New York 10452 | (3/9/82) |

**22-05 Silo-type Storage Tanks for
Milk and Milk Products**

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|-----|--|-----------|
| 154 | APV Crepaco, Inc.
100 South CP Ave.
Lake Mills, Wisconsin 53551 | (2/10/65) |
| 168 | Cherry-Burrell Corp.
(A Unit of AMCA Int'l, Inc.)
575 E. Mill Street
Little Falls, New York 13365 | (6/16/65) |
| 160 | DCI, Inc.
P.O. Box 1227, 600 No. 54th Ave.
St. Cloud, Minnesota 56301 | (4/5/65) |
| 181 | Damrow Co.
(Div. of DEC Int'l, Inc.)
196 Western Ave., P.O. Box 750
Fond du Lac, Wisconsin 54935-0750 | (5/18/66) |
| 312 | Feldmeier Equipment, Inc.
6800 Town Line Road
P.O. Box 474
Syracuse, New York 13211 | (9/15/78) |

23-02 Equipment for Packaging Viscous Dairy Products

- | | | |
|-----|---|------------|
| 174 | APV Crepaco, Inc.
Filling & Wrapping Systems Div.
100 South CP Avenue
Lake Mills, Wisconsin 53551 | (9/28/65) |
| 209 | Doboy Packaging Machinery Incorp.
869 S. Knowles Ave.
New Richmond, Wisconsin 54017 | (7/23/69) |
| 853 | Elmar Industries
200 Gould Ave., PO. Box 245
Buffalo, New York 14043-0245 | (10/11/95) |
| 674 | Hayssen Manufacturing
5300 Highway 42 North
P.O. Box 571
Sheboygan, Wisconsin 53082-0571 | (4/20/92) |
| 447 | Mateer-Burt Co., Inc.
434 Devon Park Drive
Wayne, Pennsylvania 19087 | (7/22/85) |
| 343 | Tetra Laval Food Hoyer, Inc.
7711 95th St., P. O. Box 0902
Pleasant Prairie, Wisconsin 53158-0902
(Mfg. by: Alfa Hoyer, Denmark) | (7/6/81) |
| 679 | Ice Cream Novelties
Division of Popsicle Inc., Ltd.
5305 Harvester Road
P.O. Box 610
Burlington, Ontario, Canada L7R 3Y5
(U.S. Rep: Sunshine Biscuits
100 Woodbridge Center Drive
Woodbridge, New Jersey 07095-1196) | (6/1/92) |
| 635 | Interbake Dairy Ingredients Div.
2821 Emerywood Parkway
Suite 210
Richmond, Virginia 23294 | (7/10/91) |
| 760 | Jordan Manufacturing, Inc.
Rt. 1, Box 42 A 1
Crossville, Alabama 35962 | (2/23/94) |
| 537 | Osgood Industries, Inc.
601 Burbank Rd.
Oldsizar, Florida 34677 | (7/19/88) |

- 666 Rapidpak (3/5/92)
1725 West 8th Street
Appleton, Wisconsin 54911
- 740 Raque Food Systems, Inc. (6/25/93)
11002 Decimal Drive
Louisville, Kentucky 40299
- 222 Sweetheart Packaging (11/15/71)
(Formerly Fort Howard Pkg. Corp.)
10100 Reistertown Road
Owing Mills, Maryland 21117

24-02 Non-coil Type Batch Pasteurizers

- 158 APV Crepaco, Inc. (3/24/65)
100 South CP Ave.
Lake Mills, Wisconsin 53551
- 161 Cherry-Burrell Corp. (4/5/65)
(A Unit of AMCA Int'l., Inc.)
575 E. Mill St.
Little Falls, New York 13365
- 187 DCI, Inc. (9/26/66)
P.O. Box 1227, 600 No. 54th Ave.
St. Cloud, Minnesota 56302
- 819 JayBee Precision, Inc. (3/17/95)
Kirk Pasture Road, P.O. Box 231
Bristol, New Hampshire 03222-0231
- 166 Paul Mueller Co. (4/26/65)
P.O. Box 828
Springfield, Missouri 65801

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

- 159 APV Crepaco, Inc. (3/24/65)
100 South CP Ave.
Lake Mills, Wisconsin 53551
- 162 Cherry-Burrell Corp. (4/5/65)
(A Unit of AMCA Int'l., Inc.)
575 E. Mill St.
Little Falls, New York 13365
- 188 DCI, Inc. (9/26/66)
P.O. Box 1227, 600 No. 54th Ave.
St. Cloud, Minnesota 56301
- 725 Inox-Tech, Inc. (4/14/93)
6705 Route 132
Ville Ste-Catherine
Quebec, Canada J0L 1E0
(U.S. Rep: Michael Ripka, Pres., Bionex
12615 E. Meridian Avenue
Payallup, Washington 98373)
- 710 Lee Industries, Inc. (2/10/93)
P.O. Box 687
514 West Pine Street
Phillipsburg, Pennsylvania 16866
- 167 Paul Mueller Co. (4/26/65)
P.O. Box 828
Springfield, Missouri 65801
- 687 SANIFAB (8/3/92)
528 North Street
Stratford, Wisconsin 54484
- 448 Scherping Systems (8/1/85)
801 Kingsley Street
Winsted, Minnesota 55395
- 520 Stainless Fabrication, Inc. (12/8/87)
4455 W. Kearney
Springfield, Missouri 65803

- 837 Viatic Process/Storage Systems (7/10/95)
500 Reed Street
Belding Michigan 48809
- 202 Walker Stainless Equip. Co., Inc. (9/24/68)
625 State St., P.O. Box 202
New Lisbon, Wisconsin 53950-0202

26-03 Sifters for Dry Milk and Dry Milk Products

- 752 Andritz Sprout-Bauer (1/28/94)
Sherman Street
Muncy, Pennsylvania 17756
- 363 Kason Corp. (7/28/82)
1301 East Linden Ave.
Linden, New Jersey 07036
- 430 Midwestern Industries, Inc. (10/11/84)
915 Oberlin Rd., P.O. Box 810
Massillon, Ohio 44648-0810
- 185 Rotex, Inc. (8/10/66)
1230 Knowlton St.
Cincinnati, Ohio 45223
- 656 Separator Engineering, Ltd. (11/4/91)
810 Ellingham Street
Pointe Clair, Quebec, Canada H9R 3S4
(U.S. Rep: Kason Corp.
1301 E. Linden Avenue
Linden, New Jersey 07036)
- 172 Sweco, Inc. (9/1/65)
(Division of Emerson Electric Company)
7120 Buffington Rd.
Florence, Kentucky 41042

27-02 Equipment for Packaging Dry Milk and Dry Milk Products

- 353 All-Fill, Inc. (3/2/82)
418 Creamery Way
Exton, Pennsylvania 19341
- 831 Custom Equipment Design (5/9/95)
1057 Highway 80 East, P.O. Box 4807
Monroe, Louisiana 71203
- 618 Hayssen Manufacturing Company (2/18/91)
5300 Highway 42 North
P.O. Box 571
Sheboygan, Wisconsin 53082-0571
(Manufactured by Yamato Scale Co.
Akasi, 673, Japan)
- 625 Ishida Scales Mfg. Co., Inc. (4/2/91)
44, Sanno-Cho, Shogoin
Sakyo-Ku, Kyoto, Japan
(U.S. Rep: Heat & Control
225 Shaw Rd.
S. San Francisco, California 94080)
- 409 Mateer-Burt Co. (10/31/83)
436 Devon Park Dr.
Wayne, Pennsylvania 19087
- 816 Pacmac Inc. (2/24/95)
1611 Armstrong Ave., P.O. Box 360
Fayetteville, Arkansas 72702-0360
- 497 Triangle Package Machinery Co. (2/26/87)
6655 West Diversey Ave.
Chicago, Illinois 60635

28-02 Flow Meters for Milk and Milk Products

- 270 ABB Kent-Taylor, Inc. (2/9/76)
P.O. Box 20550
Rochester, New York 14602-0550

- 272 Accurate Metering Systems, Inc. (4/2/76)
1651 Wilkening Court
Schaumburg, Illinois 60173
- 253 Badger Meter, Inc. (1/2/74)
4545 W. Brown Deer Road
P.O. Box 23099
Milwaukee, Wisconsin 53223
- 359 Brooks Instruments (6/11/82)
407 West Vine St.
Hatfield, Pennsylvania 19440
- 660 Danfoss A/S (11/20/91)
DK-6430
Nordborg, Denmark
(U.S. Rep: Danfoss Electronics
2995 Eastrock Drive
Rockford, Illinois 61109)
- 692 Endress & Hauser Flowtec AG (9/14/92)
Kägenstrasse 7
CH - 4153 Reinach, Switzerland
(U.S. Rep: Endress & Hauser, Inc.
2350 Endress Place
Greenwood, Indiana 46143)
- 797 Endress & Hauser, Inc. (10/10/94)
2350 Endress Place, P.O. Box 246
Greenwood, Indiana 46142
(Mfg. by: Endress & Hauser Flowtec AG
Kägenstrasse 7
CH - 4153 Reinach
Switzerland)
- 599 Euromatic Machine & Oil (4/26/95)
CO (UK) LTD
Westcroft Industrial Estate
Rhodes, Middleton, Manchester
M24 4GJ England
(Not available in the U.S.A.)
- 226 Fischer & Porter Co. (12/9/71)
125 E. County Line Rd.
Warminster, Pennsylvania 18974
- 477 Flowdata, Inc. (7/31/86)
1817 Firman Drive
Richardson, Texas 75081-1826
- 506 E G & G Flow Technology, Inc. (6/17/87)
4250 East Broadway Road
Phoenix, Arizona 85040
- 224 The Foxboro Company (11/16/71)
33 Commercial Street
Foxboro, Massachusetts 02035
- 717 Gemu Valves, Inc. (3/4/93)
3800 Camp Creek Parkway
Ste. 102, Bldg. 2400
Atlanta, Georgia 30331
- 649 Geo Technology (10/2/91)
12312 E. 60th Street
Tulsa, Oklahoma 74146
- 661 G/H Products Corp. (11/21/91)
7600-57th Avenue
P.O. Box 1199
Kenosha, Wisconsin 53142
- 562 Great Lakes Instruments, Inc. (2/6/89)
9020 West Dean Road
Milwaukee, Wisconsin 53224-0056
- 630 Halliburton Services (5/28/91)
Drawer 1431
Duncan, Oklahoma 73536-0346
- 574 Hersey Measurement Co., Inc. (10/12/89)
150 Venture Blvd.
P.O. Box 4585
Spartanburg, South Carolina 29305
- 512 Hoffer Flow Controls, Inc. (8/17/87)
107 Kitty Hawk Lane
Elizabeth City, North Carolina 27909
- 744 Honeywell (11/16/93)
Industrial Controls Div.
1100 Virginia Drive
Fort Washington, Pennsylvania 19034
- 733 Honeywell, Inc. (5/18/93)
16404 Black Canyon Highway
Phoenix, Arizona 85023-3095
- 265 GH Flow Automation (3/10/75)
9303 Sam Houston Parkway
Houston, Texas 77099-5298
- 535 Invalco, Inc. (7/22/88)
(A subsidiary of Smith Meter, Inc.)
P.O. Box 1183
Hutchinson, Kansas 67504
- 764 Johnson Yokogawa (4/22/94)
4 Dart Road
Newnan, Georgia 30265-1040
(Mfg. by: Yokogawa Electric Corp.
2-9-32 Nakacho
Musashino-shi, Tokyo,
180 Japan)
- 840 KOBOLD Instr. Inc. (7/17/95)
1801 Parkway View Drive
Pittsburgh, Pennsylvania 15205
(Mfg. by: KOBOLD Messring GmbH
Frankfort HRB 29376
Germany)
- 529 Krohne America, Inc (5/18/88)
7 Dearborn Road
Peabody, Massachusetts 01960
(Mfg. by: Altometer, Holland)
- 755 Liquid Controls Corporation (2/21/94)
105 Albrecht Drive
Lake Bluff, Illinois 60044
(Mfg. by: Processautomatic
Box 117,
61070 Vagnharad, Sweden)
- 778 Magnetrol Intl., Inc. (7/27/94)
5300 Belmont Road
Downers Grover, Illinois 60515
- 378 Micro Motion, Inc (2/16/83)
7070 Winchester Circle
Boulder, Colorado 80301
- 729 Peck Measurement, Ltd. (4/14/93)
Kings Worthy, Winchester
Hampshire, England S023 7QA
(U.S. Rep: Peck Measurement
10335 Landsbury, Ste. 300
Houston, Texas 77099-3407)
- 490 Rosemount, Inc. (1/8/87)
12001 Technology Dr.
Eden Prairie, Minnesota 55344
- 585 Solartron (12/7/89)
11321 Richmond Ave.
Houston, Texas 77082-2615
(Mfg. by: Solartron, England)
- 587 Schlumberger Ind., Measurement Div. (12/18/89)
1310 Emerald Rd.
Greenwood, South Carolina 29646
(Mfg. by: Schlumberger, France)

- 550 Sparling Instruments Co., Inc. (10/26/88)
4097 N. Temple City Blvd.
P.O. Box 5988
El Monte, California 91731
- 715 Thermal Instrument Co. (2/25/93)
217 Sterner Mill Road
Trevose, Pennsylvania 19053
- 386 Turbo Instruments, Inc. (5/11/83)
4 Vashell Way
Orinda, California 94563
(Mfg. by: Turowerk, West Germany)
- 803 Turck, Inc. (11/18/94)
3000 Campus Dr.
Plymouth, Minnesota 55441-2656
(Mfg. by: EGE - Elektronik
Ravensberg 34
D-24214 Gehorf
Germany)
- 664 Schutte & Koerting (12/16/91)
(A division of Ketema, Inc.)
XO Technologies Products
2233 State Road
Bensalem, Pennsylvania 19020

**29-01 Air Eliminators for Milk
and Fluid Milk Products**

- 340 Accurate Metering Systems, Inc. (6/2/81)
1651 Wilkening Court
Schaumburg, Illinois 60173
- 662 G/H Products Corp. (11/21/91)
7600-57th Avenue
P.O. Box 1199
Kenosha, Wisconsin 53142
- 436 Scherping Systems (11/27/84)
801 Kingsley Street
Winsted, Minnesota 55395

30-01 Farm Milk Storage Tanks

- 421 Paul Mueller Co. (4/17/84)
P.O. Box 828
Springfield, Missouri 65801

31-02 Scraped Surface Heat Exchangers

- 290 APV Crepaco, Inc. (6/15/77)
100 South CP Ave.
Lake Mills, Wisconsin 53551
- 323 Cherry-Burrell Corp. (7/26/79)
Process Equipment Division
P.O. Box 35600
Louisville, Kentucky 40232-5600
- 274 Contherm, Inc. (6/25/76)
111 Parker St., P.O. Box 352
Newburyport, Massachusetts 01950
- 496 FR Mfg. Corp. (2/23/87)
2807 South Highway 99
Stockton, California 95202
- 840 Kobold Instr. Inc. (7/17/95)
1801 Parkway View Dr.
Pittsburgh, Pennsylvania 15205
(Mfg. by: Kobold Messring GmbH
Frankfort HRB 29376
Germany)

- 361 N.V. Terlet (7/12/82)
P.O. Box 62
7200 AB Zutphen
Netherlands
(U.S. Agent Manning & Lewis-NJ)

**32-01 A1 Uninsulated Tanks for Milk
and Milk Products**

- 397 APV Crepaco, Inc. (6/21/83)
100 South CP Ave.
Lake Mills, Wisconsin 53551
- 264 Cherry-Burrell Corp. (1/27/75)
(A Unit of AMCA Int'l., Inc.)
575 E. Mill St.
Little Falls, New York 13365
- 268 DCI, Inc. (11/21/75)
600 No. 54th Ave., P.O. Box 1227
St. Cloud, Minnesota 56301
- 708 Lee Industries, Inc. (1/12/93)
P.O. Box 688
Phillipsburg, Pennsylvania 16866
- 844 Paul Mueller Co. (8/24/95)
1600 West Phelps St.
Springfield, Missouri 65801
- 354 C.E. Rogers Co. (3/3/82)
S. Hwy. #65, P.O. Box 118
Mora, Minnesota 55051
- 683 SANIFAB (7/9/92)
A Division of A&B Process Systems Corp.
528 North Street
Stratford, Wisconsin 54484
- 441 Scherping Systems (3/1/85)
801 Kingsley St.
Winsted, Minnesota 55395
- 852 Viatec Process/Storage Systems (10/18/95)
500 Reed Street
Belding, Michigan 48809
- 339 Walker Stainless Equip. Co., Inc. (6/2/81)
618 State St.
New Lisbon, Wisconsin 53950

33-01 Polished Metal Tubing for Dairy Products

- 310 Allegheny Bradford Corp. (7/19/78)
P.O. Box 200 Route 219 South
Bradford, Pennsylvania 16701
- 812 A.T.I. s.r.l. (1/26/95)
Viale Resegone 7
22036 Erba (Como)
Italy
(U.S. Rep: Norca Corporation
185 Great Neck Road
Great Neck, New York 11022)
- 413 Azco, Inc. (12/8/83)
P.O. Box 567
Appleton, Wisconsin 54912
- 809 Damascus-Bishop Tube Co. (1/2/95)
795 Reynolds Industrial Park Road
Greenville, Pennsylvania 16125
- 736 Kvalitetsproduktion AB (6/11/93)
S-693 29 Degerfors, Sweden
(U.S. Rep: Flowtech, Inc.
1900 Lake Park Drive, Ste. 345
Smyrna, Georgia 30080)

- 308 Rath Manufacturing Co., Inc. (6/20/78)
2505 Foster Ave.
Janesville, Wisconsin 53545
- 368 Rodger Industries Inc. (10/7/82)
P.O. Box 186, R.R. 1
Blenheim, Ontario
Canada NOP 1A0
(Not available in U.S.A.)
- 776 Siam Stainless (7/18/94)
Fittings & Tubulars
Bangkok, Thailand
(U.S. Rep: Kurt Orban Partners
Kurt Orban
450 Kings Road
Brisbane, California 94005)
- 775 Trent Tube (7/18/94)
P.O. Box 77
East Troy, Wisconsin 53120
- 289 Tri-Clover, Inc. (1/21/77)
9201 Wilmot Road
Kenosha, Wisconsin 53141
- 331 United Industries, Inc. (10/23/80)
1546 Henry Ave.
Beloit, Wisconsin 53511
- 34-02 Portable Bins**
- 647 Thomas Conveyor Company (9/18/91)
Tote System Division
555 I-35 South
Burleson, Texas 76028
- 35-00 Continuous Blenders**
- 527 Arde Barinco, Inc. (3/15/88)
500 Walnut Street
Norwood, New Jersey 07648
- 590 Chemineer, Inc. (1/23/90)
125 Flagship Dr.
North Andover, Massachusetts 01845
- 417 Cherry-Burrell (2/7/84)
Process Equipment Division
P.O. Box 35600
Louisville, Kentucky 40232-5600
- 825 GEI Processing, Inc. (3/30/96)
Machines Collette
One Indian Lane East
Towaco, New Jersey 07082
(Mfg. by: Machines Collette N.V.
Keerbaan 70
B-2160 Wommelgem
Belgium)
- 526 Hosokawa Bepex Corporation (3/16/88)
333 Taft St. NE
Minneapolis, Minnesota 55413
- 642 Mondomix Howden B.V. (8/7/91)
Reeweg 13
P.O. Box 98
1394 ZH Nederhorst den Berg
The Netherlands
(U.S. Rep: Donster and Co.
HCR-3, Box 128
Johnsburg, New York 12843)
- 680 Quadro Engineering, Inc. (6/3/92)
613 Colby Drive
Waterloo, Ontario
Canada N2V 1A1
(U.S. Rep: Zajac Equipment Supply
270 Roosevelt Trail
Windham, Maine 04062)
- 766 Semi-Bulk Systems (4/28/94)
159 Cassens Court
Fenton, Missouri 63026-2543
- 724 Silverson Machines, Inc. (4/14/93)
P.O. Box 589
355 Chestnut Street
East Longmeadow, Massachusetts 01028
(Mfg. by: Silverson Machines,
Chesham, England)
- 36-00 Colloid Mills**
- 808 Boston Shearpump, Inc. (12/16/94)
P.O. Box 390161
Cambridge, Massachusetts 02139-9998
- 846 IKA Works, Inc. (9/7/95)
2635 North Chase Parkway, S.E.
Wilmington, North Carolina 28402-7499
- 608 Kinematica, Inc. (10/17/90)
19 Normandy Road
Newton, Massachusetts 02166
(Mfg. by: Kinematica AG,
CH-6014 Littau/Lucerne, Switzerland)
- 293 Waukesha Cherry-Burrell (8/25/77)
611 Sugar Creek Road
Delavan, Wisconsin 53115
- 37-01 A1 Liquid Pressure and Level Sensing Devices**
- 738 ABB Kent-Taylor, Inc. (6/25/93)
1175 John Street
Rochester, New York 14602-0550
- 576 Ametek/Mansfield & Green Division (10/13/89)
8600 Somerset Dr.
Largo, Florida 34643
- 822 Ametek US Gauge Division (3/17/95)
PMT Products
820 Pennsylvania Blvd.
Feasterville, Pennsylvania 19053
- 318 Anderson Instrument Co., Inc. (4/9/79)
156 Auriesville Road
Fultonville, New York 12072
- 659 Bindicator Company (11/20/91)
1915 Dove Street
Port Huron, Michigan 48060
- 525 Caldwell Systems Corporation (3/4/88)
(Formerly Zantel Instruments)
1500 Kansas Ave., Suite 2A
Longmont, Colorado 80501-6540
- 850 Chicago Stainless Equip. (9/28/95)
511 Weston Ridge Drive
Naperville, Illinois 60563
- 672 Computer Instruments Corp. (4/3/92)
1000 Shames Drive
Westbury, New York 11590

- 706 CTI Celtek Electronics (12/29/92)
5762 Royalmount
T.M.R., Quebec, Canada H4P 1K5
(U.S. Rep: CTI Celtek Electronics, Inc.
1000 Leonidas Street
New Orleans, Louisiana 70118)
- 829 DCT Instruments (4/13/95)
1165 Chambers Road
Columbus, Ohio 43212
(Mfg. by: Sensotec Inc.
1200 Chesapeake Avenue
Columbus, Ohio 43212)
- 862 Delta Controls Corporation (11/30/95)
585 Fortson Street
Shreveport, Louisiana 71107
- 640 Dresser Industries (7/16/91)
Instrument Division
250 East Main Street
Stratford, Connecticut 06497
- 663 Dresser Industries (12/4/91)
Instrument Division
210 Old Gate Lane
Milford, Connecticut 06460
- 405 Drexelbrook Engineering Co. (9/27/83)
205 Keith Valley Rd.
Horsham, Pennsylvania 19044
- 861 Dwyer Instruments, Inc. (11/28/95)
P.O. Box 373
Michigan City, Indiana 46360
(Mfg. by: Ametek, U.S. Gauge Div.
PMT Products
820 Pennsylvania Blvd.
Feasterville, Pennsylvania 19053)
- 459 Endress + Hauser, Inc. (10/17/85)
2350 Endress Place
Greenwood, Indiana 46142
(Mfg. by: Endress + Hauser GmbH,
Hauptstrasse 1,
D-79689 Maulburg, Germany)
- 524 Flow Technology, Inc. (1/14/88)
4250 E. Broadway Road
Phoenix, Arizona 85040
- 463 The Foxboro Company (12/6/85)
33 Commercial Street
Foxboro, Massachusetts 02035
- 668 GP: 50 New York, Ltd. (3/30/92)
2770 Long Road
P.O. Box 805
Grand Island, New York 14072
- 651 Granzow, Inc. (10/3/91)
2300 CrownPoint Executive Drive
Charlotte, North Carolina 28227
(Mfr: Kubler AG
Baar, Switzerland)
- 633 Griffith Industrial Products Company (6/21/91)
P.O. Box 111
Putnam, Connecticut 06260
- 749 Haenni Cie & AG (1/17/94)
CH-3303
Jegenstorf, Switzerland
(U.S. Rep: Viatran Corporation
300 Industrial Drive
Grand Island, New York 14072)
- 771 Hawk America (6/13/94)
1741 W. Rose Garden Lane
Phoenix, Arizona 85027
- 832 H.O. Trerice Co. (5/12/95)
12950 W. Eight Mile Rd.
Oak Park, Michigan 48237-3288
(Mfg. by: Bourdon-Sedene
125 Rue De La Marre
41 100 Vendome
France)
- 557 Honeywell, Inc. (12/21/88)
Industrial Controls Div.
1100 Virginia Drive
Fort Washington, Pennsylvania 19034
- 629 Intrinsic Safety Equipment of Texas (5/20/91)
907 Bay Star
Webster, Texas 77598-1531
- 598 Invalco, Inc. (3/22/90)
P.O. Box 1183
Hutchinson, Kansas 67504-1183
- 572 ITT Conoflow (9/25/89)
P.O. Box 768, Rt. 78
St. George, South Carolina 29477
- 798 Kay-Ray/Sensall, Inc. (10/14/94)
1400 Business Center Dr.
Mount Prospect, Illinois 60056
- 842 Klay Instruments B.V. (8/18/95)
Nijverheidsweg 5
NL 7991 CZ Dwingeloo
The Netherlands
(Not available in the U.S.A.)
- 396 King Engineering Corp. (6/13/83)
P.O. Box 1228
Ann Arbor, Michigan 48106
- 501 Lumenite Electronic Company (4/27/87)
2331 N. 17th Avenue
Franklin Park, Illinois 60131
- 768 MTS Sensors Division (6/6/94)
3001 Sheldon Drive
Cary, North Carolina 27513
- 596 Magnetrol International (3/20/90)
5300 Belmont Rd.
Downers Grove, Illinois 60515
- 627 Milltronics, Inc. (4/12/91)
730 The Kingsway
Peterborough, Ontario
Canada K9J 7B1
(U.S. Rep: Milltronics, Inc.
709 E. Stadium Drive
Arlington, Texas 76011)
- 597 NUOVA FIMA S.p.A. (3/20/90)
Via C. Battisti 59
28045 - INVORIO (NO) Italy
(Not available in U.S.A.)
- 523 Paper Machine Components, Inc. (1/3/88)
Miry Brook Road
Danbury, Connecticut 06810
- 554 Par Sonics, Inc. (11/30/88)
R.D. #1 - Box 505
Centre Hall, Pennsylvania 16828
- 563 PI Components Corp. (2/13/89)
350 Loop 250 South
Brenham, Texas 77833
- 644 Princo Instruments, Inc. (8/22/91)
1020 Industrial Highway
Southampton, Pennsylvania 18966-4095

- 815 ProMag PM LTD (2/24/95)
4251 Rhoda Drive
Baton Rouge, Louisiana 70819
- 328 Rosemount, Inc. (5/22/80)
12001 Technology Dr.
Eden Prairie, Minnesota 55344
- 784 Sensotec, Inc. (8/31/94)
1200 Chesapeake Ave.
Columbus, Ohio 43212-2288
- 515 Setra Systems, Inc. (9/14/87)
45 Nagag Park
Acton, Massachusetts 01720
- 583 S. J. Controls, Inc. (11/11/89)
2248 Obispo Ave. #203
Long Beach, California 90806
- 638 Span Instruments (7/10/91)
1947 Avenue "K"
Plano, Texas 75074
- 285 K Systems Corp. (Tank Mate Division) (12/7/76)
4919 Butterfield Road
Hillside, Illinois 60162
- 641 Tempress A/S (7/16/91)
Engtoften 6, DK-8260
Viby J, Denmark
- 765 Tri-Clover, Inc. (4/27/94)
9201 Wilmot Road
Kenosha, Wisconsin 53141
- 754 Valmet Automation (2/15/94)
30 Thomas Drive
Westbrook, Maine 04092
(Mfg. by: Valmet-Finland
P.O. Box 237 SF-33101
Tampere, Finland)
- 410 Viatran Corporation (11/1/83)
300 Industrial Drive
Grand Island, New York 14072
- 569 WEISS Instruments, Inc. (5/24/89)
85 Bell St.
West Babylon, New York 11704
(Mfg. by: Nuova-Fima, Italy)
- 600 Weksler Instruments Corporation
800 Mill Rd.
Freeport, New York 11520-0808
- 646 WIKA Instrument Corp. (9/10/91)
1000 Wiegand Blvd.
Lawrenceville, Georgia 30243
(Mfg. by: WIKA Ind. Corp.
63911 Klingenberg
Germany)
- 685 Winter's Thermogauges, Ltd. (8/3/92)
2220-3 Midland Avenue
Scarborough, Ontario
Canada M1P 3E6
(U.S. Rep: Winter's Thermogauges, Inc.
100 Sonwil Drive
Buffalo, New York 14225)

38-00 Cottage Cheese Vats

- 541 Kusel Equipment Company (9/16/88)
820 West St.
Watertown, Wisconsin 53094

- 385 Stoelting, Inc. (5/5/83)
P.O. Box 127
Kiel, Wisconsin 53042-0127

40-01 Bag Collectors for Dry Milk and Dry Milk Products

- 453 Hosokawa MikroPul E. Systems (9/4/85)
102 American Road
Morris Plains, New Jersey 07950
- 381 Marriott Walker Corp. (4/12/83)
925 E. Maple Rd.
Birmingham, Michigan 48011
- 456 C. E. Rogers Company (9/25/85)
P.O. Box 118
Mora, Minnesota 55051

41-00 Mechanical Conveyors

- 631 Flexicon Corporation (5/28/91)
1375 Stryker's Road
Phillipsburg, New Jersey 08865

42-00 In-Line Strainers

- 855 Flowtech Inc. (10/30/95)
1900 Lake Park Drive, No. 345
Smyrna, Georgia 30080
- 655 Tri-Clover, Inc. (10/23/91)
9201 Wilmot Road
Kenosha, Wisconsin 53141
- 606 Waukesha Cherry-Burrell (9/18/90)
611 Sugar Creek Road
Delavon, Wisconsin 53115

44-01 Air Driven Diaphragm Pumps

- 713 Warren Rupp, Inc. (2/5/93)
800 North Main Street
P.O. Box 1568
Mansfield, Ohio 44905
- 833 Wilden Pump & Engr. Co. (6/22/95)
22069 Van Buren Street
Grand Terrace, California 92313-5651
- 669 Skellerup Engineering, Ltd. (3/30/92)
2 Robert Street
P.O. Box 11-020
Ellerslie, Auckland 5
New Zealand
(U.S. Rep: Masport, Inc.
6140 McCormick Drive
Lincoln, Nebraska 68507)
- 805 Tri-Clover (11/18/94)
9201 Wilmont Road
Kenosha, Wisconsin 53141
(Mfg. by: KWW
Dusseldorf, Germany)

45-00 Cross Flow Membrane Modules

- 807 CeraMem Separations (11/30/94)
12 Clematis Ave.
Waltham, Massachusetts 02154
- 813 Golden Technologies Co., Inc. (2/2/95)
1697 Cole Blvd., Suite 300
P.O. Box 4040
Golden, Colorado 80402

786 North Carolina SRT, Inc. (8/31/94)
 1018 Morrisville Parkway
 Morrisville, North Carolina 27560
 (Mfg. by: Tohshin Seiko Co., Ltd.
 42-2 Aza Shinmei Tazawa Ohkuma
 Watari-Cho, Watari-Gun
 Miyagi 889-23 Japan)

46-00 (Refractometers and Optical Sensors)

785 Bran & Lubbe, Inc. (8/31/94)
 1025 Busch Parkway
 Buffalo Grove, Illinois 60089
 (Mfg. by: Bran & Lubbe
 Norderstdt
 GmbH [Germany])

859 The Electron Machine Corp. (11/4/95)
 15820 CR 450 West
 P.O.Box 2345
 Umatilla, Florida 32784

800 Epsilon Industrial Inc. (10/24/94)
 2215 Grand Ave. Parkway
 Austin, Texas 78728

783 James C. Camp (8/31/94)
 dba Advantec Process Systems
 95 Wyngate Dr.
 Newnan, Georgia 30265
 (Mfg. by: BTG Inc.
 2364 Park Central Blvd.
 Decatur, Georgia 30035-3987)

737 Katrina, Inc. (6/17/93)
 91 Western Maryland Pkwy.
 Hagerstown, Maryland 21740

697 Liquid Solids Control, Inc. (10/21/92)
 P.O. Box 259
 Farm Street
 Upton, Massachusetts 01568

751 Maselli Misure S.p.A. (1/20/94)
 Via Baganza, 4/3
 43100 Parma, Italy
 (U.S. Rep: Maselli Measurements, Inc.
 P.O. Box 7571
 7746 Lorraine Avenue
 Stockton, California 95267)

767 NIRSystems/Perstorp (6/6/94)
 12101 Tech Road
 Silver Spring, Maryland 20904

750 PT Papertech, Inc. (1/20/94)
 4850 The Dale
 West Vancouver
 B. C. Canada V7W 1K3
 (U.S. Rep: BD Services Corporation
 300 North Commercial Street
 Bellingham, Washington 98227)

742 Reflectronics, Inc. (9/15/93)
 3009 Montavesta Road
 Lexington, Kentucky 40502

817 Technitron Labs Inc. (2/24/95)
 306 Looney Road
 Piqua, Ohio 45346

50-00 Level Sensing Devices

705 CTI Celtek Electronics (12/29/92)
 5762 Royalmount
 T.M.R., Quebec, Canada H4P 1K5
 (U.S. Rep: CTI Celtek Electronics, Inc.
 1000 Leonidas Street
 New Orleans, Louisiana 70118)

51-00 (Formerly 08-17R) Plug-Type Valves

801 Alloy Products Corp. (11/10/94)
 P.O. Box 529
 Waukesha, Wisconsin 53187

787 Cipriani, Inc. (8/31/94)
 Tassalini S.P.A.
 23195 LaCadena Dr., Suite 103
 Laguna Hills, California 92653

772 G & H Products (6/13/94)
 7600 - 57th Avenue
 Kenosha, Wisconsin 53141

780 L. C. Thomsen, Inc. (8/31/94)
 1303 - 43rd St.
 Kenosha, Wisconsin 53140

239 LUMACO (6/3/72)
 9-11 East Broadway
 Hackensack, New Jersey 07601

788 Puriti, S.A. De C. V. (8/31/94)
 Alfredo Nobel No. 39
 Fracc. Ind. Pte. de Vigas
 Tlalnepantha, Mexico
 (U.S. Rep: Waukesha Cherry-Burrell
 611 Sugar Creek Road
 Delavan, Wisconsin 53115)

781 Robert James Sales, Inc. (8/31/94)
 699 Hertel Ave., Suite 260
 Buffalo, New York 14207

357 Tanaco Products (4/15/82)
 3860 Loomis Trail Road
 Blaine, Washington 98230

777 Tech Control Ent. (7/18/94)
 3725 N. Murray Road
 Otis Orchard, Washington 99027
 (Mfg. by: Tech Control, Taipei, TAIWAN)

271 The Foxboro Company (3/8/76)
 33 Commercial Street, No. 05-4A
 Foxboro, Massachusetts 02035

790 Tri-Clover, Inc. (9/14/94)
 9201 Wilmont Road
 Kenosha, Wisconsin 53141-1413

759 VNE Corporation (3/16/94)
 1149 Barberrry Drive
 Janesville, Wisconsin 53545

761 Waukesha Fluid Handling (12/17/93)
 611 Sugar Creek Rd.
 Delavan, Wisconsin 53115

52-00 (Formerly 08-17H) Thermoplastic Plug Type Valves

577 Ralet-Defay (11/2/89)
 66, Blvd. Poincare
 1070 Brussels, Belgium
 (U.S. Agent GENICANAM, Chazy, New York)

53-00 (Formerly 08-17A) Compression Type Valves

- | | | | | | |
|-----|---|------------|------|--|------------|
| 484 | APV Crepaco, Inc.
100 South CP Avenue
Lake Mills, Wisconsin 53551 | (10/22/86) | 552 | Pierre Guerin SA
BP.12 - 79210
Mauze-Sur-Le-Mignon
France
(U.S. Rep: Alfa Technical Group, Inc.
601 Thompson Road N.
Syracuse, New York 13211) | (10/4/91) |
| 730 | APV Crepaco
100 South C P Avenue
Lake Mills, Wisconsin 53551-1799 | (4/21/93) | 551 | Puriti, S.A. de C.V.
Alfredo Nobel 39
Fracc. Ind. Puente de Vigas
Tlalnepantla, Mexico
(U.S. Rep: Waukesha Cherry-Burrell
611 Sugar Creek Road
Delavan, Wisconsin 53115) | (9/12/72) |
| 552 | Alloy Products Corp.
1045 Perkins Ave.
P.O. Box 529
Waukesha, Wisconsin 53187 | (11/23/57) | 149R | Q-Controls
Subsidiary of Cesco Magnetics
93 Utility Court
Rohnert Park, California 94928 | (5/18/64) |
| 245 | Babson Brothers Company
Dairy System Division
1400 West Gale Ave.
Galesville, Wisconsin 54630 | (2/12/73) | 748 | Richards Industries
3170 Wasson Road
Cincinnati, Ohio 45209-2381 | (1/11/94) |
| 443 | Badger Meter, Inc.
6116 East 15th Street
P.O. Box 581390
Tulsa, Oklahoma 74158-1390 | (4/30/85) | 762 | Stainless Products, Inc.
P.O. Box 169
1649 - 72nd Avenue
Somers, Wisconsin 53171-0169 | (12/18/80) |
| 686 | Bardiani Valvole S.R.L.
Via G. Vittorio, 53
43045 Fornovo (PR) Italy
(U.S. Rep: Sanchelima Int.
1763 Northwest 93rd Ave.
Miami, Florida 33172) | (8/3/92) | 806 | Steri Technologies, Inc.
857 Lincoln Ave.
Bohemia, New York 11716
(Mfg. by: Aseptomag AG
Bachweg 3, Postfach 415
CH-3401 Burgdorf
Switzerland) | (11/23/94) |
| 538 | Cipriani, Inc.
23195 La Cadena Drive, Suite 103
Laguna Hills, California 92653
(Mfg. by: Fratelli Tassalini, Italy) | (7/31/86) | 804 | Sudmo North America
4740 E. 2nd St., Suite C-20
Benicia, California 94510
(Mfg. by: Sudmo Schleicher AG
Industriester 7 D-73469
Reisburg, Germany) | (11/18/94) |
| 716 | Conexiones Inoxidables
de Puebla S.A. de C.V.
Vicente Guerrero No. 211
Xicotepec de Juarez
Edo, Puebla Mexico
(U.S. Rep: Ben Dolphin Consulting,
4735 Lansing Drive
North Olmsted, Ohio 44070) | (3/4/93) | 823 | Sudmo North America
4403 First Ave., Suite 500
Cedar Rapids, Iowa 52402
(Mfg. by: Sudmo Schleicher AG
Industriester 7 D-73469
Reisburg, Germany) | (3/17/95) |
| 376 | Definox Division
Defontaine, Inc.
16720 W. Victor Road
New Berlin, Wisconsin 53151 | (9/13/93) | 542 | L.C. Thomsen, Inc.
1303-43rd. St.
Kenosha, Wisconsin 53140 | (8/31/57) |
| 530 | G & H Products Corp.
7600-57th Ave.
P.O. Box 1199
Kenosha, Wisconsin 53141 | (6/10/57) | 34A | Tri-Clover, Inc.
9201 Wilmot Rd.
Kenosha, Wisconsin 53141 | (10/15/56) |
| 480 | Niro Inc.
Evaporator Division
9165 Rumsey Road
Columbia, Maryland 21045-1991 | (8/8/86) | 467 | Tuchenhagen North America, Inc.
(Mfg. by: Otto Tuchenhagen, West Germany)
196 Western Avenue
Fond du Lac, Wisconsin 54936-1458 | (1/13/86) |
| 607 | Kammer Valve, Inc.
510 Parkway View Drive
Pittsburgh, Pennsylvania 15205
(Mfg. by: Kammer Ventile GmbH
Manderscheidstr. 19
45141 Essen 1, Germany) | (9/25/90) | 789 | Tuchenhagen North America, Inc.
196 Western Avenue
Fond du Lac, Wisconsin 54936-1458
(Mfg. by: Scan Flow A/S
Skellhojsvej 9, d k 9541 Suldrup
Denmark) | (8/31/94) |
| 570 | LUMACO
9-11 East Broadway
Hackensack, New Jersey 07601 | (8/9/89) | 561 | VACU-PURG, Inc.
214 West Main St.
P.O. Box 272
Fredericksburg, Iowa 50630 | (1/26/89) |
| 594 | Oden Corp.
255 Great Arrow Ave.
Buffalo, New York 14207 | (3/6/90) | | | |
| 483 | On-Line Instrumentation, Inc.
Rt. 376, P.O. Box 541
Hopewell Junction, New York 12533 | (10/15/86) | | | |

- 584 Valvinox, Inc. (11/27/89)
650 Iere Rue.
Iberville-QUE-Canada J2X 3B8
- 796 VNE Corp. (10/11/94)
1149 Barberry Dr.
Janesville, Wisconsin 53547
(Mfg. by: EGMO LTD.
1 Hayotsrim, P.O. 266
Nahariya, Israel)
- 555 Waukesha Cherry-Burrell (12/11/57)
611 Sugar Creek Road
Delavan, Wisconsin 53115
- 86R Waukesha Specialty Co., Inc. (12/20/57)
P.O. Box 160, Hwy. 14
Darien, Wisconsin 53114

54-00 A2 (Formerly 08-17B) Diaphragm-Type Valves

- 565 APV Crepaco, Inc. (10/22/86)
100 South CP Avenue
Lake Mills, Wisconsin 53551
(Mfg. by: APV Rosista, Inc., W. Germany & Denmark)
- 615 AsepCo (1/4/91)
1101 San Antonio
Mountain View, California 94043
- 814 Burkert Contromatic Corp. (2/2/95)
1091 North Batavia Street
Orange, California 92667
(Mfg. by: Buerkert Steuer-Und Regeltechnik
Christian-Buerkert-Str 13-17
D-74653 Ingelfinger
Germany)
- 745 Cashco, Inc. (12/9/93)
P.O. Box 6, Hwy. 140 West
Ellsworth, Kansas 67439-0006
- 617 Definox Division (2/1/91)
Defontaine, Inc.
16720 W. Victor Road
New Berlin, Wisconsin 53151
- 856 Flowtech (10/30/95)
1900 Lake Park Drive, No. 345
Smyrna, Georgia 30080
- 637 Gemu Valves, Inc. (7/10/91)
3800 Camp Creek Parkway
Bldg. 2400, Suite 102
Atlanta, Georgia 30331
- 514 H. D. Bauman Inc. (8/24/87)
35 Mirona Road
Portsmouth, New Hampshire 03801
- 203R IIT Engineered Valves (11/27/68)
33 Centerville Rd.
Lancaster, Pennsylvania 17603
- 494 Saunders Valve, Inc. (2/10/87)
16516 Air Center Blvd.
Houston, Texas 77032-5103

55-00 Boot Seal Valves for Milk & Milk Products

- 839 G & H Products Corp. (7/11/95)
7600 - 57th Avenue
P.O. Box 1199
Kenosha, Wisconsin 53141-1199
(Mfg. by: Keofitt A/S
Snaremosvej 27
DK-7000 Fredericia
Denmark)

- 821 Mark James Company (3/17/95)
P.O. Box 23505
Milwaukee, Wisconsin 53223-0505
(Mfg. by: Keofitt A/S
Snaremosvej 27
DK-7000 Fredericia
Denmark)

56-00 (Formerly 08-17E) Inlet and Outlet Leak-Protector Plug Valve

- 34E Tri-Clover, Inc. (10/15/56)
9201 Wilmot Rd.
Kenosha, Wisconsin 53141
- 556 Waukesha Fluid Handling (12/12/57)
611 Sugar Creek Road
Delavan, Wisconsin 53115

57-00 (Formerly 08-17F) Tank Outlet Valve

- 531 G & H Products Corp. (6/10/57)
7600 57th Ave.
P.O. Box 1199
Kenosha, Wisconsin 53141-1199
- 534 Lumaco (6/30/72)
9-11 East Broadway
Hackensack, New Jersey 07601
- 643 Paul Mueller Company (8/22/91)
1600 West Phelps
Springfield, Missouri 65801

58-00 (Formerly 08-17M) Vacuum Breakers and Check Valves

- 843 APV Crepaco, Inc. (8/24/95)
100 South CP Avenue
Lake Mills, Wisconsin 53551
- 691 Definox Division (1/25/83)
Defontaine, Inc.
16720 W. Victor Road
New Berlin, Wisconsin 53151
- 835 G & H Products Corp. (5/22/95)
7600 - 57th Avenue, P.O. Box 1199
Kenosha, Wisconsin 53141-1199
- 834 Stanfos, Inc. (5/22/95)
3908 - 69th Avenue
Edmonton, Alberta
Canada T6B 2V2
(U. S. Rep: Andron Stainless Corporation
8901 Farrow Road, Suite 101
Columbia, South Carolina 29203)
- 857 Steel & O'Brien, Mfg. Co. (10/30/95)
12850 Route 39
Sardinia, New York 14134
- 689 VNE Corporation (8/17/92)
1149 Barberry Drive
Janesville, Wisconsin 53547

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

- 291 Accurate Metering Systems Inc. (6/22/77)
(Mfg. by: Diessel, Germany)
1650 Wilkening Ct.
Schaumburg, Illinois 60173

- 284 Bristol Equipment Co. (11/18/76)
210 Beaver St.
P.O. Box 696
Yorkville, Illinois 60560
- 693 Micropure Filtration, Inc. (9/17/92)
2323 6th Street, P.O. Box 7007
Rockford, Illinois 61125
(Mfg. by: Olper Maschinen & Armaturen
Olpe, Germany)

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

- 422 BS & B Safety Systems, Inc. (6/12/84)
7455 E. 46th St.
Tulsa, Oklahoma 74145-6379
- 407 Continental Disc Corp. (10/14/83)
3160 W. Heartland Dr.
Liberty, Missouri 64068
- 854 Fike Metal Prod. (10/17/95)
Div. Fike Corp.
704 South 10th Street
Blue Springs, Missouri 64015

61-01 (Formerly 08-17I) Steam Injected Heaters

- 728 APV Crepaco, Inc. (4/14/93)
395 Fillmore Avenue
Tonawanda, New York 14150
- 811 Hydro-Thermal Corporation (1/1/95)
400 Pilot Court
Waukesha, Wisconsin 53188
- 560 Pick Heaters, Inc. (1/19/89)
P.O. Box 516
West Bend, Wisconsin 53095

62-00 (Formerly 08-17L) Hose Assemblies

- 795 Able Hose & Rubber, Inc. (9/14/94)
2307 E. Hennepin Ave.
Minneapolis, Minnesota 55413
- 758 Crouch Supply Co. (2/22/94)
P.O. Box 163829
902 S. Jennings
Ft. Worth, Texas 76161
- 721 Dixon Valve & Coupling Co. (3/23/93)
800 High Street
Chestertown, Maryland 21620
- 774 The Briggs Co. (7/18/94)
3 Bellecor Dr.
New Castle, Delaware 19720
- 757 Nelson-Jameson, Inc. (2/21/94)
P.O. Box 647
2400 East 5th Street
Marshfield, Wisconsin 54449
- 727 Pure Fit, Inc. (4/14/93)
924 Marcon Blvd.
Allentown, Pennsylvania 18103
- 799 Rubber World (10/21/94)
936 Links Ave.
Landisville, Pennsylvania 17538
- 698 Sanitary Couplers, Inc. (10/23/92)
696-698 Pleasant Valley Dr.
Springsboro, Ohio 45066
- 700 Titan Industries, Inc. (10/23/92)
11121 Garfield Avenue
South Gate, California 90280

63-00 (Formerly 08-17R) Sanitary Fittings

- 470 Advance Stainless Mfg. Corp. (3/30/86)
218 West Centralia Street
Elkhorn, Wisconsin 53121
- 380 Allegheny Bradford Corp. (3/21/83)
P.O. Box 200 Route 219 South
Bradford, Pennsylvania 16701
- 79R Alloy Products Corp. (11/23/57)
1045 Perkins Ave., P.O. Box 529
Waukesha, Wisconsin 53187
- 682 Andron Stainless, Ltd. (6/30/92)
6170 Tomken Road
Mississauga, Ontario
Canada L5T 1X7
(U.S. Rep: Andron Stainless Corp.
8901 Farrow Road, #101
Columbia, South Carolina 29223)
- 349 APN, Inc. (12/15/81)
921 Industry Rd.
Caledonia, Minnesota 55921
- 621 Bradford Castmetals (2/25/91)
P.O. Box 33
Elm Grove, Wisconsin 53122
- 688 Cajon Company (8/4/92)
9760 Shepard Road
Macedonia, Ohio 44056
- 645 Cipriani, Inc. - Tassalini S.P.A. (8/27/91)
23195 LaCadena Drive, Suite #103
Laguna Hills, California 92653
- 696 Conexiones Inoxidables (10/1/92)
de Puebla S. A. de C. V.
Vicente Guerrero No. 112
Xicotepc de Juarez
Edo. Puebla, Mexico
(U.S. Rep: Ben Dolphin Consulting
4735 Lansing Drive
North Olmsted, Ohio 44070)
- 528 Dayco Products, Inc. (3/16/88)
1 Prestige Place
Miamiburg, Ohio 45342
- 677 EXCEL-A-TEC, Inc. (5/8/92)
W141 N5984 Kaul Avenue
Menomonee Falls, Wisconsin 53051
- 838 Food & Dairy Quality Mgmt. Inc. (7/10/95)
245 E. 6th Street, Suite 416
St. Paul, Minnesota 55101
- 67R G & H Products Corp. (6/10/57)
P.O. Box 1199
7600-57th Avenue
Kenosha, Wisconsin 53141
- 773 Herrli AG (7/15/94)
3210 Kerzers
Switzerland
(U.S. Rep.: VNE Corp.
P.O. Box 1698
Janesville, Wisconsin 53547)
- 454 Jensen Fittings Corp. (9/11/85)
107-111 Goundry St.
North Tonawanda, New York 14120-5998
- 389 Lee Industries, Inc. (5/31/83)
P.O. Box 688
Philipsburg, Pennsylvania 16866

- | | | | | | |
|------|---|------------|---|---|------------|
| 703 | Parker Hannifin Corp.
Instrument Connectors Div.
9400 South Memorial Pkwy.
Huntsville, Alabama 35803 | (11/6/92) | 707 | Valvinox, Inc., SG RM Div.
650-1st Street
Iberville, Quebec, Canada J2X 3B8
(Mfg. by: SG RM, France
Not available in U.S.A.) | (1/5/93) |
| 200R | Paul Mueller Co.
1600 W. Phelps St., Box 828
Springfield, Missouri 65801 | (3/5/68) | 304 | VNE Corporation
1149 Barberry Drive
Janesville, Wisconsin 53547 | (3/16/78) |
| 726 | Pure Fit, Inc.
924 Marcon Blvd.
Allentown, Pennsylvania 18103 | (4/14/93) | 82R | Waukesha Cherry-Burrell
611 Sugar Creek Road
Delavan, Wisconsin 53115 | (12/17/93) |
| 242 | Puriti, S.A. de C.V.
Alfredo Nobel 39
Industrial Puente de Vigas
Tlalnepantla, Mexico
(U.S. Rep: Waukesha Cherry-Burrell
611 Sugar Creek Road
Delavan, Wisconsin 53115) | (9/12/72) | 64-00 (Formerly 08-17N) Pressure Reducing
and Back Pressure Regulating Valve | | |
| 424 | Robert-James Sales, Inc.
699 Hertel Ave., Suite 260
Buffalo, New York 14207 | (8/31/84) | 782 | CASHCO, Inc.
P.O. Box 6
Ellsworth, Kansas 67439-0006 | (8/31/94) |
| 699 | Rodger Industries, Inc.
P.O. Box 186
Blenheim, Ontario
Canada NOP 1A0
(Not available in the U.S.A) | (10/23/92) | 753 | G & H Products
7600 - 57th Avenue
P.O. Box 1199
Kenosha, Wisconsin 53141 | (2/1/94) |
| 334 | Stainless Products, Inc.
1649-72nd Ave., Box 169
Somers, Wisconsin 53171 | (12/18/80) | 769 | Richards Industries Valve Group
3170 Wasson Road
Cincinnati, Ohio 45209 | (6/6/94) |
| 741 | Steel & O'Brien Mfg., Inc.
12850 Route 39
Sardinia, New York 14134 | (8/26/93) | 65-00 Sight &/or Light Windows & Sight Indications
& Contact with Milk & Milk Products | | |
| 391 | Stork Food Machinery, Inc.
P.O. Box 1258/Airport Parkway
Gainesville, Georgia 30503
(Mfg. by: Stork Amsterdam, Netherlands) | (6/9/83) | 849 | Jacoby TarBox Division of
Clark Reliance Corp.
16633 Foltz Industrial Parkway
Strongsville, Ohio 44136 | (9/25/95) |
| 449 | Tech Controls Enterprise Co., Ltd.
3725 N. Murray Road
Otis Orchard, Washington 99027
(Mfg. by: Tech. Control, Taipei, TAIWAN) | (8/2/85) | 845 | L. J. Star Inc.
P.O. Box 280
Fredonia, New York 14063
(Mfg. by: Herberts Industrie-glas
GmbH & Co.
KG, Wuppertal
Germany) | (9/7/95) |
| 73R | L.C. Thomsen, Inc.
1303-43rd. St.
Kenosha, Wisconsin 53140 | (8/31/57) | 818 | Tri-Clover, Inc.
9201 Wilmot Road
Kenosha, Wisconsin 53141-1413 | (3/10/95) |
| 34R | Tri-Clover, Inc.
9201 Wilmot Rd.
Kenosha, Wisconsin 53141 | (10/15/56) | | | |

ATTENTION AUTHORS

The Editors are seeking articles of general interest and applied research with an emphasis on food safety for publication in **Dairy, Food and Environmental Sanitation**

Submit your articles to:

EDITOR, Dairy, Food and Environmental Sanitation, c/o IAMFES, Inc., 6200 Aurora Ave., Suite 200W, Des Moines, Iowa 50322-2863

Please submit three copies of manuscripts along with a fourth copy on 3 1/2" computer disk.

"Proceedings of the 1994 *Vibrio vulnificus* Workshop"; Availability

Agency: Food and Drug Administration, HHS.

Action: Notice.

Summary: The Food and Drug Administration (FDA) is announcing the availability of "Proceedings of the 1994 *Vibrio vulnificus* Workshop." The workshop was a scientific forum that was cosponsored by FDA, the National Marine Fisheries Service (NMFS), and the Interstate Shellfish Sanitation Conference (ISSC) to: Review the current information available on the epidemiology, ecology, and pathogenicity of *Vibrio vulnificus*, as well as industry practices affecting the levels of this pathogen in seawater and shellfish, ongoing education efforts, and other related technical information obtained since the last *Vibrio vulnificus* workshop, held in March 1988; identify further critical information needs; and identify the kind of research that will best address these needs using available government and nongovernment resources most effectively.

Addresses: Submit written requests for single copies of "Proceedings of the 1994 *Vibrio vulnificus* Workshop" to the Program and Enforcement Branch, Office of Seafood (HFS-417), Food and Drug Administration, 200 C. St. SW., Washington, D.C. 20204. Requests should be identified with the docket number 95N-0281. Send two self-addressed adhesive labels to assist that office in processing your requests.

For further information contact: Jeanette B. Lyon, Center for Food Safety and Applied Nutrition, Office of Seafood (HFS-417), 200 C St. SW., Washington, D.C. 20204, 202-418-3177.

Products from Foreign Countries; Eligibility for Import into the United States

Agency: Food Safety and Inspection Service, USDA.

Action: Notice; affirmation of effective date.

Summary: On July 28, 1995, the Food Safety and Inspection Service (FSIS) published a direct final rule, "Products from Foreign Countries; Eligibility for Import into the United States." This direct final rule notified the public of FSIS' intention to amend those paragraphs of the imported products sections of the Federal meat and poultry products inspections regulations that contain the phrase "at least equal to" by replacing the phrase with the words "equivalent to." This action amends language in the Federal meat and poultry products inspection regulations to correctly reflect the language used in the Uruguay Round Agreements Act, which was enacted to comply with the General Agreement on Tariffs and Trade, 1994 (GATT). No adverse comments were received in response to the direct final rule.

For further information contact: Dr. Paula M. Cohen, Director, Regulations Development, Policy,

Evaluation and Planning Staff, Food Safety and Inspection Service, U.S. Department of Agriculture, Washington, D.C. 20250-3700, 202-720-7164.

Beverages: Bottled Water

Agency: Food and Drug Administration, HHS.

Action: Final Rule.

Summary: The Food and Drug Administration (FDA) is establishing a standard of identity for bottled water. At the same time, the agency is recodifying the standard of quality for bottle water. FDA is revising the definition for bottled water in the quality standard to include mineral water and ingredient uses of this product. In addition, FDA is defining "artesian water," "ground water," "mineral water," "purified water," "sparkling bottled water," "spring water," "sterile water," and "well water." FDA is exempting mineral water from certain physical and chemical allowable levels. FDA is taking these actions, in part, in response to a petition submitted by the International Bottled Water Association (IBWA). FDA finds that the regulation will promote honesty and fair dealing in the interest of consumers as well as the interest of the regulated industry.

For further information contact: Sheila A. Davis, Center for Food Safety and Applied Nutrition (HFS-306), Food and Drug Administration, 200 C. St., SW., Washington, D.C. 20204, 202-205-4681.

NewMembers

ARGENTINA

Enrique Cajide
CEPA S. A., Buenos Aires

Alejandro Vilarrasa
CEPA S. A., Buenos Aires

ARIZONA

Karl E. Olson
The Dial Corp., Scottsdale

BRAZIL

Leo Kuniak
Universidade De Sao Paulo,
S. Paulo

Daniel S. Marques
Sucocitrico Cutrale Ltda.,
Araraquara-SP

Tereza Cristina De Oliveira
Universidade Estadual
De Marinha, Clinicas

CANADA

Wendy Fraser
Pepsi-Cola Canada Beverages,
Toronto

Surinder Grewal
Health Canada, Edmonton

Craig Oswald
Canbra Foods Ltd., Lethbridge

Manon Quevillon
Flamingo Foods, Ste. Rosalie

Ronald Simard
Universite Laval,
Cite Universitaire

DISTRICT OF COLUMBIA

Kristen Savage
Food Marketing Institute,
Washington

ENGLAND

Richard Worsley
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FLORIDA

Lucia A. James-Davis
Darden Restaurants, Inc.,
Orlando

Jorge Saltijeral
UAM-XOCHIMILCO, Miami

GEORGIA

Brian A. Costa
Kinnett Dairies, Inc., Columbus

GREAT BRITAIN

Stephen T. Smith
Olaf Foods, Wresham, Wales

GREECE

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Angelos Theodoridis
Greek Army, Thessaloniki

INDIANA

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Indiana Packers Corp., Delphi

MALAYSIA

Lim Luck Peng
All Eights (M) SDN BHD,
Selangor Darul Ehsan

MARYLAND

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New Horizons Diagnostics Corp.,
Columbia

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Middlebury Center

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H. J. Heinz Co., Pittsburgh

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Nestlé R & D Center (PTE) Ltd.

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Tim Fulton
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Jacqueline B. Sheeron
Western Country Pies,
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Tania Busch-Weak
Clallam Co. Division of Env. Health,
Port Angeles

Jeff Freshley
Unisen Foods, Inc., Redmond

WISCONSIN

Darold Alderman
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Tricia Ciolkosz
Garden Fresh Foods, Milwaukee

Virginia Deibel
Univ. of Wisconsin-Madison,
Monona

Affiliate News

Kansas Holds Annual Educational Conference

The Kansas Association of Sanitarians Annual Educational Conference was held in Wichita, Kansas on October 4-6, 1995. The opening session included a presentation about GIS, an address by NEHA Regional VP Larry Gales, the history of sanitation by Howard Duncan, R. S. — starting with biblical references and including the "Broad Street Well" case of London, England in 1854 (initially investigated by John Davis, R. S.), and a motivational talk by mental health consultant Ronald R. Willis.

Ken Robinson again provided and prepared the pork chops for the opening dinner. A talk following the dinner given by Dennis Foster, R. S., included some of his most memorable experiences as an environmental health professional. The second day of the conference involved several diverse presentations and the Kansas Association of Sanitarians business meeting. New officers of the association were then announced as follows: President, Dan Hutchison; 1st Vice President, Marvin Simonton; 2nd Vice President, Joseph Malinowski, R. S.; Secretary, Galen Hulsing; Treasurer, Jerry McNamar, R. S.; Food Section Chair, Greg Willis; General Section Chair, Robert Rust; and Member-at-Large, Jim Cain.

Lead Training Offered

The University of Kansas Regional Lead Training Center is now offering Lead-Based Paint Risk Assessment Training. This course follows the EPA curriculum and discusses how to find lead hazards in a dwelling and advise the owner on possible long- and/or short-term solutions.

Because of the Kansas Association of Sanitarians' EPA

funding, the registration fee will be waived for state, county and city government employees wanting to attend this and other lead training courses. The only costs to qualified individuals wishing to attend would be travel and lodging expenses.

Below is a list of upcoming courses for which the fee can be waived for qualifying persons by contacting Stacy at (913) 897-8524.

Lead Inspector Training: March 25-27, 1996; Risk Assessment Training: March 28-29, 1996; Lead Abatement Training for Supervisors & Contractors: May 6-10, 1996.

There is no limit on the number of courses any one individual is allowed to attend through this offer.

Division of Continuing Education, 12600 Quivira Road, Overland Park, KS 66213-2402 (913) 897-8530, FAX (913) 897-8540.

South Dakota Receives Federal Grant

Breast and cervical cancer control efforts in South Dakota will expand with a \$220,000 grant from the Federal Centers for Disease Control and Prevention (CDC). CDC funds similar programs in more than 45 states.

In 1993, 125 women died of breast cancer in South Dakota and cervical cancer claimed 11 women.

The grant will fund development of a comprehensive cervical cancer control program for the state. As part of the grant, a state-wide coalition has formed to promote the early detection and control of breast and cervical cancer. Coalition members include health professionals, consumers, cancer survivors, and representatives of the American Cancer Society, the American Association of Retired Persons, and the state Department of Health.

Specific uses for the funds are: to increase public and health professional knowledge and awareness of breast and cervical cancer; strengthen quality assurance programs for mammography and cervical cytology sites; strengthen existing cancer surveillance systems; and develop an evaluation system.

Information about the coalition can be obtained from the Department of Health, Breast and Cervical Cancer Control Program, at 605-773-3737, or the American Cancer Society, South Dakota Division, at 605-361-8277.

Group Organizes for Public Health Week

The National Public Health Week is April 7-13, 1996. Public health professionals and groups from across South Dakota have organized to plan for the week.

The group is considering immunization clinics, health screenings and other special events for the week. Media materials will be developed along with a packet for use in planning local events. The group is also organizing a Public Health Awards competition to recognize outstanding public health professionals and initiatives with winners to be announced at the joint Environmental Health and Public Health Conference in April 1996.

Committee members include representatives from the Indian Health Service, the Dakota Association of Community Health Centers, the Sioux Falls City Health Department, the South Dakota Public Health Association, the South Dakota Environmental Health Association, and the South Dakota Department of Health.

Anyone interested in helping or volunteering suggestions is urged to call Sandi Durick at 605-773-3361.

UpDates

Nelson-Jameson Announces New Board Members

Nelson-Jameson, Inc., national supplier to the dairy processing industry, has announced the addition of three new members to its board of directors. Jerry Lippert, George Douma and Don Lasecke have joined the firm's board of directors.

Jerry Lippert, Nelson-Jameson's sales manager, has been with the company since 1992, bringing with him 20 years of sales, purchasing and management experience in the paper industry. **George Douma**, the company's director of operations worked 28 years with Figi's, Inc. before joining Nelson-Jameson in 1994. **Don Lasecke**, CEO of Delkor Systems, Inc. in Minneapolis has been continuously employed in the dairy and food processing industry since 1957.

World Dryer Promotes Scott Kerman

David Ring, Vice President-Sales & Service for World Dryer Corporation, has announced the promotion of a veteran employee within the company's sales organization.

Scott Kerman has been employed by World Dryer for 6 1/2 years, most recently as Northeast U.S. Regional Manager. Effective October 1, 1995, he accepted the position of National Sales and Leasing Coordinator for the U.S. Scott's responsibilities include overseeing customer service, sales promotions, trade shows, lead generation and follow-up activities. He will also supervise World

Dryer's new Lease and Lease Plus programs.

Beaulieu Retires from AMHIC

Raymond Beaulieu of the Division of Retail Food Protection in the U. S. Food and Drug Administration in Washington, D.C. received a plaque and the well wishes of Larry M. Eils, who serves as secretary of the Automatic Merchandising Health-Industry Council (AMHIC).

Beaulieu is retiring from AMHIC after 13 years of service to the council, which concerns itself with food and public health issues in the vending machine industry. Eils is the director of health, safety and technical standards for the National Automatic Merchandising Association (NAMA), the trade organization representing vending/foodservice operators, equipment manufacturers and related suppliers throughout the United States.

Margaret A. Lawson Named Group Leader, Product Development for FMC Corporation

Margaret A. Lawson has been named Group Leader, Product Development for FMC Corporation's Food Ingredients Division, one of the world's leading producers of functional ingredients for the food processing industry. She was formerly Research Manager for New Zealand Milk Products, Inc.

Ms. Lawson will supervise global product development for FMC's hydrocolloid products, including Marine Colloids™ Carrageenan and Nutricol® konjac. As Group Leader, Ms. Lawson will

manage research and development efforts, strategic planning, and coordinate with marketing and operations in all regions of the world to identify and meet global product needs.

She brings more than 17 years of progressive experience in the food industry, including ten with the Kelco Division of Merck in Applications Research and Development. Ms. Lawson has also worked with the Ralston Purina Company and Hunt Wesson Foods.

She earned a Bachelor and Master of Sciences in Food Science and Technology from the University of California at Davis, is a member of IFT, and has been appointed to a variety of National IFT positions. Ms. Lawson has been an international speaker on ingredient functionality and new product development and has published numerous professional articles.

Becton Dickinson Microbiology Systems Receives ISO 9001 Certification

Becton Dickinson Microbiology Systems, Cockeysville, MD, announces that, following an extensive audit performed in April 1995, its manufacturing facility at 250 Schilling Circle, Cockeysville, Maryland has been certified as an ISO 9001 manufacturer by the British Standards Institution (BSi).

BSi, in assessing the facility, covered the Becton Dickinson Microbiology Systems training regimen, process documentation, integrated policies, standards of production, maintenance programs, proofs of control and other quality systems. ISO 9001 is the ISO 9000 standard for quality assurance in design, development, production, installation and servicing, for use by

a supplier to ensure conformance to specified requirements.

The ISO 9000 series of standards were created by the International Organization for Standardization in order to promote common quality standards worldwide. Increasingly, customers around the world demand ISO 9000 certification before doing business with a supplier.

Louise O'Sullivan Elected Treasurer of IFMA for 1996

Louise O'Sullivan, President of Groen/A Dover Industries Company, was elected Treasurer of the International Foodservice Manufacturers Association (IFMA) for 1996. The new officers were officially announced at IFMA's annual President's Conference in Scottsdale, Arizona. Ms. O'Sullivan will be part of the association's leadership foundation that will oversee the accomplishment of long-range plans and immediate goals that impact the association's overall growth.

IFMA is a major trade association of the world's most prestigious food, equipment and supply manufacturers serving the foodservice industry, as well as related marketing service organizations, foodservice trade publications, distributors and brokers.

Since 1985, Ms. O'Sullivan has been President of Groen, the world's largest manufacturer of commercial steam cooking and processing equipment. Her prior positions with Groen include Vice President Marketing & Engineering for the Food Service Group, Director of Marketing and Sales and

Eastern Sales Coordinator. Ms. O'Sullivan has been with Groen for 20 years.

Ms. O'Sullivan received a bachelor's degree from the College of St. Teresa in Winona, Minnesota, a MA from Northeastern Illinois University and a MBA from the University of Chicago. In 1991 she received an honorary Doctor of Business Administration degree from Johnson & Wales University. In 1989, she received the MAFSI (Marketing Agents for Food Service Industry) "Market Mover Award."

Ms. O'Sullivan is currently Chair of the CFSP Board of Governors, and is also a past President of NAFEM (the North American Association of Food Equipment Manufacturers). She serves on the FCSI Allied Member's Advisory Committee as Chair and the Board of Directors of the University of Chicago's Executive Program Club. She is also a trustee of Kendall College, Evanston, Illinois and a member of the Foodchain Advisory Board.

Quest International and Van den Bergh Food Ingredients Combine

Quest International has announced that the Van den Bergh Food Ingredients Division and the Loders-Croklaan Division of Van den Bergh Foods will merge with Quest's Food Division, effective January 1, 1996.

To accommodate the merger, a new Specialty Lipids Division will be set up and operated as a distinct part of Quest International and will be based at Quest's new Business and Technology Center, recently

opened in Hoffman Estates, Illinois, in suburban Chicago. Following the previously announced Loders-Croklaan (Europe/Canada) combination with Quest, the result will be a world-class global network of specialty functional lipid expertise. The Consumer and remaining Professional Market Divisions of Van den Bergh Foods Company will remain unaffected by this transition.

Leonard Joins Elgin Dairy as Commercial Sales Manager

Elgin Dairy Foods, Inc. announced that George Leonard, formerly National Sales Manager of Bays Corporation, has joined the company as Commercial Sales Manager.

Mr. Leonard, who holds a Bachelor's degree in Business Administration from Providence College in Providence, RI, began his career as a store manager for Winn-Dixie in Pompano Beach, FL. He was an Account Executive for Bonacker & Leigh, Inc., a broker of perishable foods in Miami before joining Bays in 1990.

Elgin Dairy Foods supplies a variety of soft serve, shake and ice cream mixes, sour cream and creamery products to chain and independent foodservice operators and co-packers throughout the Midwest. Its production facilities are capable of producing more than 300,000 gallons of dairy products weekly, sold under the Elgin label as well as custom formulations for private label and co-packed products.

Funds Available for Food Export Promotion

Your food or agricultural company's export program may be eligible for up to \$200,000 in support per year.

Market Promotion Program (MPP) funds through the U.S. Department of Agriculture are allocated to food producers and processors and their export agents. MPP funding is available through the Mid-America International Agri-Trade Council (MIATCO), a Chicago-based association of the Midwest State Departments of Agriculture or Trade Offices. The funding encourages companies to begin or expand international export programs.

Companies may use MPP funds as part of a broad range of export-enhancing services. Under the MPP, companies can receive partial reimbursement for their promotional expenditures. Small companies (usually less than 500 employees) may receive up to 50 percent reimbursement; all others are eligible for up to 33 percent. Women and minority-owned businesses are encouraged to participate.

To receive MPP funds, companies must be fully incorporated into the United States, have a product that is at least 50 percent U.S. agricultural in origin by weight and be willing to promote the product as "Made in the USA." Eligible expenses include attendance at trade shows and advertising.

Companies can receive an application on diskette or hard copy by calling their State Department of Ag./Trade Office's international marketing division, or by calling MIATCO directly at (312) 944-3030.

Ryan Instruments—On-line with the Internet

Ryan Instruments, a leader in temperature and humidity instrumentation, now offers information through the Internet. Companies who are interested in



NEWS

industry trends, information on Hazard Analysis Critical Control Point regulations (HACCP), converting Fahrenheit and Celsius temperatures, and the latest in temperature and humidity technology from Ryan Instruments can access the Ryan homepage and receive the most up-to-date information. This information includes articles, brochures and spec sheets as well as photographs of the products that Ryan Instruments provides. It offers hyper-links to other companies and government agencies for further information. Access is quick and easy. The Ryan address is <http://www.halcyon.com/ryaninst/> or E-mail us at ryaninst@halcyon.com.

Ryan anticipates the homepage will save people time and money by providing immediate, 24 hour a day access to the information. In addition, this access is worldwide, breaking down the time change issues that occur in day-to-day business. In the near future, Ryan will be offering on-line ordering through the Internet.

Today's high standards of quality, reliability and dependability demand the best. Ryan Instruments has been providing monitoring systems and services, worldwide, for over 70 years. With customers in over 50 countries throughout the world, why choose anyone but Ryan Instruments to protect your products.

Indictment in Veal Feed Case

On December 6, 1995, a Grand Jury issued a 12-count indictment against Jannes (John) Doppenberg, Sherry Steffen, and the Vitek Corporation for conspiracy and smuggling unapproved drugs into the U.S., and adding these drugs to feed mixtures sold to veal producers. Vitek Supply Corporation, located in Oak Grove, Wisconsin, imports, manufactures and distributes animal drugs, feed, feed supplements, and feed premixes for food-producing animals, primarily veal calves. Jannes Doppenberg is the president and owner of Vitek, and Sherry Steffen is employed as Vitek's office manager.

It is alleged in the indictment that the unapproved drugs were added by Vitek to its feed premix products and shipped to feed companies and growers in Kansas, Nebraska, Wisconsin, Minnesota, Pennsylvania, and Illinois. It also is alleged that between 1988 and April 1994, Vitek sold over 1.7 million pounds of products containing unapproved drugs, valued at almost \$1.3 million dollars. The unapproved drugs listed in the indictment include:

- Clenbuterol, one of a class of compounds referred to as beta agonists, which is a growth enhancer. Clenbuterol has been associated with the acute poisoning of humans who consumed meat from animals given the drug.

- Avoparcin, an antibiotic which, through uncontrolled use, might result in strains of bacteria becoming resistant to other antibiotics.

- Furaladone, furazolidone, and nitrofurazone, all members of a class of compounds known as nitrofurans. Though previously approved, all of these drugs are now unapproved due to substantial evidence that they are carcinogenic in animals. Furaladone has not been approved since February 1985 and the others have not been approved since January 1992.

The indictment charges a conspiracy to defraud the U.S. by circumventing the lawful functions of the Food and Drug Administration and the U.S. Customs Service, five counts of smuggling, four counts of shipping misbranded drugs, and two counts of shipping adulterated drugs. Vitek Corporation and Doppenberg are charged in all twelve counts of the indictment.

Megashow Success Launches Plans for Worldwide Food Show in '97

Dean Girton, Chairman of the Dairy and Food Industries Supply Association (DFISA), mentioned the 21,061 people in attendance at MegaShow when referring to the flawless success of the trade show, which was held at McCormick Place North, Chicago, IL, November 4-7, 1995. "The availability of technology on such a broad base has never before been seen in the food industry, in the United States, or otherwise," he said.

"Many of our members have commented that the quality of attendees, in terms of buyers, will be difficult to top at any other trade show. Our policy at DFISA is to provide food, dairy, beverage, pharmaceutical and related sanitary industry processors with educational opportunities, technological breakthroughs and a variety of exhibits that they can't see anywhere else. Processors, in turn, come prepared for that, and exhibitors and processors share the benefits," Girton continued. "And, DFISA's commitment is continuing, as will be witnessed at the next mega event for the industry 'WORLDWIDE FOOD EXPOS '97' which is currently being planned, and will be held at Chicago's McCormick Place, October 30 through November 2, 1997."

DFISA, the International Dairy Foods Associations (IDFA) and the National Food Processors Association (NFPA) will combine Food &

Dairy EXPO, the INTERNATIONAL DAIRY SHOW and NFPA's 90th Annual Convention to create an even larger U.S.-based, world-class food show. At the same time, the American Meat Institute (AMI) will co-locate their 1997 International Meat Industry Convention and Exposition to be held at McCormick Place.

The presidents of the four coordinating associations, John M. Martin (DFISA), E. Linwood Tipton (IDFA), John R. Cady (NFPA) and J. Patrick Boyle (AMI) made their announcement about WORLDWIDE FOOD EXPOS '97, at MegaShow, on November 5. They stressed that the new show is intended to mirror the international trend toward large shows that feature diverse products and services. "The presence of 2,247 international attendees, representing 102 countries at MegaShow, is an indication that we are moving in the right direction," said Martin. They predict the event will require hotel rooms for 30,000 visitors and more than 500,000 square feet of exhibit space.

Consent Decree Filed in Drug Residue Case

On October 4, 1995, a Consent Decree of Permanent Injunction was filed in the U.S. District Court for the Eastern District of California naming Arie C. and Clara G. Van Leeuwen, owners of Van Leeuwen Dairy, Modesto, California. This operation is primarily a dairy farm, with a milking herd of 1,200 cows. In addition, the farm sells cull dairy cows for slaughter for human food.

The injunction action against Mr. and Mrs. Van Leeuwen was based on 16 reports of illegal drug residues in cull dairy cattle offered for slaughter during the period from January 22, 1991 through November 17, 1994. The illegal residues included the following drugs: streptomycin, oxytetracycline, penicillin, sulfamethazine, tetracycline, sulfathiazole, gentamicin, erythromycin, and chlortetracy-

cline. The consent decree permanently restrained and enjoined Arie C. and Clara G. Van Leeuwen from administering to cattle any article of new animal drug and introducing or delivering for introduction into interstate commerce any article of food consisting of cattle or their edible tissues unless and until the defendants have established and implemented an identification system, a written record keeping system, a drug inventory and accountability system, a system that ensures that each animal has been held for the proper withdrawal period, and a quarantine or segregation system.

Quality Chekd Co-Founder Celebrates 95th Birthday

Irving B. Weber, co-founder of Quality Chekd Dairy Products Association, marked another historic milestone on Tuesday, December 19: birthday number 95.

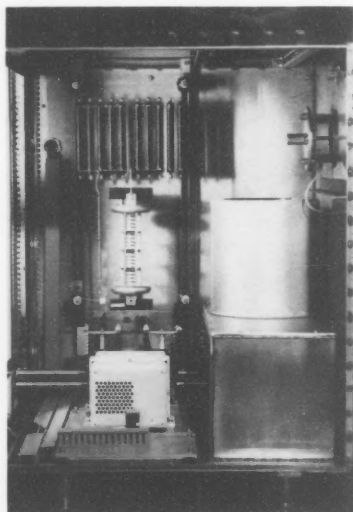
The lifelong Iowa City resident founded the association in 1944, marking the first time such a program had ever been offered to the ice cream and milk industry. Today, the association's highest award for quality bears Weber's name.

"The tremendous energy and accomplishments of Mr. Weber are an inspiration to everyone who knows him and to the entire dairy processing industry," says Mel Rapp, managing director, Quality Chekd.

In addition to his notable dairy career, Weber has made great contributions to the town where he was born in 1900. As the official historian of Iowa City, Weber has penned more than 800 newspaper articles chronicling the town's past. Many of those articles have since been compiled into books. Weber has been honored through a 1995 production of a play entitled "Irving Weber's Iowa City."

A lunch was held recently at the Irving B. Weber Elementary School in Iowa City, at which Weber's birthday was marked by a performance of the school children's adaptation of the play.

IndustryProducts



PurePulse Technologies

CoolPure™ Low Temperature Pasteurization Process Receives Favorable FDA Action

PurePulse Technologies, Inc. announced that the Food and Drug Administration has advised the company that based on the extensive scientific data presented, the company's *CoolPure* reduced temperature pasteurization process can be used broadly to treat foods and beverages without further regulatory action.

The *CoolPure* process uses pulsed electrical energy to pasteurize pumpable products such as juices, beverages, milk, and liquid eggs at relatively low temperatures. Because the process can be applied at lower temperatures than those used for conventional pasteurization, no appreciable thermal damage occurs, and the original fresh taste, natural color, texture and functionalities of foods can be retained. For example, orange juice processed with *CoolPure* tastes

fresh-squeezed. The *CoolPure* process can also provide substantial product safety and shelf life benefits.

PurePulse Technologies, based in San Diego, is developing and commercializing advanced systems for sterilizing and pasteurizing foods, packaging, medical/pharmaceutical products, water and air. PurePulse Technologies is a subsidiary of Maxwell Laboratories, San Diego, California, an advanced scientific and computer-based information systems and services company and a leading developer and manufacturer of high energy pulsed-power components and systems.

PurePulse Technologies, San Diego, CA

Reader Service No. 380

Tri-Clover Introduces New Line of Positive Displacement Pumps

Introduction of a new line of positive displacement pumps for high pressure, high performance operations has been announced by Tri-Clover Inc.

This new pump design provides flexibility for different processing requirements with a wide selection of sizes, capacities, tri-lobe or bi-lobe rotors, and other options to accommodate a broad range of applications. Models in the line can deliver up to 290 psi.

The new line includes TSK and TSR models, all of which have CIP capability and comply with USDA and 3A requirements, as well as international hygiene standards.

All T-Series models feature 316 stainless steel construction for maximum corrosion resistance. To

simplify cleaning and rotor disassembly, the pumps are designed with a sealed spline area with rotor nut O-rings located at the back of the rotor. The T-Series shims are located behind the casing so rotor clearance can be set without gearcase disassembly.

The six TSR pumps in the line enable processors to match frame, rotors and seals to suit individual applications. This design flexibility enhances operating efficiency and economy. Interchangeable rotors accommodate a wider range of temperatures and viscosities, while a choice of hard- or soft-faced seals accommodates abrasive or corrosive fluid applications.

Termed the "ultra-clean" pumps, Tri-Clover's five TSK models are designed for food, biotechnology, and pharmaceutical applications. They feature an innovative design that completely separates processed product from potential sources of contamination. The pumps' spline is totally enclosed in the rotor, eliminating exposed rotor nuts, splines and front cover recesses—areas where product can be retained and contaminated by bacterial growth.

Tri-Clover Inc., Kenosha, WI

Reader Service No. 381

Diversey Introduces Diver™ White: A Powdered Enzyme Cleaner for CIP Systems to the Dairy Producer Market

Diversey, a global supplier of milk parlor sanitation chemicals and udder health products, introduces Diver™ White, a powdered enzyme cleaner for CIP

systems on Dairy Farms. Diversey brings you this leading technology specially formulated to clean and shine all milk pipelines and bulk tanks in various water conditions. Its unique enzyme technology is more efficient and safer to use than normal chlorinated powdered detergents because it is environmentally friendly. Diver™ White is non-phosphated, non-chlorinated and contains low amounts of sodium.

Diversey Corp., Livonia, MI

Reader Service No. 382

Cooper's Cooling Thermometer Protects Against Foodborne Illness

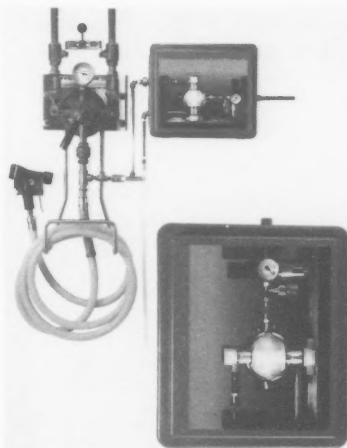
Cooper Instrument Corporation introduced the new cooling thermometer to protect against the number one factor contributing to foodborne illness - the improper cooling of food.

Designed with an eighteen inch stem, the cooling thermometer sufficiently reaches deep into large pots recording center temperatures where the cooling rate is influenced the greatest. A convenient vessel clip attaches to the side of the container allowing the contents to be stirred with a cooling wand while reading the temperature.

"According to HACCP guidelines for cooling, foods must be reduced to 40°F or below within four hours after cooking or hot holding otherwise foods must be reheated to 165°F within two hours or be thrown out. This product will be key to monitoring food batches while in the cooling stage," stated Donna Owen, Marketing Manager at Cooper. "The cooling thermometer monitors internal temperatures of large food masses at this critical control point to insure that temperatures are brought down within the specified time frame."

Cooper Instrument Corp., Middlefield, CT

Reader Service No. 383



Lynwood Industries

Safety Oriented Lynnwood Series 4000 Detergent-Injection System Features Durable, Air-Driven Pump for Quick, Easy Washdowns

The new Lynnwood Series 4000 Detergent Injection & Sanitation System automatically injects easily controlled amounts of detergents and/or sanitizers directly into the washdown stream, making plant cleanups and equipment washdown procedures quick, efficient and safe for sanitation crews.

The Series 4000 can be hooked up to any hose station—including Lynnwood's own ultra safe 203 Series Steam & Water and 303 Series Hot & Cold Water Hose Stations. The heart of the Series 4000 System is a compact air-driven pump which eliminates electrical hookups.

The durable polymer pump automatically shuts off when the water flow ceases. Detergent or sanitizer concentrations are easily controlled by selecting mix proportions with an easy one-time adjustment. A single control valve allows a choice of Hot Water Only, Cold Water Only or Detergent Wash.

Lynwood Series 4000 is designed for wall mounting and is

supplied complete with a stainless mounting bracket. An optional corrosion-resistant fiberglass cabinet which completely encloses the unit is also available.

Lynwood Industries, Hawthorne, NJ

Reader Service No. 384

Introducing the NEW Universal K™ Temperature Recorder

Ryan Instruments has announced the introduction of the Ryan Universal K, a single channel, programmable, strip chart temperature recorder. The Universal K is accurate, easy-to-use, rugged, reusable and inexpensive. It provides a permanent record of temperature fluctuations that may affect quality and profits. This versatile unit can be used in warehouses, laboratories, manufacturing and processing plants, during shipment of products and in many other applications.

Temperatures can be continuously recorded up to 40 days. It is easy to operate, just push a button to start and stop. The clear window provides visible access to recorded data at any time. Chart and battery replacement is quick and easy. The Universal K has a temperature range of -20° F to 100° F (-30° C to 40° C) with a temperature accuracy of $\pm 2^\circ$ F ($\pm 1^\circ$ C) Full Scale.

Ryan Instruments, Redmond, WA

Reader Service No. 385

Nasco Introduces... The Whirl-Pak® Retain Bag

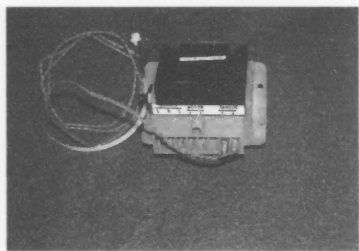
The new Whirl-Pak® Retain Bag is now available from NASCO in Fort Atkinson, Wisconsin, and Modesto, California.

The new Whirl-Pak® Retain Bag is made from a special, laminated barrier film that is designed for long term sample retention. The bag will

hold liquids, semi-solids, or solids; can be heat sealed; and will retain a sample for up to two years. The special film is 55% more effective against moisture and 99% more effective against oxygen permeability than the regular Whirl-Pak® bags. It is ideally suited for storing hygroscopic products. The new Retain Bag is available in two sizes: a 6 oz. bag that holds a 4 oz. sample and an 18 oz. bag that accommodates larger samples.

NASCO, Fort Atkinson, WI

Reader Service No. 386



EDC International, Inc.

Head Pressure Controllers

EDC International in Stamford, CT is releasing a line of Head Pressure Controllers to maximize the operating efficiency of both air conditioning and refrigeration systems. This is achieved by sensing the refrigerant temperature to modulate the condenser fan speed balancing the high to low circuit vapour pressure, to significantly reduce the compressors electrical consumption. The HPC eliminate the possibility of excessive sub-cooling that occurs during periods of low ambient temperatures, reacting to even small changes in head pressure. The HPC modulates the fan speed to a lower limit of

30% of full rpm, this minimum fan speed can be adjusted. Full voltage is applied to the fan motor on start-up for 10 seconds, this hard start is particularly important in cold weather. Especially when the served unit may have been out of action for some time, to ensure correct rotation of the fan even in windy and frosty conditions.

EDC International, Inc.,
Stamford, CT

Reader Service No. 387

Sparta Introduces the Vent Tube Filler Brush

Sparta Brush Company has introduced the No. 105 Vent Tube Filler Brush designed specifically to clean the vent tubes of Federal and Fogg filling machines.

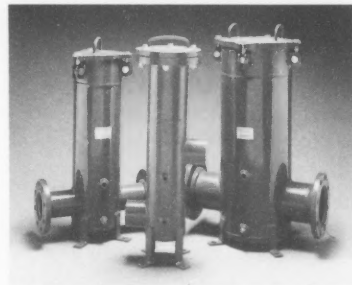
The 105 features Sparlon bristles trimmed with two different diameters for maximum cleaning effectiveness, helping to eliminate the threat of bacteria. Plastic tubing covers the exposed wire handle to eliminate scratching.

Brush part and trim lengths: 7-3/4" brush part with 13/32" trim, and 4-1/4" brush part with 5/8" trim. The overall length is 25" with a wire loop handle for hanging up when not in use.

Sparta Brush Company is a leading manufacturer of specialty brushes used in the dairy, food processing, food service, beverage, gourmet, janitorial and recreational marine industries.

Sparta Brush Co., Sparta, WI

Reader Service No. 388



Whatman Inc.

Protect Refrigerant/Desiccant Air Dryers from Oil and Water!

Prevent oil and water from entering Refrigerant and Desiccant Air Dryers with Mainline Coalescing Filters available from Whatman, Inc.

Balston® K-Series Mainline Coalescing Filters will remove 99.99% of 0.1 micron and larger oil, water, and solid particles from compressed air and other gases. The filters are designed to accommodate line sizes from 3" to 10" at flow capacities of up to 40,000 scfm.

The filters are constructed of carbon steel and have pressure ratings of up to 665 psig. All K-Series housings are ASME Code Stamped for the rated maximum operating pressure. All K-Series housings are ASME Code Stamped for the rated maximum operating pressure. All units have built-legs for floor mountings.

Balston® Mainline Coalescing Filters are designed for easy installation, operation, and minimal maintenance. Standard features include: a stainless steel automatic float drain, a differential pressure indicator, and a set of filter cartridges.

Whatman Inc., Haverhill, MA

Reader Service No. 389

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Reader Service No. 213



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Reader Service No. 124

ANNOUNCING!

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For more information on how your organization may utilize these ads, call Rick McAtee, IAMFES Advertising/Exhibits Manager at (800) 369-6337 or (515) 276-3344.

Coming Events

MARCH

• **4, 1996 Cornell Conference on Dairy Market and Product Research**, Syracuse, New York. The program will begin with an overview of the potential implications of deregulation of milk pricing in the dairy industry. For further information, contact Andrew M. Novakovic at (607) 255-7602.

• **4-5, IBC's World Summit on Agricultural Biotechnology**, A comprehensive, interactive forum on utilizing biotechnology to improve agricultural processes, Santa Fe, NM. For further information call (508) 481-6400; fax (508) 481-7911.

• **4-6, Quality Assurance for the Food Industry**, This course is designed to provide the participant with a basic understanding of the TQM process and its implementation in the food industry. For more information, contact Registrar, The Center for Professional Advancement, PO Box 1052, East Brunswick, NJ 08816; phone (908) 613-4500; fax (908) 238-9113.

• **4-6, IBC's Second Annual International Symposium, Obesity-Advances in Understanding and Treatment**, held at Washington Vista Hotel in Washington, D.C. Posters will be accepted up to Feb. 12, 1996. Call (508) 481-6400 or fax (508) 481-7911—IBC for immediate registration or write IBC, USA Conferences, 225 Turnpike Road, Southborough, MA 01772-1749.

• **4-8, Mold Identification Workshop**, sponsored by the Food Science Dept. at Purdue University. For more information contact, Dr. Maribeth A. Cousin, Food Science Dept., 1160 Smith Hall, Purdue University, West Lafayette, IN 47907; phone (317) 494-8287.

• **4-8, Backflow Prevention Technician Training & Certifica-**

tion, at the TREEO Center in Gainesville, FL. This course provides guidelines for acceptable practices for annual testing of backflow prevention assemblies used in cross-connection control programs. Individuals wishing to register should call (904) 392-9570, ext. 112.

• **11-12, International Seminar on Microbiological Criteria & Risk Analysis**, Wolfpassing, Austria. Further information obtainable from E. Hopkin, International Dairy Federation, 41 Square Vergote, B-1040 Brussels/Belgium, telephone +32 2 733 16 90; fax +32 2 733 04 13.

• **13-15, Symposium on Bacteriological Quality of Raw Milk**, Wolfpassing, Austria. Abstracts of oral presentations and posters are welcome until January 31, 1996 and should be sent to: Dr. G. Hahn, Institut für Hygiene, Postfach 60 69, D-24121 Kiel (Germany), (fax) +44 431 609222.

• **18-22, Molds and Mycotoxins in Foods**, Lincoln, NE sponsored by The American Association of Cereal Chemists. For more information, contact the AACC Short Course Dept., 3340 Pilot Knob Rd., St. Paul, MN 55121-2097, USA; phone (612) 454-7250; fax (612) 454-0766; E-mail aacc@scisoc.org.

• **19-20, Carolina's Association of Milk, Food and Environmental Sanitarians Annual Meeting**, will be held at the Best Western-Merchandise Mart in Charlotte, NC. Please contact Kay Sigmon at (704) 663-1699 for further details.

• **19-21, HACCP Workshops**, sponsored by The Educational Foundation of the National Restaurant Association and the Food and Drug Administration. For more information, contact Kyle Gould at (312) 715-5369.

• **20, Food Industry Conference**, sponsored by the Food Science

Dept. at Purdue University. For more information contact, James V. Chambers, Food Science Dept., 1160 Smith Hall, Purdue University, West Lafayette, IN 47907; phone (317) 494-8279.

• **20-22, Food Irradiation Technology**, Chicago, IL. This course is designed to bring food industry people up-to-speed in this important area of new technology. The basic science and technology pertinent to food irradiation are covered. For more information, contact Registrar, The Center for Professional Advancement, PO Box 1052, East Brunswick, NJ 08816; telephone (908) 613-4500; fax (908) 238-9113.

• **28-30, Food Mycology—Emphasis on Aspergillus and Penicillium Workshop**, Dallas, TX. Participants will review more than 40 species of fungi which are significant to the food mycologist in this three day, hand-on workshop where cultures will be examined and identification schemes will be discussed. For further information, call (504) 568-2081 or (512) 458-7566.

• **30-April 2, Dairy and Food Industries Supply Association, 1996 Annual Conference**, at the Loews Coronado Bay Resort in San Diego, CA. The Conference has grown into an annual "must attend" event for food, dairy, beverage and related processing industry suppliers. For more information, contact Dorothy Brady at (703) 761-2600.

APRIL

• **2-4, South Dakota Environmental Health Association Annual Conference**, Holiday Inn, Mitchell, SD. For further information, contact Rex Van Den Berg at (605) 773-3364.

•3-5, **Missouri Milk, Food & Environmental Health Association 1995 Annual Educational Conference**, in Columbia, MO. For further details, contact Stephen St. Clair, R.S. at (314) 221-1166.

•9-11, **Backflow Prevention Assembly Repair and Maintenance**, in Gainesville, FL. This course is offered by The University of Florida's Center for Training, Research and Education for Environmental Occupations (UF/TREEO). This program provides participants with hands-on experience repairing large diameter models from various manufacturers. For more information, contact Tammy Gumbiner at (904) 392-9570 ext. 129.

•10-15, **The Conference for Food Protection**, at Adam's Mark Hotel in Denver CO. Information may be received from Leon Townsend, CFP Executive Secretary, 110 Tecumseh Trail, Frankfort, KY 40601 or phone (502) 695-0253.

•11-13, **NAMA Western Convention and Exhibition**, Anaheim Convention Center, Anaheim, CA. Exhibitors of vending machines, food products and services related to the industry. For additional information contact Larry Eils at (312) 346-0370.

•11-13, **The Association of Water Technologies Spring Conference**, to be held in Anaheim, CA at the Disney Land Hotel. Please contact Mary Beth Belka at (703) 524-0905 or fax (703) 524-2303 for further information.

•14-16, **Annual Meeting of the Milk Industry Foundation Board, the National Cheese Institute Board and the International Ice Cream Association Board**, to discuss current issues. For more information contact, IDFA, 1250 H St., N.W., Suite 900, Washington, D.C. 20005; phone (202) 737-4332; fax (202) 331-7820.

•14-18, **The Fourth Latin American Congress on Food Micro-**

biology & Hygiene, will be held in Lima, Peru. The program of activities includes plenary speeches by world-wide known specialists, round tables, posters and oral presentations, courses and seminars. For more information, contact Dr. Fernando Quevedo, Honorary President, 11604 Deborah Dr., Potomac, MD 20854; phone (301) 299-9291; fax (301) 299-9448, USA; or in Peru: Santa Luisa 155, Suite 204, San Isidro, Lima 27, fax (5114) 218 317 or (5114) 373 152. President of the Congress: Dr. Alina Ratto, Av. del Ejercito 467 Miraflores, Lima, Peru Tel/fax (5114) 413 939.

17-19, **Chemical Leavening**, San Diego, CA sponsored by the American Association of Cereal Chemists. For more information, contact the AACC Short Course Dept., 3340 Pilot Knob Rd., St. Paul, MN 55121-2097, USA; phone (612) 454-7250; fax (612) 454-0766; E-mail aacc@scisoc.org.

•21-24, **American Dairy Products Institute Annual Meeting and Technical Conference**, Rosemont, IL. Informative programs have been arranged for these events and a wide range of subjects will be addressed by speakers. Additional information can be obtained by contacting Dr. Warren S. Clark, Jr., Chief Executive Officer, 130 N. Franklin St., Chicago, IL 60606; phone (312) 782-4888 or (312) 782-5455; fax (312) 782-5299.

•29, **Train-the-Trainer for Environmental Occupations**, in Gainesville, FL. This course is offered by The University of Florida's Center for Training, Research and Education for Environmental Occupations (UF/TREEO). This course provides participants with an understanding of the agencies under which they may be regulated: EPA, OSHA, and DOT. For more information, contact Richard Zelonka at (904) 392-9570 ext. 122.

•29-May 1, **Food Protection Workshop**, at the Holiday Inn Down-

town-Riverfront, St. Louis, MO. This comprehensive 3-day seminar covers GMP's, HACCP, ISO 9000, food safety issues and regulatory trends, insect and rodent control, cleaning and sanitizing techniques, proper conditions for storage and transportation of food products. For more information, contact Vicki Bodrow, ASI Food Safety Consultants, Inc., 7625 Page Blvd., St. Louis, MO 63133 or call (314) 725-2555 or (800) 477-0778.

•30-May 3, **Experimental Baking and Dough Rheology**, Fargo, ND sponsored by The American Association of Cereal Chemists. For more information, contact the AACC Short Course Dept., 3340 Pilot Knob Rd., St. Paul, MN 55121-2097, USA; phone (612) 454-7250; fax (612) 454-0766; E-mail aacc@scisoc.org.

MAY

•2-4, **Symposium on Dairy Microorganisms as Probiotics and Nutrition Week**, Potsdam, Germany. For further information, contact Prof. Dr. Chr Barth, Director, DIFE, Arthur-Scheunert-Allee 114-116, D-1505 Bergholz-Rehbrücke (Germany); telephone +49 33 20088216; fax +49 33 200 85250.

•6-8, **Third International Conference on Residues of Veterinary Drugs in Food**, Veldhoven, The Netherlands. Inquiries to Dr. N. Haagsma, Utrecht University, Faculty of Veterinary Medicine, Dept. of the Science of Food of Animal Origin, section Food Chemistry, P.O. Box 80.175, NL-3508 TD Utrecht, The Netherlands; telephone +31-30-535365/535367; fax +31-30-532365.

•6-8, **Introduction to Food Chemistry**, Chicago, IL sponsored by the American Association of Cereal Chemists. For more information, contact the AACC Short Course Dept., 3340 Pilot Knob Rd., St. Paul, MN 55121-2097, USA; phone (612) 454-7250; fax (612) 454-0766; E-mail aacc@scisoc.org.

• **7-9, Food Regulations and Their Impact on Additives and Ingredients Seminar**, Radisson Hotel, Newark, NJ. This new seminar presents the impact of regulations in the EC, U.S.A., and some Latin American countries on the usage of food additives and ingredients. For detailed seminar agendas and registration please call (717) 291-5609; fax (717) 295-4538.

• **12-15, Associates of Clinical Pharmacology 20th Annual Meeting**, in Nashville, Tennessee. The meeting will take place at the Opryland Hotel Convention Center. For more information contact, Dr. Frederic Harwood at (202) 737-8100 or fax (202) 737-8101.

• **21-24, WetMilling**, Champaign, IL sponsored by The American Association of Cereal Chemists. For more information, contact the AACC Short Course Dept., 3340 Pilot Knob Rd., St. Paul, MN 55121-2097, USA; phone (612) 454-7250; fax (612) 454-0766; E-mail aacc@scisoc.org.

• **27-29, Principles of Cereal Science and Technology**, Chicago, IL sponsored by The American Association of Cereal Chemists. For more information, contact the AACC Short Course Dept., 3340 Pilot Knob Rd., St. Paul, MN 55121-2097, USA; phone (612) 454-7250; fax (612) 454-0766; E-mail aacc@scisoc.org.

• **27-31, Fourth World Congress on Environmental Health**, will take place in Aberdeen, Scotland. Subjects to be covered during the Congress include Pollution Control; Food Safety; Occupational Health and Safety; Waste Management; Housing; Water; Environmental Protection;

and Communicable Disease Control. For further information, call (01896) 754751; fax (01896) 757003.

JUNE

• **2-4, IDDA's 32nd Annual Seminar & Expo; Dairy-Deli-Bake 96**, held at the Minneapolis Convention Center in Minneapolis, MN. For further information contact IDDA, PO Box 5528, Madison, WI 53705-0528; phone (608) 238-7908; fax (608) 238-6330.

• **4-6, 4th ASEPT International Conference, Sécurité Alimentaire 96/Food Safety 96, co-sponsored by IAMFES**. Laval, France, with the ASEPT/EHEDG Symposium 1996. Contact AMGAR-ASEPT-BP49-53020 LAVAL CEDEX-France or call 33-16 43 49 22 22; fax 33-16 43 53 36 53.

• **10-12, The 18th Mycotoxin Workshop**, organized by the Institute of Microbiology and Toxicology, and held in Kulmbach, Germany. Further information available by phone +49-9221-803-221; or fax +49-9221-803-331.

• **30-July 3, International Association of Milk, Food and Environmental Sanitarians, Inc. 83rd Annual Meeting**, in Seattle, WA. For additional information contact Julie Cattanaach at (800) 369-6337; fax (515) 276-8655.

JULY

• **12-19, Rapid Methods and Automation in Microbiology: International Workshop XVI**, Kansas

State University, Manhattan, KS. A mini-symposium will occur on July 12-13. Contact Dr. Daniel Y. C. Fung, Workshop Director for further information, telephone (913) 532-5654; fax (913) 532-5681.

SEPTEMBER

• **2-3, Symposium on Years in the Dairy Industry**, Copenhagen (Denmark). The main objective of this Symposium is to provide a comprehensive view of the role of yeasts, both positive and negative aspects, in the dairy industry. For registration information contact Prof. M. Jakobsen, The Royal Veterinary and Agricultural University, Dept. of Dairy and Food Science, Rolighedsvej 30, DK-1958 Frederiksberg C Denmark; telephone +45 35 28 32 15; fax +45 35 28 32 14.

• **10-14, The 11th International Packaging & Food Processing Machinery and Materials Exhibition**, Jakarta, Indonesia. For further information, telephone +44 (0)171 486 1951; fax +44 (0)171 486 8773 or +44 (0)171 413 8222.

OCTOBER

• **31-Nov. 2, NAMA National Convention and Exhibition**, Cervantes Convention Center, St. Louis, MO. Exhibitors of vending machines, food products and services related to the industry. For additional information contact Larry Eils at (312) 346-0370.

Food Safety for Temporary Food Events Pamphlet Available

Published for local health officials and others who are educating personnel about Food Safety for Temporary Food events.

The 8 page pamphlet developed by the IAMFES Food Sanitation Professional Development Group outlines 14 steps to safe and sanitary food service events.

To receive a reproducible copy of the pamphlet, contact:

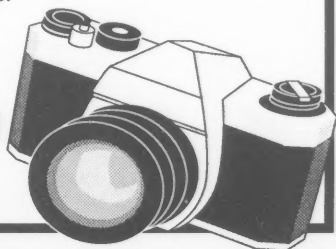
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Advertising Index

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Bar-Bel Fabricating Co., Inc.	73
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The Crombie Company	117
DQCI Services, Inc.	117
Dynal	65
Electro Steam Generator	73
Environmental Systems Service, Ltd.	83
Food Analytics Inc.	80
Ingman Labs, Inc.	117
Judge, Inc.	117
Lechler, Inc.	80
McGlaughlin Oil Co.	64
Nelson-Jameson, Inc.	61
Seiberling Associates, Inc.	73
Wisconsin Center For Dairy Research	83

Preview

of the 83rd IAMFES Annual Meeting

Monday Morning—July 1, 1996

Travellers Advisory—Don't Leave Home Without It!

- Medical Advice and General Food Safety Information for Travellers
- Food Safety for Cruises
- New Findings in Washroom Microbiology
- How Safe is Airline Food
- Ethnic Food Safety
- The Safety of Mysterious Ethnic Foods

Technical Session—Meat & Poultry Safety

- Survival of *Yersinia enterocolitica* during Fermentation and Storage of Yogurt
- Efficacy of Chlorine and Heat Treatment in Killing *Salmonella stanley* on Alfalfa Seeds, and Growth of the Pathogen during Sprouting and Storage
- Inhibition of *Listeria monocytogenes*, *Staphylococcus aureus*, and *Bacillus cereus* by the Hop & Acid Colupulone and Its Derivative, Hexahydrocolupulone
- A Rapid Dot-Blot Immunoassay for the Detection of *Salmonella enteritidis* in Eggs, Poultry and Other Foods
- Antimicrobial Properties of Linear Furanocoumarins
- The Influence of Divalent Cations and Chelators on Aflatoxin B₁ Degradation by *Flavobacterium aurantiacum*
- Determination of Nisin Activity Using an HPLC Method
- Coliform and *Enterobacteriaceae* Count Comparisons Among Naturally Contaminated Food and Environmental Samples
- Evidence for the Occurrence of Plant Specific *Bacillus cereus* in the Dairy Industry
- Generalized Evaluation of Isolation Methodologies for Foodborne *Listeria monocytogenes*
- The Antibacterial Effect of Tea and Tea Concentrates on *Clostridium botulinum*

Planning for the 21st Century on the Dairy Farm (part one)

- Large Farm Design from the Owner/Operator Perspective

- Large Herd Health Management
- Economics of Antibiotic Free Dairying
- Planning for Adequate Waste Disposal
- Water Recovery and Reuse
- Western Hauling Concepts

Global Perspectives on *E. coli* O157:H7 and Other Serotypes (Sponsored by ILSI)

- Canadian Views
- U.S. Views
- Australian Views
- European Views
- South American Views
- U.K. Views
- Roundtable Discussion

Posters—General Microbiology Pathogens

- Numerical Methods to Determine Suitability of *Listeria monocytogenes* Ribotype Patterns for Normalization and Matching
- Differences in ELISA Reactions of Monoclonal Antibodies EM-6E11 (Genus-Specific) and EM-7G1 (Species-Specific) Against Live and Heat Killed Cells of *Listeria* and *Listeria monocytogenes*
- The Incidence of *Listeria* Species in Market Mussel
- Antimicrobial Agents Incorporated in Edible Films to Control Microbial Growth
- Influence of Temperature and Preincubation Temperature on Survival of *Listeria monocytogenes* at pH 4.8
- Significance of Preincubation Temperature and Inoculum Size on Growth of *Listeria monocytogenes*
- Thermal Destruction of *Listeria innocua* in Solid Muscle Beef or Chicken
- Effect of Some Additives Used in Meat Products on Behavior of *Listeria monocytogenes*
- Evaluation of Rapid DNA Extraction Methods for Detection of *Listeria monocytogenes* in Dairy Products Using the TaqMan™ Sequence Detection System
- Survey on *Listeria* spp. Contamination of Korean Market Pork

- Predictive Modeling of *Listeria* spp. Inactivation in Whole Bovine Milk in a High-Temperature, Short-Time Pasteurizer
- Survival and Growth of *Listeria monocytogenes* Scott A in Beef and Pork Stored at Different Temperatures
- Disinfection Efficacy Against Pure-Culture and Mixed-Population Biofilms of *Listeria innocua* and *Pseudomonas aeruginosa* on Stainless Steel, Teflon® and Rubber
- Effect of Temperature and pH on the Growth of *Listeria monocytogenes* on Pork Packaged in CO₂
- Microbial Competition: Suppression of *Listeria monocytogenes* Growth by *Pseudomonas fluorescens*
- Evaluation of a New Rapid Screening Test for *Listeria*
- Evaluation and Application of *Listeria monocytogenes* Specific Antibodies
- Petrifilm™ *Listeria* Count Plate: A Highly Selective Method for the Quantitative Recovery of *Listeria* from Environmental Samples
- Time to Toxin Production by Nonproteolytic *Clostridium botulinum* as Affected by Environmental Factors
- Development of a Twenty-Four Hour Method for the Detection of *Bacillus cereus* Spores in Raw Milk
- Development of a PCR Assay for the Detection of *Bacillus cereus*
- Effect of Modified Atmosphere and NaCl Treatment on the Growth of *Yersinia enterocolitica* on Minimally Processed Broccoli Stored at 4°C
- Use of a Single Procedure for Selective Enrichment Isolation and Identification of Plasmid-Bearing Virulent Serotypes of *Yersinia enterocolitica* from Ground Pork
- Removal of Blood from Standard Culture Protocol Enhances Recovery of *Campylobacter*
- Multiplex PCR for the Identification and Differentiation of *Campylobacter coli* and *C. jejuni*
- Comparison of Selective Media for Primary Isolation of *Campylobacters* Using Numerical and Graphical Tools to Indicate Optimal Media
- Rapid Detection of *Campylobacter jejuni* in Chicken Products by a Nested PCR
- The Apparent Heat-Resistance of Non-Proteolytic *Clostridium botulinum* Spores is Increased by Endogenous Lysozyme Activity of Vegetable Extracts
- Microbiological Quality of Cream-Fillings from Doughnuts Sold at Bulawayo, a Zimbabwean City
- Cross Protection by Heat and Cold Shock to Lethal Temperatures in *Clostridium perfringens*
- Effect of Heat Shock on Sporulation, Protein Synthesis and Enterotoxin Production of *Clostridium perfringens*

Monday Afternoon—July 1, 1996

Food Safety Education

- Using a Computer-Based CD-ROM Tutorial to Strengthen Understanding of Good Sanitary Practices in Retail Food Stores
- Different Ways to Get Food Safety Information to Clientele Groups
- Codex Alimentarius: Its Expanded Importance in Food Safety and International Trade
- The Management and Technology of Retail Food System Food Safety
- ISO 9000/HACCP/Food Hygiene Practices: Food Safety and Quality for the Food and Beverage Industry
- Food Safety Education for Teens

Technical Session—Sanitation

- A Novel Enzyme-Linked Antibiotic Assay for Rapid Detection of Gram-Negative Bacteria
- Quenching and Enhancement Effect on the ATP Bioluminescence Signal Using Different ATP Extractants and Sanitizers
- Characterization of *Alicyclobacillus* Species Isolated from Fruit Juices and Tomatoes
- Chemical, Microbiological, and Physical Quality of Packaged Ice in Florida
- Assessment of the Microbiological Quality of Ready-to-Use Vegetables for Healthcare Food Service in Ontario, Canada
- The Effect of Lactic Acid Sanitizer Treatment on *Listeria monocytogenes* L-Forms Biofilms on Food and Clinical Contact Surfaces

Technical Session—General Microbiology

- Ecology of *Salmonella*, *Campylobacter* and *Listeria* in Chicken Production
- Evaluation of a Steam Pasteurization Process in a Commercial Beef Processing Facility
- Characterization of *Lactococcus* spp. Isolated from Cooked Modified Atmosphere Packaged Poultry Meat
- The Optimization of a Lactic Acid Treatment for the Improvement of the Microbiological Quality and Safety of Poultry Carcasses
- Level of *Campylobacter* on the Farm Associated with Levels on Processed Carcasses
- An Effective Procedure for the Detection of *Campylobacter* spp. on Broiler Carcasses by Rinsing Directly with Enrichment Broth
- Comparison of *In Ovo* Treatments for Reduction of *Salmonella* Colonization in Broiler Chickens
- Immobilization of Nisin in an Edible Gel for Reducing Bacteria on the Surface of Beef and in Ground Beef

- Statistical Evaluation of a Poultry Process for the Determination of Overall Quality Using Conventional Microbiology and ATP Bioluminescence
- Environmental Analysis Methods Utilized to Determine the Contamination Source in a Sausage Processing Plant
- Comparison of F+RNA Coliphage and Coliform Levels as Fecal Contamination Indicators in a Pork Slaughterhouse Environment
- Quantity and Distribution of Airborne Microorganisms in Poultry Processing Environments

Planning for the 21st Century on the Dairy Farm (part two)

- Eco-Agriculture—Sustaining the Dairy Cow
- Proper Design of Milking Equipment
- On Farm Ultra Filtration Equipment
- Regulatory Concerns
- Electronic Communication on the Dairy Farm
- Farm Uses of Computer Technology

Controlling *Escherichia coli* O157:H7 and Friends in Meat

- Industrial Perspective
- Farm Prevalence of EHEC and Production Intervention Strategies
- Effect of Carcass Decontamination Procedures on Microflora
- Intervention Strategies in Primary Processing—New Zealand Experience
- Physiological Control of EHEC
- Control of *Escherichia coli* O157:H7 in Dry, Fermented Sausage

Posters—Methods/Sanitation

- Assessing Microbial Hazards from Chilled/Frozen Foods Exposed to Refrigeration Failure
- Microbial Quality of Vacuum Packaged Cook/Chill Foods Prepared in a Hospital
- Automated Ribotyping-Based Assessment of Diversity in Bovine Mastitis-Causing Microorganisms
- A Comparison of Various Phenotypic and Genotypic Methods for Typing *Enterobacter sakazakii*
- Comparative Recovery of Coliforms from Meat and Milk Using M-ColiBlue 24 and Standard Methods
- Rapid Coliform Counts of Raw Milk
- Microbiological and Sensory Quality of Milk
- Fermented Milk Containing *Bifidobacterium longum* Potentiates Immune Response of the Host
- Survival and Growth of *Aeromonas hydrophila* and *Listeria monocytogenes* on Raw Cabbage and Celery

- Isolation and Characterization of Lactic Acid Bacteria from Bean Sprouts which Inhibit *Listeria monocytogenes*
- Occurrence of *Listeria monocytogenes*, *Salmonella* spp., *Escherichia coli* and *Escherichia coli* O157:H7 in Vegetable Salads
- Growth of *Listeria monocytogenes* on Minimally Processed Broccoli with Antimicrobial Treatment
- Application of ATP-Bioluminescence for Cleaning Validation of Food Processing Equipment
- Application of a Rapid ATP-Bioluminescence Method for Assessing Cleanliness of Milking Equipment
- Monitoring Cleanliness of Food Contact Surfaces Using Rapid ATP-Bioluminescence Method
- A New Medium for the Quantification of Bacteria in Food After 24 Hours
- Real Time Monitoring of Lactic Fermentations Using Impedance Microbiology
- The Efficacy of Washing and Sanitizing Animal Hauling Trucks
- Enhanced Detection of Pathogens in Meat Products Using Automated Malthus Conductance Assays
- Genetic Characterization and Identification of Lactic Acid Bacteria Important to the Food Industry Using Automated Ribotyping
- Growth of and Antagonism by *Leuconostoc gelidum* UAL 187 in Vacuum Packaged Coarse Ground Beef
- Oregon Consumers' Use of U.S.D.A. Safe Handling Instructions Label on Meats and Poultry and Their Knowledge of Foodborne Illness Risks
- An Evaluation of the Efficacy of Two Beef Carcass Decontamination Methods
- Isolation of *Hafnia alvei* from Commercially-Prepared, Chub-Packed Ground Beef, and Its Importance in Meat Spoilage
- Microbiology of Aquacultured Striped Bass Grown in Earthen Ponds, Flow-Through Tanks, and Recirculating Tanks
- Growth of Psychrotrophic Pathogens on Refrigerated Aquacultured Rainbow Trout and Channel Catfish Filets
- Effect of Organic Acids on the Microflora of Channel Catfish (*Ictalurus punctatus*)
- Comparison of Quality in Aquacultured Fresh Catfish Filets II: Pathogens *Escherichia coli* O157:H7, *Campylobacter*, *Vibrio*, *Plesiomonas* and *Klebsiella*
- Microbial Evaluation of Salmon Roe Processed in Alaska
- Biogenic Amines in Fish Sauces
- Quality of Surimi Made from Tilapia and Carp

Tuesday Morning—July 2, 1996

Use of Indicator Microorganisms in Food Safety

- Introduction—Purposes and Uses of Microbial Indicators
- Use of Microbial Indicators—Regulatory Perspective
- Use of Microbial Indicators—Industry Perspective
- Research Perspectives: Value of Microbial Indicators in Environmental Monitoring
- Microbial Indicators and Foodborne Pathogens—*Salmonella*
- Microbial Indicators and Foodborne Pathogens—*Escherichia coli* O157:H7
- Alternative Microbial Indicators and Food Safety

Technical Session—*Escherichia coli*/Listeria

- Acid and Heat Tolerance of Acid Habituated *Escherichia coli* O157:H7
- Changes in Heat-Resistance of *Escherichia coli* O157:H7 Following Heat Shock and Acid-Shock
- Survival of Unheated and Heat-Stressed *Escherichia coli* O157:H7 in Salami and Suitability of Plating Media for Its Recovery
- Isolation and Characterization of Substances Inhibitory to *Escherichia coli* O157:H7 and *Listeria monocytogenes*
- Outer Membrane Proteins and Adherence of Iron-Stressed Enterohemorrhagic *Escherichia coli* to HEp-2 Cells
- Survival of *Escherichia coli* O157:H7 during Fermentation of Apple Cider
- Sensitivity of *Escherichia coli* O157:H7 Isolates to Ionizing Radiation at Refrigeration Temperatures
- Application of a Fluorogenic 5' Nuclease PCR Assay for Detection of *Listeria monocytogenes* in Raw Milk
- Development of a Bacteriophage—Mediated ATP Bioluminescent Detection System for *Listeria monocytogenes*
- Use of Nisin to Control *Listeria monocytogenes* in Queso Fresco Cheese
- Response of *Escherichia coli* O157:H7 in the Presence of Sodium Lactate during Refrigerated Storage with and without Temperature Abuse

Increasing Dairy Product Shelf Life

- Process Improvement Through the Use of Computerization
- The Use of Computerized Processing/CIP Controls
- The Cheese HACCP Pilot Program
- Round Table Discussion on Increasing Shelf-Life From 16 to 21 Days
- The Economics of Aseptic Processing

- Round Table Discussion on Plant Design and Equipment for Aseptic Processing
- Regulatory Concerns of Aseptic Processing

Emerging Issues in Communicating Food Safety Risks

- Consumer Perceptions of Food Safety Issues: What do We Know and How are We Using That Information in Developing Risk Communication Strategies?
- Changing Patterns in North America Newspaper Coverage of Microbial Food Safety Risks and Implications for Risk Communication
- Food Safety Risk Communication—What's Out There and What's Still Needed
- Effects of Professional and Media Warnings About the Hazards of *Escherichia coli* O157:H7 Prior to and After the 1993 Jack-In-The-Box Outbreak
- Anatomy of a Campaign: Designing Food Safety Education for Those at Risk
- Incorporating Risk Communication into an Overall Risk Analysis Framework For Emerging Foodborne Disease

Posters—*Escherichia coli*/Listeria

- A Definitive and Rapid Method for Identifying Atypical *Salmonella* from Selective Agar Plate
- Control of Enteric Pathogenic Bacteria on Fresh Produce
- Evaluation of the *Salmonella* BAX™ System. A Rapid PCR Based Method for the Analysis of Foods for Foodborne *Salmonella*
- Establishing Baseline Risk for *Salmonella enteritidis* in Shell Eggs
- Elimination of *Salmonella* and *Staphylococcus aureus* from Bison, Ostrich, Alligator, and Caiman Meat by Gamma Irradiation
- Detection of *Salmonella* in Food Using a Novel PCR-Based Fluorogenic 5' Nuclease Assay
- Rapid Molecular Method for the Detection of Human Enteric Viruses in Clams
- The Effects of Some Extrusion and Canning Processes on Deoxynivalenol
- Electron Microscopy of Fungal Spores Produced under Reduced Water Activity
- Stability of Fumonisin B₁ (FB₁) during Extrusion Cooking
- Inhibition of Growth and Mycotoxin Production of *Penicillium* by *Lactobacillus* Species
- An Easy Screening Test for Detecting Yeast Contamination in Rinse Water Samples
- Fumonisin Concentrations in Commercial Corn-Based Food Products

- Retention of Acid Tolerance and Acid Shock Responses in *Escherichia coli* O157:H7
- A Model for the Interactions of Temperature pH, Lactate, Salt and Nitrite on the Survival of *Escherichia coli* O157:H7
- Effectiveness of Sanitizers vs. *Escherichia coli* O157:H7
- Heat Shock Response Protects *Escherichia coli* O157:H7 Against Lethal Acidity
- Survival of *Escherichia coli* O157:H7 in Drinking and Recreational Water
- Heat Inactivation and Injury of *Escherichia coli* O157:H7 Cultured at 10 and 37°C
- Studies on the Survival of *Escherichia coli* O157:H7 in Fermented Meat Products
- Evaluation of an ELISA System for Detecting Verotoxin Produced by Enterohemorrhagic *Escherichia coli* (EHEC)
- A Multiplex PCR Assay for Detecting Verotoxin-Producing *Escherichia coli* O157:H7
- The Behavior of *Escherichia coli* O157:H7 in Fermentation Systems with Thermophilic and Mesophilic Dairy Starter Cultures
- Thermal Inactivation of *Escherichia coli* O157:H7 in Meat
- Validation of Pepperoni Processes for Control of *Escherichia coli* O157:H7
- Survival of *Escherichia coli* O157:H7, *Listeria monocytogenes*, and *Salmonella typhimurium* in Ground Beef Jerky
- Acid Stress and Death in Pathogenic *Escherichia coli*
- Effect of *Escherichia coli* O157:H7 Growth in the Presence or Absence of Glucose on Its Acid Tolerance
- Prevalence of *Escherichia coli* O157:H7 in Lebanon
- A PCR-Based Method for the Detection of *Escherichia coli* O157:H7 from Ground Beef

Tuesday Afternoon—July 2, 1996

General Session—Ensuring a Safe Global Food Supply (Sponsored by ILSI)

- Foodborne Disease: A Global Perspective
- Microbial Food Safety Issues and Concerns in International Trade: Harmonization and Standards
- Microbial Food Safety Issues and Concerns in International Trade: Food Industry Perspective
- Microbial Hazards Associated with Produce
- Emerging Issues in Produce Safety
- Microbial Hazards Associated with Seafood
- Emerging Issues in Seafood Safety

Wednesday Morning—July 3, 1996

Microbiological Issues in Seafood

- Parasites in Seafoods
- Marine Toxins
- Control of Bacterial Pathogens in Seafood
- Risk Assessment of Seafood in Canada—Initial Stages
- Epidemiology and Detection of Human Enteric Viruses in Seafood
- Aquaculture

Microbiology of Wine

- Quality Control Aspects in Winemaking
- Influence of Yeast Strains on Wine Quality
- Yeast Enumeration and Identification
- Interaction Between Yeasts and Malo-lactic Bacteria
- Physiology of the Malo-lactic Bacteria
- Wine Spoilage Microorganisms and Their Control

Dairy Foods Safety and Quality—Dairy Foods Research Centers

- The Development and Use of Bacteriocin-Containing Dairy Ingredients to Control Unwanted Microorganisms in Formulated Foods
- Survival of *Escherichia coli* O157:H7 in Fermented Dairy Foods
- Mastitis Pathogens of Public Health Concerns
- Microbiological Safety and Quality of Reduced-Fat Cheddar Cheese
- HACCP Model Programs for the Dairy Industry

Framework for Accessing the Risk of Microbial Contamination (Sponsored by ILSI)

- Role of Risk Assessment in Microbial Food/Water Safety Regulatory Issues
- Risk Assessment Principles Document of the U.S. National Advisory Committee on Microbial Criteria for Foods
- Overview of Risk Assessment in the Agri-Food Industry: Approaches to Identifying Intervention Strategies
- Principles for Microbial Water Safety Risk Assessment
- International Risk Assessment Guidelines for Foods of Animal Origin
- European Perspectives on Microbial Risk Assessment: International Commission on Microbiological Specifications for Food

Wednesday Afternoon—July 3, 1996

Surveillance of Foodborne and Waterborne Disease

- *Salmonella enteritidis* Surveillance in New York State

- *Escherichia coli* O157:H7 Outbreaks in the North-east United States
- Foodborne Disease Surveillance—A National Perspective
- Foodborne Disease Surveillance in Latin America and the Caribbean—An International Perspective
- On Sites Investigation of Waterborne Disease
- Procedures to Investigate Waterborne Illness

Current Methods and Future Prospects for the Control of Foodborne Pathogen Colonization in the Gastrointestinal Tract

- Historical, Current, and Future Prospects for Probiotic Research—International Perspectives
- Strategies for Controlling *Salmonella enteritidis* in Egg-Laying Chickens
- Ecological Concepts for Developing Continuous-Flow Competitive Exclusion Cultures for Food Animals
- Virulence Mechanisms of Bacterial Pathogens and the Effect of Human Biota Interactions in the Gut
- Research Strategies for Understanding Foodborne Pathogen Competiveness under Strict Anaerobic and Gastrointestinal Conditions

- Immuno-Based Methodology for Detection of Competitive Exclusion Cultures
- The Utility of Molecular Assays for Understanding Microbial Gene Expression in Gastrointestinal Tracts

Emerging Issues in Food Mycology

- Detection, Control and Toxicity of Fumonins and Other Fusarium Toxins
- Alternative Methods for Isolation, Culture and Identification of Fungi in Foods
- Immunological and Genetic Methods to Rapidly Detect Fungi in Foods
- Biocontrol of Mold Growth and Mycotoxin Production
- Heat Resistant Molds and Preservative Resistant Yeasts

Intervention Strategies for Safe Meats: Production to Consumers

- Probiotics
- Slaughter
- Chemical Treatments/Bacteriocins
- Irradiation
- Retail
- Restaurants

83rd IAMFES Annual Meeting

Spouse/Companion

Tours and Special Events

Sunday, June 30 — 10:00 a.m. — 3:00 p.m.
Sample Seattle — A Deluxe City Tour
Registration: \$30 (Late \$35) Lunch on your own

Come sample Seattle — This tour provides an overview of the many attractions Seattle offers its visitors. You'll enjoy a drive along the waterfront with its import shops and fresh seafood restaurants. Then you'll drive into Pioneer Square, the city's oldest area rich with early 1900's architecture, much of which has been renovated into art galleries and specialty shops. Next is the International District in which evidence of

the Pacific Rim cultural influences abound. The tour continues along Lake Washington into the Arboretum and on to the University of Washington campus. The Hiram Chittenden Locks and salmon ladders will be the first stop. The locks connect the Puget Sound with freshwater Lake Union and the salmon ladders feature seasonal migration of salmon returning to parent streams to spawn. Next you will travel to Magnolia Bluff for a breathtaking view of the Sound. Then back to the city and the world famous Pike Place Market for shopping. The day will be capped off with a visit to the Space Needle observation deck.

Opening Session

Ivan Parkin Lectureship

Sunday, June 30 — 7:00 p.m.

Lecture: Sense, Nonsense, and Science presented by: Joseph A. Schwarcz, Ph.D., Professor of Chemistry, Vanier College; Senior Adjunct Professor of McGill University; Science Editor of CJAD Radio; TV Columnist on The Discovery Channel.

Cheese and Wine Reception held in the Exhibit Hall

Sunday, June 30 — 8:00 p.m. — 10:00 p.m.

The traditional opening of the Educational Exhibits and an opportunity to learn about the latest industry advancements as well as greet old friends and make new friends.

Monday Night Gala

Evening at Redhook Ale Brewery

July 1 — 6:00 p.m. — 10:00 p.m.

Registration: \$45 (Late \$50)

The evening includes fresh Northwest ales and cuisine at Redhook Ale Brewery, one of the Pacific Northwest's premier microbreweries. Enjoy an intimate look at the brewhouse and fermentation cellar with resident experts on hand to answer any questions concerning the process of creating hand-crafted ales.

An assortment of Redhook ales will be available for sampling with your souvenir tasting glass. After a casual brewhouse style dinner you can spend time socializing while enjoying the natural beauty of the countryside in the outdoor beer garden.

All Dolled Up: The Museum of Doll Art and Shopping at Bellevue Square

Monday, July 1, 1996 — 9:00 a.m. — 3:00 p.m.

Registration: \$30 (Late \$35), Lunch on your own

You will visit an extraordinary museum dedicated to the preservation and exhibition of dolls as an art form. The nostalgia of Rosalie Whyel's Museum of Doll Art will fill you with memories of days gone by. Here you will witness one of the world's fine collections of dolls, teddy bears, toys and miniatures. Over 700 dolls ranging from rare porcelain pieces from the 18th century to Barbie and GI Joe are on display. After you experience the charm of the museum and its eloquent Victorian Gardens you will depart for Bellevue Square with over 200 shops and restaurants. Time will be provided for shopping. If shopping is not your forte, visit the Bellevue Art Museum on the third floor where contemporary Northwest art is on display. Then relax while sipping a cappuccino at Seattle's Best Coffee, or savor a warm cinnamon roll at Cinnabon.

Country Sampler

Tuesday, July 2, 1996 — 9:00 a.m. — 3:30 p.m.

Registration: \$30 (Late \$35), Lunch on your own

This favorite outing begins with a scenic ride through the foothills of the Cascade Mountains to breathtaking Snoqualmie Falls. Once worshipped by Native American Indians as a place for the gods, these falls are actually 97 feet higher than Niagara! Next you're off to Gilman Village in Issaquah. The homes are historic and provide a unique setting for shops which include hand-crafted jewelry, clothing, home accessories and freshly baked goods. You will have time to explore. The last stop will be Chateau Ste. Michelle, Washington's premier winery. Nestled on 87 acres of rolling grounds, the original manor house was built in 1912 and is surrounded by formal gardens, a trout pond, and hundreds of lush shrubs and flowers. During your private guided tour, you will witness the marvel of wine-making and learn the "sniff, swirl, and slurp" method of wine tasting as you sample world famous wines.

Historic Seattle

Wednesday, July 3, 1996 — 9:00 a.m. — 3:30 p.m.

Registration: \$30 (Late \$35), Lunch on your own

Discover the intrigue of Seattle's history and its fascinating architecture on this informative tour. You will break into smaller groups and begin your tour with a short walk to the Fifth Avenue Theater, a national historical landmark, where you will hear about the theater's latest production and enjoy the dramatic interior. Next is a short walk to Seattle's most recent architectural feat, the Underground Metro Bus Tunnel. You'll experience an incredibly clean, beautiful marbled tunnel on your trip down to Pioneer Square. The history of Seattle will unfold before you and come to life as you are guided through the streets on a walking tour of the district. During your tour you will visit the Klondike Museum and Seattle's Underground where you will see "old Seattle." During the afternoon you will have time to enjoy the area. The tour ends with a bus trip back to your hotel.

IAMFES Annual Award's Reception and Banquet, Wednesday, July 3

Reception: 6:00 p.m. — Banquet: 7:00 p.m.

Registration: \$35 (\$40 Late)

IAMFES Kid's Pizza Banquet

Wednesday, July 3 — 6:30 p.m. — 9:30 p.m.

Registration: \$15 (\$20 Late)

Adult supervised for children ages 4 and up. Pizza, pop and activities provided.

83rd IAMFES Annual Meeting Registration Form

Sheraton Seattle Hotel & Towers — Seattle, WA — June 30 - July 3, 1996
(Use photocopies for extra registrations)

FOR OFFICE USE
Date Rec'd. _____
Registration # _____
First initial _____
Last name _____

First Name (will appear on badge) _____ (please print) Last Name _____

Title _____ Employer _____

Mailing Address (Please specify: Home or Work) _____

City _____ State/Province _____ Country _____ Postal/Zip Code _____

Telephone # _____ Fax # _____

Please check where applicable:

IAMFES Member
 Non-Member
 Local Arrangements
 30 Yr. Member
 50 Yr. Member
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 Executive Board
 Speaker
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**Sign up to become
a NEW member**
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***REGISTER BY MAY 31, 1996 TO AVOID LATE REGISTRATION FEES**

REGISTRATION:	MEMBERS	NON-MEMBERS	AMOUNT
Registration (Banquet included)	\$195 (\$240 late)*	\$275 (\$320 late)*	_____
Student Member	\$ 25 (\$ 35 late)*	Not Available	_____
One Day Registration (Circle: Mon/Tues/Wed)	\$100 (\$120 late)*	\$130 (\$150 late)*	_____
Spouse/Companion (Name): _____	\$ 25 (\$ 25 late)*	\$ 25 (\$ 25 late)*	_____
Children (14 & Under), Names: _____	FREE	FREE	_____

NEW MEMBERSHIP FEES:		
Membership with Dairy, Food & Environmental Sanitation	\$ 70	_____
Membership with Dairy, Food & Env. Sanitation & Journal of Food Protection	\$110	_____
**Student Membership <input type="checkbox"/> Dairy, Food & Env. San. or <input type="checkbox"/> Journal of Food Protection	\$ 35	_____
**Student Membership with Dairy, Food & Env. San. & Journal of Food Protection	\$ 55	_____
**Full-time student verification required.		

SHIPPING CHARGES: OUTSIDE THE U.S. - SURFACE RATE	\$ 22.50 per journal	_____
AIRMAIL	\$ 95.00 per journal	_____

OTHER FEES:	PER PERSON	# OF TICKETS
Cheese and Wine Reception (Sun., 6/30)	FREE	_____
An Evening at Redhook Ale Brewery (Mon., 7/1)	\$ 45 (\$ 50 late)*	_____
IAMFES Awards Banquet (Wed., 7/3)	\$ 35 (\$ 40 late)*	_____
Children's Banquet (Wed., 7/3)	\$ 15 (\$ 20 late)*	_____

SPOUSE/COMPANION EVENTS:	PER PERSON	
Sample Seattle (Sun., 6/30)	\$ 30 (\$ 35 late)*	_____
Museum of Doll Art & Bellevue Square (Mon., 7/1)	\$ 30 (\$ 35 late)*	_____
Country Sampler (Tues., 7/2)	\$ 30 (\$ 35 late)*	_____
Historic Seattle (Wed., 7/3)	\$ 30 (\$ 35 late)*	_____

Please indicate here if you have a disability requiring special accommodations.

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Registration Information
Send payment with registration to IAMFES, 6200 Aurora Avenue, Suite 200W, Des Moines, IA 50322-2863. Make checks payable to IAMFES. Registration must be post-marked by May 31, 1996. Registration post-marked after May 31, 1996 will be charged the late registration fee. For additional information contact Julie Cattanach at 1-800-369-6337.

Refund/Cancellation Policy
The IAMFES policy on refunds and/or cancellations is as follows: Registration fees, minus a \$50 processing fee, will be refunded for written cancellations post-marked by June 14, 1996. No refunds will be made for cancellations post-marked after June 14, 1996, however, the registration may be transferred to a colleague with written notification to IAMFES.

Budget Rental Car Information
For information on special rental car rates from Budget call 1-800-866-6137. Please mention Rate Code: V9Y and BCD #: U009666.

Guest Room Commitment
GOOD UNTIL MAY 29, 1996
Make Your Reservation Now

HOTEL RESERVATIONS IAMFES

83rd Annual Meeting
June 30 – July 3, 1996
Sheraton Seattle Hotel & Towers
Seattle, WA

- Please check accommodation requested:
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Bed type:

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SPECIAL REQUESTS _____

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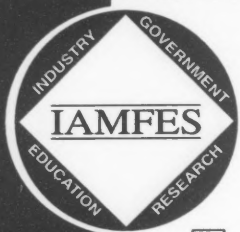
Seattle, Washington

June 30 – July 3

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