

ISSN: 0273-2866

April • 1989

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Vol • 9 • No. 4 • Pages 169-232

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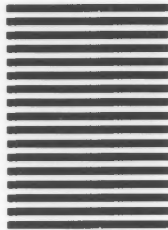
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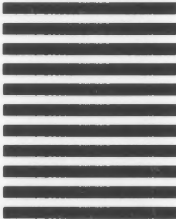
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Dairy, Food and Environmental Sanitation (ISSN-0273-2668) is published monthly by the International Association of Milk, Food and Environmental Sanitarians, Inc., executive offices at PO Box 701, 502 E. Lincoln Way, Ames, IA 50010. Printed by Heuss Printing, Inc., 911 N. Second St., Ames, IA 50010. Second-class Postage paid at Ames, IA. POSTMASTER: Send address changes to IAMFES, 502 E. Lincoln Way, Ames, IA 50010-0701.

**Manuscripts:** Correspondence regarding manuscripts and other reading materials should be addressed to Kathy Hathaway, PO Box 701, Ames, IA 50010-0701. 515-232-6699.

"Instructions to Contributors" can be obtained from the editor.

**Orders for Reprints:** All orders should be sent to DAIRY, FOOD AND ENVIRONMENTAL SANITATION, IAMFES, Inc., PO Box 701, Ames, IA 50010-0701. Note: Single copies of reprints are not available from this address; address reprint requests to principal author.

**Business Matters:** Correspondence re-

garding business matters should be addressed to Kathy R. Hathaway, IAMFES, PO Box 701, Ames, IA 50010-0701.

**Subscription Rates:** \$75.00 per year. Single copies \$6.00 each. No cancellations accepted. U.S. FUNDS ONLY.

**Sustaining Membership:** A sustaining membership in IAMFES is available to companies at a rate of \$375 per year, which includes \$100 credit toward an ad in the "annual meeting issue" of the Journal, the July issue. For more information, contact IAMFES, PO Box 701, Ames, IA 50010-0701, 515-232-6699.

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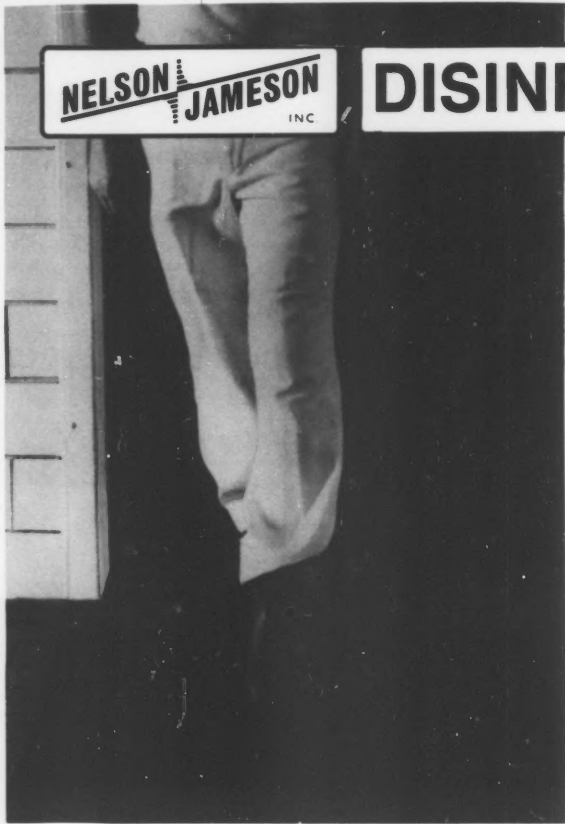
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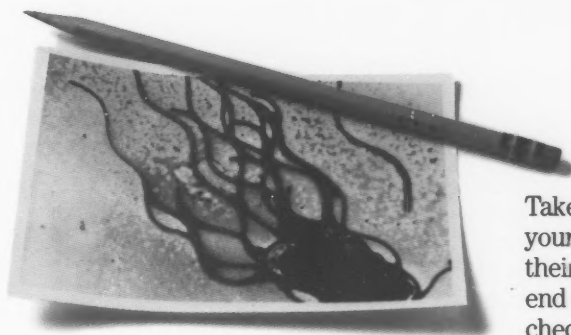


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# Thoughts From the President . . .



By  
**Robert B. Gravani, Ph.D.**  
IAMFES President

At the Spring Executive Board Meeting, Kathy Hathaway, our Executive Manager, shared some personal news with us . . . she is going to be married and moving to Ohio. As you will note in the, "From the Ames Office" column, Kathy has tendered her resignation effective June 2, 1989.

In order to assure a smooth transition your Executive Board met to discuss the role of the Executive Manager and

plan a position search strategy. The position description is listed below. Qualified and interested applicants may submit resumes to:

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The board publicly thanks Kathy Hathaway for the many contributions she has made to IAMFES during her 7 years with the association. Her interest in and dedication to IAMFES has been outstanding. We express our congratulations on her upcoming marriage and our best wishes for continued success in her career.

## IAMFES EXECUTIVE MANAGER SEARCH

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# Biomonitoring of Waste Effluents - An Overview For Environmental Sanitarians

by

Homer C. Emery, R.S., Ph.D.  
LTC, MS, U.S. Army

*The opinion or assertions contained herein are the private views of the author and are not to be construed as official or as reflecting the views of the Department of the Army or Department of Defense.*

In the early seventies it was a problem to conduct routine wastewater effluent testing at many municipal sewage treatment facilities because of a lack of equipment and the availability of trained personnel. During this time sanitarians in many states played a key role in training and assisting plant operators to establish routine effluent monitoring programs. Effluent testing and monitoring during the early 1970's was focused on biochemical oxygen demand and other eutrophying characteristics of the waste.

Concern about the toxic effects of wastewater developed as increasing numbers of chemical substances were identified in waste effluents. In 1972 the Federal Water Pollution Control Act was amended, establishing as a national policy "that the discharge of toxic pollutants be prohibited." The enactment of the Toxic Substances Control Act (TSCA) in 1976 directed the Environmental Protection Agency (EPA) to determine whether the disposal of a chemical substance presented a toxic risk to the environment.

Traditional chemical analysis cannot provide information concerning the changes in toxicity of a chemical substance due to characteristics of the receiving stream (e.g. temperature, pH). In addition, traditional analysis of complex mixtures is difficult and cannot be used to predict synergistic effects with other chemical constituents.

The need to improve the evaluation of waste effluents for toxic effects on aquatic organisms was recognized by the EPA when it issued a national policy statement in 1984 entitled "Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants". In its policy statement the EPA established the use of biological techniques for effluent toxicity testing. Specific language in the 1984 national policy statement included: "In addition to enforcing specific numerical criteria, EPA and the States will use biological techniques and available data on chemical effects to assess toxicity impacts".

The use of biological monitoring as part of the National Pollutant Discharge Elimination System (NPDES) permit was also included: "effluent toxicity data in conjunction with other data can be used to control priorities, assess compliance with state water quality standards, and set permit limitations to achieve those standards." As more State water quality authorities adopt EPA recommendations for toxicity testing, local sanitarians will need to have a greater knowledge of biomonitoring techniques and methods.

Biomonitoring is defined as the use of organisms for evaluating the toxicological impact of wastewater effluents on receiving waters.

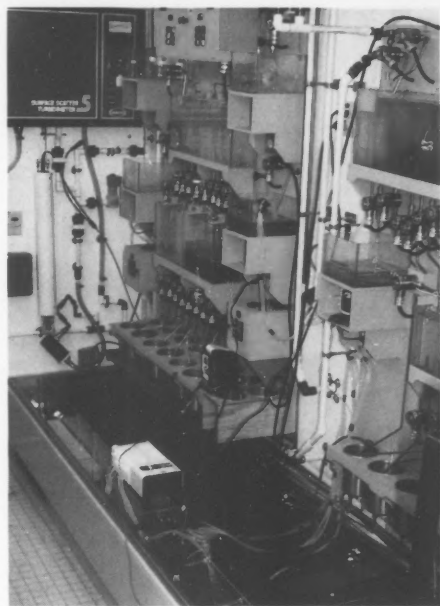
Organisms used in aquatic toxicity tests range from fish and protozoans to bacteria and algae. Table 1 provides a summary of organisms commonly used in toxicity testing of waste effluents.

Table 1. Organisms Commonly Used in Biomonitoring of Waste Effluents.

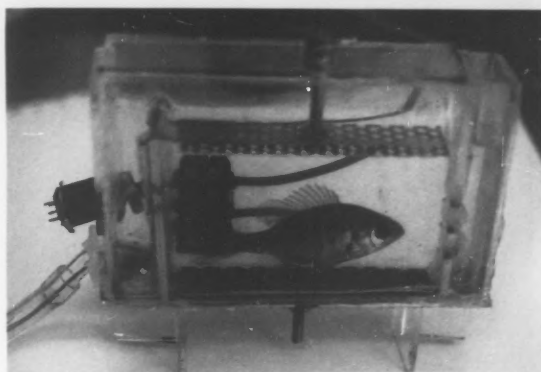
Fish	Invertebrates
- Fathead minnow	- Water fleas
- Rainbow trout	- Crayfish
- Bluegill sunfish	- Snails
- Channel catfish	- Shrimp
Bacteria	Algae
- Bioluminescent bacteria	- Green algae
	- Blue-green algae

Acute biomonitoring tests are conducted to determine immediate or short term toxic effects. The mortality of test organisms is observed and recorded when exposed to a specified concentration of the waste effluent (e.g. 100%, 50%, 25%). The duration of an acute test is normally 96 hours for fish and 48 hours for most invertebrates. Acute tests using algae can be completed in even less time, and the bioluminescent bacteria test takes only 10 minutes to perform.

Chronic tests provide information on long term effects of the effluent on growth, reproduction, and mortality of the test organism. Chronic tests normally involve a critical portion or the entire life cycle of the test organism. The



Slide A: Flow Thru Bioassay Diluter System installed in mobile biomonitoring unit. The unit consists of a system of pumps and solenoid valves that can deliver varying concentrations of the effluent being tested.



Slide C: Bluegill sunfish inside a holding chamber that monitors ventilatory rate, ventilatory depth, and body movement. By monitoring physiological responses of the Bluegill sudden changes in water quality or the introduction of toxic substances can be detected.

test requires that the test solutions be periodically replaced throughout the test period. Flow-through testing provides for continual renewal of the test effluent at a controlled rate.

Specific requirements for biomonitoring vary depending on the type of industry, receiving stream, and state water authority. In some cases continuous monitoring will be required before discharge. Other situations will require monitoring over a specific period of time (e.g. monthly or quarterly). Policies vary significantly from state to state.

Toxicity reduction evaluation (TRE) is an application of biomonitoring that is receiving increased interest. If the waste effluent from a municipal pollution control facility suddenly starts causing acute toxicity problems, a TRE is conducted to isolate the source of the toxic pollutant. When the source has been identified, further testing is required to demonstrate the effectiveness of measures taken to treat and reduce the toxicity. TREs are also used to determine effectiveness of pollution control options.

A wide range of biomonitoring techniques are being used for environmental toxicity assessment problems. Researchers in Canada have used algae, luminescent bacteria, and rainbow trout to evaluate the toxicity of paper mill wastewater. Workers in England have used freshwater isopods to evaluate the toxicity of effluents from mining operations. Histopathological changes in marine organisms have been used in studies of southeastern U.S. coastal waters.

Elaborate systems are now in use that monitor selected physiological responses of the test organism. At water treatment facilities in England the ventilatory rates of fish are being automatically monitored to provide an early warning of toxic compounds that enter public water supplies. To rapidly evaluate acutely toxic problems developing in water or wastewater, researchers at the U.S. Army Biomedical Research and Development Laboratory have developed an advanced system for monitoring ventilatory patterns of fish. This automated system not only measures ventilatory rates, but also provides information on the ventilatory depth and body movement of bluegill sunfish.

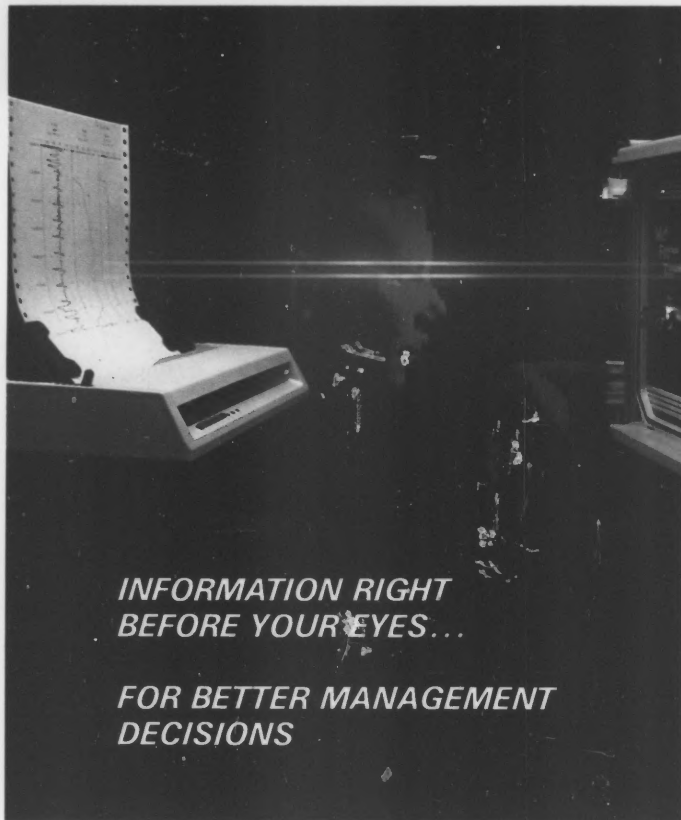
con't. on p. 179



Slide B: On site biomonitoring unit at the U.S. Army Biomedical Research and Development Laboratory, Fort Deterick, Maryland. The unit can be used to conduct biomonitoring at pollution control facilities, hazardous waste sites, or locations involved with hazardous material spills.

duration of a chronic test can range from six to twelve months for fish and three to four weeks for invertebrates. Due to the time required and the high cost of a full chronic assay, EPA is now encouraging the use of a seven-day test for predicting long term toxic effects.

Methods of exposing the test organisms to the waste effluent can vary. A static test exposes the test organisms to the same solution throughout the testing period. A renewal



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The need for evaluating and controlling toxic pollutants in wastewater effluents and public water supplies is clear. Traditional chemical analysis techniques do not provide adequate information concerning environmental toxicity and health related issues. Biomonitoring is required to answer these questions.

Sanitarians that become involved in biomonitoring programs will need to attend workshops and training sponsored by federal or state agencies. Local consulting firms may offer similar training. Biomonitoring references that will be helpful include: *Fundamentals of Aquatic Toxicology: Methods and Applications*, edited by Gary M. Rand and Sam Pertocelli, Hemisphere Publications, 1985; and *Standard Practice for Conducting Toxicity Tests With Fishes, Macroinvertebrates, and Amphibians* (ASTM E 729-80); American Society for Testing and Materials, Philadelphia, 1980. In addition the EPA has published a number of procedure manuals for conducting aquatic toxicity evaluations. A listing of these manuals is provided in Table 2.

Biomonitoring of waste effluents is now a standard procedure at many pollution control facilities. In large municipal pollution control facilities, full time positions will likely be necessary to conduct required monitoring. For smaller communities, private consulting firms may be the best choice for meeting monitoring requirements. In either case, sanitarians in state and local health departments will be called upon to assist and train plant operators in biomonitoring of waste effluents.

Table 2. U.S. Environmental Protection Agency Biomonitoring Publications.

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- Short term methods for estimating the chronic toxicity of effluents and receiving water to freshwater organisms.* EPA/600/4-85/014. 1985.
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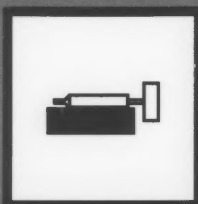
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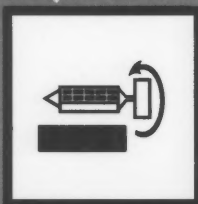
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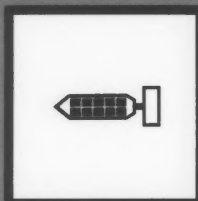
**2** Press one side of the paddle to the surface to be tested.



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## Update on Salmonella Enteritidis in Eggs

by

Nancy King

The U.S. Department of Agriculture and the Food and Drug Administration are not eating their eggs sunnyside up, lightly cooked, these days, and they have mounted a large campaign to educate the public to do likewise. According to FDA Commission Dr. Frank E. Young, "We're not saying, 'Don't eat eggs.' We're saying take precautions: cook eggs thoroughly and avoid raw eggs."

Table eggs that were contaminated with *Salmonella enteritidis* (*S. enteritidis*) bacteria have caused recent outbreaks of food-borne illness. See "Salmonella Reported in Northeast," FDA Veterinarian, July/August 1988. Together the two agencies launched a *S. enteritidis* public awareness campaign by distributing 50,000 Safe Egg-Handling Bulletins during the week of September 12, aimed at high-risk populations, food service establishments, and consumers. The bulletins, dealing with safe egg-handling, were directed at both consumers and food service institutions. Special precautions are needed when eggs are served to people in high-risk categories, i.e., the elderly, the very young, pregnant women (because of risk to the fetus), and those who are weakened by illness, particularly a weakened immune system. To provide additional information on safe handling of eggs, home economists from USDA's Meat and Poultry Hotline are responding to inquiries between the hours of 10:00 a.m. and 4:00 p.m. Eastern time, on 1-800-535-4555.

On September 15, 1988, FDA held a public meeting on this issue in Washington, D.C. After presenting an overview of *S. enteritidis* outbreaks, public health concerns, and *S. enteritidis* in animal agriculture, there was a discussion of the epidemiology of *S. enteritidis* from the standpoint of the States' experiences with the voluntary model State program - a comprehensive plan drafted by the Northeastern Conference on Avian Diseases, an organization of government, university, and industry officials. USDA's Agricultural Marketing Service, Animal and Plant Health Inspection Service, Agricultural Marketing Service, and Cooperative

State Research Service worked with the FDA and Centers for Disease Control to further develop the program.

This program provides an experimental model for surveying for the presence of *S. enteritidis* in table egg breeding and production flocks. It was distributed to State public health officials and it calls for State agriculture and National Poultry Improvement Plan officials, in cooperation with producers, to test breeder and suspected commercial egg production flocks for *S. enteritidis*. The program will help determine the extent of the problem, identify infected flocks, and enable producers to assure egg quality.

Cooperative research efforts were also discussed at the public meeting. USDA's Agricultural Research Service and Cooperative State Research Service, in conjunction with FDA and the Centers for Disease Control have undertaken an accelerated research effort involving *S. enteritidis* in poultry flocks and shell eggs. It has been recommended that these efforts should include basic research on the behavior of the *S. enteritidis* infections, such as determining the pathogenesis of infection, the duration of the shedding of bacteria, the means of identifying infected flocks, and the importance of vertical versus horizontal spread of *S. enteritidis*.

Dr. Kenneth A. Gilles, USDA's Assistant Secretary of Marketing and Inspection Services, said that these broad initiatives involving block testing, consumer education, and research, represent an appropriate response to the incidence of *S. enteritidis* in eggs. He called for the continuing extraordinary degree of cooperation among Federal agencies, State officials, industry, and consumer organizations.

Commissioner Young asked for written comments on the Government's strategy to attack the Salmonella in eggs problem. He said that the Center for Veterinary Medicine plans on monitoring poultry feed operations and rendering plants to ensure that these products are not contaminated with *S. enteritidis*.

Reprint from FDA Veterinarian Nov/Dec 1988.

## A Primer on Food Additives

FDA Consumer/October 1988

Since the time when the kitchen stove was a campfire outside a cave, people have tinkered with ways to preserve and enhance food. Food was fragile, delicate, prone to rot, and easily injured. Bugs infested it, bacteria invaded it, mold infected it, and the air made it rancid.

Something had to be added to protect food and perhaps make it tastier, too. So the ancient Romans used sulfites to disinfect wine containers and help preserve the wine. Europeans in the 13th and 14th centuries embraced Marco Polo because he brought back spices from the Orient to season their bland diet. Travelers to the New World stored meat in salt to preserve it during their long voyages across the Atlantic Ocean. Later, pioneers in America used saltpeter to preserve their meat.

"Without food additives, we'd live like the caveman," says Richard Rank, acting director of FDA's Center for Food Safety and Applied Nutrition.

Additives prolong the life of food, keep it from spoiling, add flavor, and help prevent disease. Without food additives bread would easily mold, cake wouldn't rise, salt would lump, ice cream would separate into icy crystals, and marshmallows would harden into bite-sized rocks.

Former generations could add just about anything they wanted to food - as long as it didn't poison someone. But increasing knowledge about food science and the possible long-term harmful effects of food chemicals on health led Congress in 1958 to enact the Food Additives Amendment to the Federal Food, Drug and Cosmetic Act to ensure the safety of additives. In 1960 the Color Additive Amendments were enacted to make sure colorings used in foods (drugs, medical devices, and cosmetics, as well) were safe.

For purposes of FDA regulations, chemicals added to foods - other than pesticides and animal drugs - fall into four categories:

- food additives,
- generally recognized as safe (GRAS) substances,
- prior-sanctioned substances, and
- color additives.

These finely drawn legal categories were set up to ensure appropriate safety reviews of food additives. Depending on what category an ingredient falls in, different regulatory requirements apply.

The "toughest" category - in terms of regulations and safety testing - is the food additive category. This covers substances that have no proven track record of safety; scientists just don't know that much about them. Additives such as the artificial sweetener aspartame and the emulsifying agent polysorbate 60, which is found in salad dressing and other food, were substances that needed to be tested before they could be used because it was not known whether they were safe. Subsequent testing proved them safe.

But what is "safe"?

"Congress has defined safety as a reasonable certainty that no harm will result from use of an additive," says Gerard McCowin, director of FDA's division of food and color additives. "In our evaluation we examine to see whether the additive has any toxic effects, whether it may cause birth defects. Does it interfere with nutrition? Does it affect individuals with allergies?"

When an additive is tested, it is usually fed in large doses over an extended period to at least two kinds of animals. These feeding studies, usually done by or for a food company that wants to use or sell the additive, are designed to determine whether the substance causes cancer, birth defects, or other injury to the animals.

Cancer is of particular concern. A special provision of the 1958 and 1960 additive amendments, the so-called Delaney clause, states that if an additive is found to cause cancer in humans or animals it may not be added to food. (See "The Delaney Dilemma" in the September 1988 FDA Consumer).

The company submits the results of all these tests to FDA for review. If the FDA review finds that the additive is safe, the agency establishes regulations for how it can be used in food. This commonly includes a 100-fold margin of safety. This means that the substance may be used in food at a level that is no more than 1/100th of the highest level at which it was fed to test animals and did not produce any harmful effects.

The second group of substances is known as GRAS, an acronym for substances "generally recognized as safe." This group includes several hundred substances whose use in food experts consider safe based either on a history of safe use before 1958 or on published scientific evidence.

Products in the categories below—that bear an NSF Mark—have been verified to comply with the NSF Listing or Certification requirements. Products without the Mark should not be regarded as Listed or Certified by NSF. **IF IT'S NOT MARKED—IT'S NOT LISTED OR CERTIFIED.** This is true even if the product is in the current *Listing Book* or *Certification Registry*.



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Congress established the GRAS category in 1958 because it felt that it was unnecessary to require industry to develop evidence to prove the safety of substances that were already generally regarded as safe by knowledgeable scientists. Included are many spices and herbs, salt, sugar, and vitamins that "logic and common sense," in the words of one expert, tell us are safe to use.

"These are substances that are so widely known and the information about them is so widely distributed in the scientific community, that there is little question about their safety," says Dr. George Pauli, a consumer safety officer with FDA's division of food and color additives.

The third category - "prior-sanctioned" substances - include ingredients such as the preservative nitrite (used in meat) that had been sanctioned before the 1958 amendment by either FDA or the U.S. Department of Agriculture to be used in a specific food. For example, while nitrites can be used in meat, they cannot be used on vegetables because vegetables were not covered by the pre-1958 sanction.

Inclusion in either of the latter two categories - GRAS and prior sanctioned - does not guarantee a substance's safety; sometimes new evidence shows that "logic and common sense" erred. If new data suggested that a GRAS or prior-sanctioned substance may be unsafe then FDA requires the manufacturer to conduct studies to ascertain the ingredient's safety.

For example, the artificial sweeteners saccharin and cyclamates are substances that were once included on the GRAS list but came under fire several years ago because of new evidence that they may cause cancer in animals. Based on this evidence they were removed from the GRAS list; in fact, cyclamates were banned from use in food altogether. (Saccharin continues to be used because Congress granted it a special exemption.)

The Color Additive Amendments subject substances in the fourth category - dyes used in food, drugs, cosmetics and medical devices - to pre-market testing similar to that required for the first category - food additives. Colors in use when the amendments were passed were placed on a provisional approval list pending further investigation to confirm their safety. Nearly 200 colors were on the provisional approval list in 1960. Since the passage of the amendment, several of the colors have been dropped because manufacturers were no longer interested in marketing them or because they were found to be unsafe.

Food additives may also be present in food packages. Known as indirect additives, they can end up in the food so FDA requires that they be evaluated.

The ubiquitous presence of additives in nearly all our foods adds up to big business. The food additive industry generates approximately \$10 billion a year in business, according to Dr. Richard Hall, a former vice president with McCormick Spices.

But it is the safety of food additives that remains a key concern for FDA. The agency must be sure that the new sweeteners, emulsifiers, preservatives, dyes and other substances that food chemists concoct to add to our modern-day diet measure up to safety standards appropriate to the 1980s, not the Stone Age.

*Reprint from FDA Consumer/October 1988*

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## Dairy Cooperatives and Their Role in the United States - 1988

by

Robert E. Jacobson<sup>1</sup>

Dairy cooperatives, or more specifically milk marketing cooperatives, are a major institution in the milk industry in the United States. Currently, 394 dairy cooperatives are marketing producer milk in the U.S., and an estimated 78 percent of all producer milk is marketed through a cooperative in which the dairy farmer is a member-owner. The other 22 percent of producer milk is marketed by independent or non-member dairy farmers. In terms of dairy farm numbers, approximately 138,000 dairy farms of the 181,000 dairy farms defined as commercial dairy farms in the U.S. at the present time have a milk marketing cooperative affiliation.

### Structure of Dairy Cooperatives

Dairy cooperatives, like other farmer cooperatives, are for profit corporations which operate at cost by allocating net margins back to their producer members on a patronage basis. Dairy cooperatives are chartered by State statute in the State in which they are headquartered, and they enjoy a significant anti-trust exemption under the Copper-Volstead Act of 1922.

The structure of dairy cooperatives has reflected the same trends that have described dairy farms and processing plants in recent decades, i.e., fewer and larger. Table 1 reports these trends.

Even while 80 percent of the dairy cooperatives have disappeared during the 1950 through 1986 period, the share of producer milk marketed by cooperatives has increased markedly to the 78 percent level. While the 78 percent market share looks to be strong in the aggregate, there are some milk markets in the United States in which the cooperative movement is limited and the proportion of non-member producers is substantial.

<sup>1</sup>Professor, Agricultural Economics. The Ohio State University, for presentation at the Dairy Economics Forum, UDIA, Chicago, Illinois. September 14, 1988.

<sup>2</sup>This paragraph is adopted from *Who Will Market Your Milk?* by Robert Jacobson, et al., Texas Agricultural Extension Service, D-1058. March, 1978, p. 15.

Table 1. Number of Dairy Cooperatives and Farm Level Share of Milk Marketed by Dairy Cooperatives, U.S., 1950-1986.

Year	Number of Dairy Cooperatives	Farm Level Share of Cooperative Marketing
1950-51	2,072	53 pct.
1960-61	1,609	61
1969-70	971	73
1974-75	631	75
1985-86	394	78

Almost all of the reduction in the number of dairy cooperatives is explained by merger-consolidation activities. A rapid transition to the regional cooperative structure we see today occurred mostly in the 1965-1975 period. A cooperative such as AMPI, for example, has scores of smaller predecessor cooperatives in its genealogy. At the present time, the top 24 dairy cooperatives in the United States which are only 6 percent of the total number, market approximately 60 percent of all producer milk (see Table 2).

In some instances, cooperatives have federated or formed a federation to pursue some common marketing-pricing objectives. A federation, which is comparable in many ways to a marketing agency-in-common, is a cooperative whose membership includes individual cooperatives that maintain independent corporate status. Associated Dairymen, Inc. and Great Lakes-Southern Milk, Inc. were early versions of federated activity. Presently, most federated activity is reflected in organizations such as CMPC in Chicago and RCMA in the Northeast which are primarily mechanisms for operating over-order price pools.

The Agricultural Cooperative Service of the USDA estimates that dairy cooperatives in the United States hold \$4.1 billion in assets. Member equity or net worth totals \$1.6 billion. Much of the \$2.5 billion in liabilities represents loans from the Banks for Cooperatives in the Farm Credit System.

### Activities of Dairy Cooperatives

The 394 dairy cooperatives in the United States represent wide variations in size, marketing function pursued and impact in the market served.<sup>2</sup> Some of the dairy cooperatives

Table 2. Top 24 Dairy Cooperatives in the U.S. - 1988.

Rank	Cooperative	Annual Volume Billion lbs.	Member Farms Number
1.	Associated Milk Producers, Inc.	17.0	25,300
2.	Mid-America Dairymen, Inc.	7.0	11,270
3.	Dairymen, Inc.	5.7	6,500
4.	Land O'Lakes, Inc.	4.4	8,700
5.	Milk Marketing, Inc.	4.4	6,465
6.	Farmers Union Milk Marketing Cooperative	3.3	6,200
7.	Michigan Milk Producers Association	3.3	4,000
8.	Northwest Dairymen's Association	3.2	1,300
9.	Wisconsin Dairies Cooperative	2.9	5,000
10.	California Milk Producers Association	2.8	230
11.	Agri-Mark, Inc.	2.6	2,800
12.	Inter-State Milk Producers Cooperative	2.6	3,002
13.	California Cooperative Creamery	2.5	494
14.	Western Dairymen Cooperative Inc.	2.45	1,560
15.	Eastern Milk Producers Cooperative, Inc.	2.2	4,100
16.	Maryland and Virginia Milk Producers Association	2.1	1,440
17.	Dairylea Cooperative, Inc.	2.0	3,000
18.	Manitowoc Milk Producers Cooperative	1.8	2,200
19.	Alto-Golden Guernsey Dairy Cooperative	1.7	2,400
20.	San Joaquin Valley Dairymen	1.3	274
21.	Milwaukee Cooperative Milk Producers	1.2	2,000
22.	Swiss Valley Farms	1.2	3,500
23.	Upstate Milk Cooperative, Inc.	1.2	850
24.	United Dairymen of Arizona	1.1	150

have fewer than 50 members, while a large regional cooperative like Associated Milk Producers, Inc. has over 20,000 producer members. Some cooperatives are essentially bargaining associations that maintain an office and may offer members field services, while others have extensive facilities for handling and manufacturing reserve milk processing-distributing operations. Similarly, some dairy cooperatives do not have enough control over the supply of milk for a market to have any bargaining power. Others have substantial market power and are able to implement effective and coordinated marketing-bargaining programs.

In most dairy cooperatives, the milk producer signs a membership agreement (contract) which commits the producer to marketing all milk through the cooperative and which commits the cooperative to doing various things for the producer. The basic objectives or reasons for joining a dairy cooperative from a producer standpoint are:

1. To be guaranteed a market outlet and a price.
2. To have the best price terms possible bargained for in the marketplace.
3. To have milk marketed efficiently, i.e., balancing, diversion, assembly.
4. To have the highest quality producer milk possible be shipped to the market.
5. To be effectively represented in legislative, regulatory, and public relations arenas.

Financing of dairy cooperatives is generally handled on an assessment per cwt. basis from the producer milk check. The assessment, which is usually in the range of 1 percent to 2 percent of the gross blend price, covers operating expenses as well as member investment in the cooperative. The member investment portion of the assessment is generally revolved back to the member in a specified time period, usually seven to ten years.

#### Market Operations and Market Shares of Dairy Cooperatives

In pursuing both their market guarantee objective and their bargaining objective, the leaders in many dairy cooperatives concluded early on that cooperative owned and controlled milk plant operations would be required. Until 1950, cooperative plants in fluid milk markets engaged primarily in butter-powder processing as a means of balancing supplies in fluid milk markets. Prior to 1950, dairy cooperatives in manufactured dairy product regions such as the upper midwest had been very active in plant operations. For example, in 1936, 39 percent of the butter in the United States, 25 percent of the natural cheese, and 17 percent of the dry milk products were manufactured at cooperative plants (but only 5 percent of fluid milk products).

In a 1984 report, the Agricultural Cooperatives Service

of the USDA reported product manufacturing activity by dairy cooperatives over time.<sup>3</sup> Market shares are reported for 1957 and 1980 in Table 3.

Table 3. Market Share of Dairy Products Distributed by Cooperatives, 1957 and 1980, and Number of Cooperative Plants in Operation, 1980.

	Market Share		Number of Co-op Owned Plants, 1980
	1957	1980	
Butter	58 pct.	64 pct.	95 plants
Dry Milk Products	57	87	122
Cheese	18	47	174
Cottage Cheese	14	22	44
Ice Cream/ Ice Milk	4	10	49
Fluid (packaged)	9 (1964)	16	123

The ACS report also indicates that in 1980, cooperatives manufactured other dairy products including (1) bulk condensed milk with a 15 percent market share, (2) condensed whey, with a 59 percent market share, and (3) dry whey, with an 81 percent market share. Approximately one-third of the total 698 plants owned by cooperatives in 1980 operated only as milk receiving stations.

Now, in 1988, best estimates are that dairy cooperatives do 15 percent of the fluid milk processing in the United States, 65 percent of butter manufacture, 55 percent of hard cheese manufacture, and 90 percent of dry milk products manufacture (see A.C. Manchester - *The Public Role in the Dairy Economy*, Westview Press, 1983, p. 84 for more detailed discussion of market shares by cooperatives). In the past couple of years, there appears to have been some retreat from fluid milk processing by cooperatives. The sale by Michigan Milk Producers Association of their McDonald plants to a cooperative grocery chain (Country Fresh), and the effort by Dairywomen to go joint venture with Borden on Dairywomen's several fluid processing plants are symptoms of the retreat. Joint ventures in manufactured dairy products, particularly cheese, as illustrated by the several Leprino joint venture activities with cooperatives, have become a more significant activity in the milk industry in the past couple of years.

#### Dairy Cooperatives and Federal Milk Orders

The Federal milk marketing order program interfaces closely with dairy cooperatives. Federal milk orders operate in 43 fluid milk markets and regulate 80 percent of the Grade A milk in the United States. Presently, 82.8 percent of the 105,000 dairy farmers shipping milk in Federal order markets belong to one of the 218 dairy cooperatives qualified in the program.

Frequently, questions arise as to what cooperatives do versus what the order does in Federal order markets. Dairy

<sup>3</sup>Stafford, Thomas H. and Roof, James B., *Marketing Operations of Dairy Cooperatives*. ACS Research Report 40, ACS-USDA, July 1984, 27 pages.

<sup>4</sup>Questions and Answers on Federal Milk Marketing Orders, AMS-559, AMS-USDA, March 1975, p. 12.

cooperatives must qualify or be certified as legitimate organizations in order to gain some privileges from the order program. These privileges include:

1. The cooperative is entitled to block vote for its members on most order provisions.
2. The cooperative is entitled to blend or pool the proceeds from the sale of member milk.
3. The cooperative may collect proceeds for its members from handlers from the sale of member milk.
4. Members of cooperatives that perform marketing services for members are exempt from market services charged non-members.
5. Cooperatives may move or direct milk in a manner not permitted proprietary handlers.

A dairy cooperative markets milk. A Federal order is only a regulation. As noted in Federal order publications contrasting the programs, "An order cannot assure that a market will be found for every producer's milk at all times. It cannot secure the most economical utilization of milk. Nor can it perform many of the other marketing functions such as procurement of supplies, economical transportation of milk, and other services which are among the normal functions of milk producers' associations."<sup>4</sup>

Table 4 indicates the member-non-member proportions in the Federal order by regions in the United States, and it also indicates the concentration of producers in the four largest cooperatives by region. The North Atlantic region reflected the lowest proportion of dairy farmers belonging to dairy cooperatives, 68.4 percent in December, 1986; and the West North Central region showed the highest at 91.4 percent. The four largest cooperatives marketed only 39.0 percent of producer milk in the North Atlantic region, while the West South Central region showed much more cooperative concentration with 78.3 percent of the milk in the four largest cooperatives.

Table 5 indicates that on average across the Federal order program, non-member producers ship about the same amount of milk per farm as do cooperative members. However, there is quite a bit of variation by region, especially as noted by the larger non-member operations in the two South Central regions.

#### Non-Excludable Benefits

Dairy cooperatives, as voluntary membership organizations, face the continuing problem of non-excludable benefits. Non-excludable benefits are programs or benefits established by a cooperative for its members and at a cost to the cooperative, but these benefits cannot be excluded from producers who are not in the cooperative. Two examples illustrate.

Historically, dairy cooperatives were very supportive of the generic advertising and promotion programs financed by dairy farmers. In many cases, cooperatives made promotion assessments mandatory on their membership. In the 1940's, 1950's, and 1960's, the American Dairy Association and the



Table 4. Number of Cooperatives and Proportions of Producer Deliveries Accounted for by all Cooperatives and the Four Largest Cooperatives, by Regional Group of Federal Milk Order Markets, December, 1986.

Region <sup>1</sup>	Number of cooperatives <sup>2</sup>	Percent of producers belonging to: <sup>3</sup>		Percent of producer deliveries marketed by:	
		All cooperatives	Four largest cooperatives <sup>4</sup>	All cooperatives	Four largest cooperatives <sup>4</sup>
North Atlantic	87	68.4	38.0	67.3	39.0
South Atlantic	12	80.0	66.4	81.8	65.6
East North Central	47	86.6	46.9	88.2	46.7
West North Central	78	91.4	61.1	91.8	61.3
East South Central	5	80.2	79.5	75.5	74.7
West South Central	7	87.7	81.4	86.1	78.3
Mountain	8	91.0	75.1	90.3	73.4
Pacific	11	83.4	76.2	83.9	77.5
All regions combined	218	82.8	32.0	82.8	29.1

<sup>1</sup>See listing below for Federal milk order marketing areas included in each region.

<sup>2</sup>Totals are net figures in that, if a cooperative association has members marketing milk under more than one order within the region, then that cooperative association is counted only once.

<sup>3</sup>For some regions, these figures may be overstated since cooperative members are more likely to market their production under more than one order than are nonmembers.

<sup>4</sup>Figures represent the share of the four largest cooperatives operating within the region or in all markets combined.

#### FEDERAL MILK ORDER MARKETING AREAS GROUPED BY REGION

<u>North Atlantic</u> New England New York-New Jersey Middle Atlantic	<u>West North Central</u> Upper "Midwest" East. South Dakota Black Hills Iowa Nebraska-Western Iowa Greater Kansas City	<u>Mountain</u> Eastern Colorado Western Colorado SW. Idaho-E. Oregon Great Basin Lake Mead Central Arizona Rio Grande Valley
<u>South Atlantic</u> Georgia Alabama-W. Florida Upper Florida Tampa Bay Southeastern Florida	<u>East South Central</u> Tennessee Valley Nashville Paducah Memphis	<u>Pacific</u> Puget Sound-Inland Oregon-Washington
<u>East North Central</u> Michigan Upper Peninsula Southern Michigan E. Ohio-W. Pennsylvania Ohio Valley Indiana Chicago Regional Central Illinois Southern Illinois Louisville-Lex.-Evans.	<u>West South Central</u> Central Arkansas Ft. Smith Southwest Plains Texas Panhandle Lubbock-Plainview Texas Greater Louisiana New Orleans-Mississippi	

National Dairy Council drew their fundamental producer support from dairy cooperatives. By 1970, it was the dairy cooperatives that were instrumental, through cooperative leaders such as Glenn Lake, in creating the United Dairy Industry Association. But the stronger demand for milk and dairy products and higher price levels that presumably were stimulated by the various promotion-research programs benefitted all dairy farmers, not just those supporting the programs. One outgrowth of this fact, and one which has effectively resolved the non-excludable benefits problem in the promotion area, was passage of the Dairy and Tobacco Act of 1983 which mandated the 15 cent per cwt. assessment on all milk producers.

The second example concerns marketwide services. Marketwide services include activities such as transporting milk and balancing market supplies by a handler, usually a cooperative, in ways that benefit the total market but the costs of which are borne by the organization providing the service. Marketwide services therefore have historically been a part of the non-excludable benefits area. As a result of some authorizing language in the Food Security Act of 1985, cooperatives as well as other handlers have been given license to have Federal market orders amended to have costs of such services at least partially covered out of the monthly pool. As a result, all producers who benefit pay a share of the cost. Such provisions were enacted into the Chicago Re-

Table 5. Average Milk Delivery per Producer, for Various Classifications of Producers, by Regional Group of Federal Milk Order Markets, December 1986.

Region <sup>1</sup>	All producers	Cooperative members <sup>2</sup>	Nonmembers	Members of four largest cooperatives <sup>2,3</sup>
	Pounds			
North Atlantic	69,679	68,558	72,111	71,540
South Atlantic	131,608	134,664	119,393	130,015
East North Central	60,215	61,700	53,585	60,373
West North Central	58,342	58,601	55,578	58,519
East South Central	67,158	63,195	83,212	63,106
West South Central	90,493	88,821	102,463	87,086
Mountain	226,891	225,259	243,303	221,571
Pacific	190,669	191,783	185,074	193,845
All Regions Combined	72,733	72,767	72,568	66,066

<sup>1</sup>See Table 4 for Federal milk order marketing areas included in each region.

<sup>2</sup>For some regions, these figures may be understated since cooperative members are more likely to market their milk under more than one order than are nonmembers.

<sup>3</sup>Four largest cooperatives operating within the region or in all markets combined.

gional Order (30) in November, 1987. Many dairy cooperatives will be petitioning for such provisions in the next two or three years.

#### National Milk Producers Federation

Approximately sixty of the larger dairy cooperatives are affiliated in a non-profit corporation known as the National Milk Producers Federation, with offices in Arlington, Virginia. NMPF is the cornerstone of what is sometimes called the 'dairy lobby'. The main purpose of NMPF is to advance the interests of dairy farmers and their cooperatives in the United States. Primary areas of attention have included:

- dairy price supports
- import quotas
- Federal market orders
- standards of identity
- labelling
- food safety concern
- coop anti-trust and tax issues
- other

The National Milk Producers Federation is generally recognized as having a solid record of achievement. However, the Federation has been frustrated in recent years on a couple of counts including (1) failure to get an import quota placed on casein, and (2) failure to get a longer term supply management program into place, even as the support price level was dropping. Lesser issues which have been disappointing to NMPF include the inability to raise SNF minimum standards on fluid milk products and inability to get desired identification of substitute and imitation cheeses and of frozen pizza using substitute and imitation cheeses.

#### Conclusion

The dairy cooperative movement is healthy and dairy cooperatives are in a relatively strong market position. Among major farm commodities, milk ranks first in total dollar (\$16 billion in 1985) value of products marketed by farmers through cooperatives. The \$16 billion value of milk marketed is approximately 35 percent of the \$47 billion worth of all farm commodities sold annually through one of the 3,925 agricultural marketing cooperatives in the United States. The major challenges confronting dairy cooperatives continue to be those of operating efficiently and resolving membership problems. The trends toward fewer and larger dairy farms is forcing dairy cooperatives to find new ways of treating their members equitably as compared to treating them equally. At this juncture, dairy cooperatives are meeting the test.

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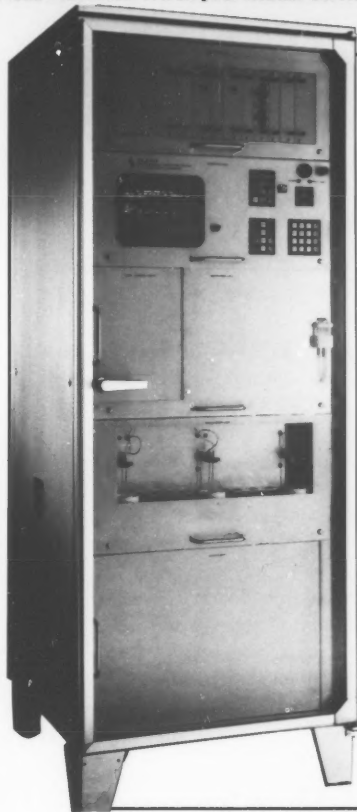
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## ***Function and Design: West Lynn Creamery Trucks Signify New Marketing Direction***

West Lynn Creamery will break new ground in its corporate marketing by launching an estimated \$2 million dollar "billboards on wheels" advertising campaign which is a first for the more than 50-year old company, and among the first in the New England advertising industry.

The Creamery, which specializes in perishable, refrigerated and frozen food products, is decorating its entire fleet of 240 trucks with full-color, larger-than-life farm scene murals that depict the campaign theme, "Wake up to freshness."

The multi-million dollar mobile billboard campaign and new company logo are part of a strategic marketing plan designed to sustain the company's 10 percent annual growth rate and boost consumer recognition of the company's products

For more information please contact Donna Giacometti or Marcia Curcuru, McDougall Assoc., 508/532-6500.

## ***Pursley Promoted to Vice President at AIB***

The promotion of William E. Pursley to vice president-sanitation at the American Institute of Baking was recently announced by Dr. William J. Hoover, president. This promotion was approved by the AIB Executive Committee in recognition of the outstanding achievements

of the Sanitation Department since he became its director in 1982.

Pursley first joined the Institute in 1975 as a field sanitarian in the New England area. He received two degrees from Kansas State University--B.S. in biology in 1973 and M.S. in grain science in 1975. He served as a graduate research assistant during his advanced degree program. From 1967 to 1970 he worked as a contract engineer working in the aircraft industry.

Pursley has provided strong leadership in developing sound and practical educational literature and programs. The food processing industry nationwide has benefited from a series of sanitation manuals outlining consolidated standards for food processors, distribution centers, frozen foods, packaging, and dairy. Added to that are AIB's Basic Food Plant Sanitation Manual, Warehouse Sanitation Manual, Quality Assurance Manual for Food Processors, and Retail Store Sanitation Manual.

## ***Guide on "How To Put The Magic In A Dairy Industry Motivation/Gala" offered by Chez-zam Entertainment***

A free guide on "How To Put The Magic In A Dairy Industry Motivation/Gala," featuring over 35 scenarios that will guarantee that every guest will have the time of their lives, has been issued by Chez-zam Entertainment.

Written by brothers Robert and Richard Blau, co-founders of Chez-zam Entertainment, the free Guide discusses in detail all the features that go into a scenario production; how a party planner can utilize these features for the maximum pleasure of his guests; and what the ultimate reaction of the attendees will be to the custom-tailored activity.

The Chez-zam Guide also includes a packet of comprehensive work sheets, so that the dairy industry guide user can check all the required elements of the planned events, and derive an in-depth evaluation of the gala. In this way he can chose those concepts which will have maximum impact to achieve the motivational goals.

The Blau brothers wrote this unique Guide after contributing their organization's talents and techniques at over 2,000 galas for a "Who's Who" of American businesses and executives.

Free copies of the Guide on "How To Put The Magic In A Dairy Industry Motivation/Gala" can be obtained by writing to Chez-zam Entertainment, Box 348, Jericho, NY 11753, telephone 516/595-2981.

## ***Mold Problems Discussed in AIB Seminar***

Problems with mold in food products become more serious in late summer and early fall, but it's not too early to consider how to control or eliminate this problem in any food plant.

The seminar, Mold Monitoring and Control for Food Processors, is the American Institute of Baking's attempt to assist the industry in solving this problem. Held in Manhattan, Kansas, April 24-25, the seminar will present information on the biology of food molds, physiological considerations, growth curves, and analysis of media procedures and controls.

Dr. John J. Iandolo, Professor of Food Microbiology at Kansas State University, will lead the discussions and demonstrations on monitoring techniques, including swabbing, exposure, contact and air sampling, identification, slide preparation, transfer techniques, and sampling plans.

For further information to include registration, write to the Registrar, American Institute of Baking, 1213 Bakers Way, Manhattan, Kansas 66502, or call 913/537-4750 or 1-800-633-5137.

## ***Vrymeer Commodities***

Vrymeer Commodities of St. Charles, Illinois a manufacturer and wholesale distributor of cocoa and chocolate flavor ingredients and fruit products is starting a major nationwide distribution rollout for 1989.

According to Dr. Rolf D.F. Ronstadt, Chairman, Vrymeer currently is expanding their broad product lines throughout North American and Canada by adding a few selective, industrial ingredient oriented manufacturer's representatives to their sales staff. Interested and qualified candidates which would like to add cocoa, chocolate and fruit commodities to all or part of their geographical working area are invited to call 312/377-2584 or telefax 312/377-5521 Vrymeer's corporate headquarters for further consideration.

Vrymeer's product lines include every imaginable cocoa and chocolate flavors from ordinary to exotic, as well as special, hard to come by fruit products and species. Vrymeer's major marketing thrust is tight product quality control and close "hands-on" customer service at significant cost savings.

## ***A Call for Posters***

The upcoming National SOPHE Mid Year Conference, June 15-17, 1989 in Seattle, Washington, will feature a poster and networking session on Saturday, June 17th. Posters are invited on the theme of the conference, "Blending Theory with Practice," or on any innovative health promotion or health education research.

To submit an abstract for the poster session, send a cover letter and a one page description of your project or program. Please do not list author(s) name(s) or institutional affiliation on the description page. It is preferred that at least one author be a National SOPHE member and that at least one presenter be formally registered for the conference.

Submit abstracts to: Kristin Zylstra, C/O PNW SOPHE, PO Box 24973, Seattle, WA 98124-0973.

For more information, please contact Kristin Zylstra at 206/522-7497. Please join us at the conference to share your recent work and research.

## ***New Basic Text on Retort Sterilization is Now Available in English Translation***

To fill a void of easy-to-understand educational and instructional text covering the state-of-the-art of retort sterilization of foods in any known sterilizable container, an English translation of Manfred Eisner's "Introduction Into the Technique and Technology of Rotary Sterilization" is now available as a Private Author's Edition at \$68 plus shipping from Guenter K. Toska, 3932 N. Lake Dr., Milwaukee, WI 53211.

This fully illustrated, valuable reference on the techniques for the thermo-processing of food in all types of containers...including new packaging materials and low profile containers...provides full details on this increasingly popular processing method to meet requirements for high product quality, safety, economy and adaptability to innovative industry changes.

## ***Seminar Updates Pizza Production Practices***

New presentations at the American Institute of Baking's PIZZA PRODUCTION seminar in Manhattan, Kansas, April 17-19, will provide the newest technical and practical information for those who are serious about making good pizza, commented Dr. Darrell D. Breising, vice president-education at AIB.

Designed and updated to tell about the what, why, and how of successful pizza operations, the sessions will include a thorough discussion of pizza crusts on the market today as well as new presentations on sauces, meat toppings, and the production of upscale pizzas. Sessions will be conducted by AIB and industry experts exploring such subjects as ingredients, formulations, processing, and sanitation.

The seminar is again presented with the cooperation and support of the National Frozen Pizza Institute and the National Association of Pizza Operators. An evening pizza buffet will allow participants to examine table top displays of new equipment and ingredients and engage in specific discussions with speakers, displayers, and guests about solutions to problems and business enhancing opportunities. A consumer panel will allow participants to learn what determines buying decisions.

"We've make sure there is something for everyone," Dr. Brensing added. "The processing section of the seminar will be divided into retail and wholesale groups to allow for the presentation of in-depth technologies and processing methods for each."

A special "hands-on" session has also been scheduled for two days following the regular seminar. Work in AIB's modern laboratories will give practical experiences and is strongly recommended for all retail personnel. It will enhance the learning gained during the first three days. This program will be limited to 30 participants and will be directed by Thomas Lehmann, AIB's director of bakery assistance.

For further information, write to the Registrar, American Institute of Baking, 1213 Bakers Way, Manhattan, KS 66502 or call 913/537-4750 or 1-800-633-5137.

### ***Applied Microbiology and Babson Brothers to Jointly Develop and Market Bovine Mastitis Preventatives***

Applied Microbiology, Inc. (APLY-NASDAQ) announced that it has signed a joint development agreement with Babson Brothers, a leading North American manufacturer of dairy farm equipment. The agreement will bring to market for the first time AMBICIN-based preventative products for bovine mastitis -- a disease of dairy cows causing losses as much as \$35 billion worldwide to the industry.

The agreement calls for Applied and Babson to share development costs and profits generated from sales. In addition, under terms of the agreement, Applied will supply the AMBICIN raw material for the products and provide technical assistance while Babson will manufacture the final product.

The dairy industry currently relies extensively on udder hygiene, including teat dips and washes, to control

the spread of bovine mastitis. Most formulations have been chemical germicides: iodophores, hypochlorites, and strong ionic surfactants. Although for the most part effective, germicides can leave toxic residues in the milk and frequently cause irritations to the teat, predisposing them to further infection.

The product developed with Babson will be composed of AMBICIN-L and AMBICIN-N. The AMBICIN-L component is produced through the Company's proprietary *Bacillus recombinant* protein production system. The AMBICIN-N component is purified from growth medium of the natural producer organism. The Company's proprietary cloning system allows it to produce large pure quantities of AMBICIN products on a commercially viable basis.

Applied Microbiology's strength lies in its research capabilities, the focus of which is to develop alternative products to antibiotics and germicides. The Company's strategy is to forge alliances with companies that have proven track records in particular industries. Through licensing agreements, Applied's partners handle the development and marketing of a particular product for a specific area, with Applied supplying the raw material. Before undertaking any development efforts, Applied determines that the potential outcome will be a product with applications in multiple markets.

The first set of products developed, AMBICINs, are non-toxic biological antimicrobial compounds that are effective against the infectious environment pathogens. These bacteriocin formulations have application in human healthcare, personal hygiene, animal healthcare, and for control of disease-causing and spoilage organisms in agriculture and in the food and beverage industries.

Applied's first three bacteriocins are AMBICIN-N and AMBICIN-S, effective in killing *Salmonella* and other gram positive and gram negative pathogens, and AMBICIN-L, effective against *Staphylococcus* bacteria contamination.

For more information, contact: Vicki Weiner, VMW, Inc., 122 E. 42nd St, Suite 5006, New York, NY 10168 212/490-6075.

### ***Chemidyne Corporation Offers Free Comprehensive Sanitation Survey***

In common with most other American businesses these days, the food processing industry faces a mighty challenge in trying to make a profit in the face of high costs of materials, energy, and labor. Strict government regulations relating to purity and sanitation place an additional burden on the food industry: the clean-up process can be an expensive one, and mistakes meet with swift retaliation in the form of even more expensive shutdowns.

A Hudson, Ohio, firm has dusted off an ancient adage to remind its clients of the value of its services: "A penny saved is a penny earned." Chemidyne Corporation specializes in saving pennies and dollars, and offers a comprehensive in-plant survey to demonstrate the savings possible with efficient sanitation programs. The survey is extensive, and it is free.

"A lot of surveys are available to food processors," says Dave Trombley, Chemidyne's vice president of marketing. "Ours is different in that it's free. And it's free because it's only the necessary first step in enabling us to show the client just how much money can be saved by using proper sanitation methods and equipment. Our survey doesn't just tell you 'this is what you're doing and this is what it costs'; we'll tell you 'this is what you're doing, this is what it costs, and here's what you can do about it.'"

The free survey allows Chemidyne engineers to scrutinize manufacturing and sanitation operations and equipment. Crews check detergent use, water consumption, pressure and temperature, bacteria control procedures and workers' efficiency.

Chemidyne Corporation has broad experience in sanitation of meat, poultry, seafood, and baking operations. The company produces detergents and chemicals, manufacturers sanitation equipment, and, through a subsidiary, offers contract cleaning services.

To schedule a free survey, call Trombley at 216/53-5512, or write Chemidyne Corp., PO Box 1386, Hudson, OH 44236.

### *Don't Miss the 103rd AOAC Annual International Meeting and Exposition!*

Prepare yourself for a new decade! The 1990's are going to bring unprecedented problems, challenges, and opportunities to anyone involved in chemical or biological analysis. Are you concerned with food, agriculture, pharmaceuticals, and environment, or forensics? The 1989 AOAC Meeting will address the hot topics, controversial issues, and exciting developments of the coming decade that you need to know about as a professional in these analytical fields.

The meeting will be held at the Clarion Hotel, St. Louis, Missouri, September 25-28, 1989.

To receive information or to register, call the AOAC office at 703/522-3032.

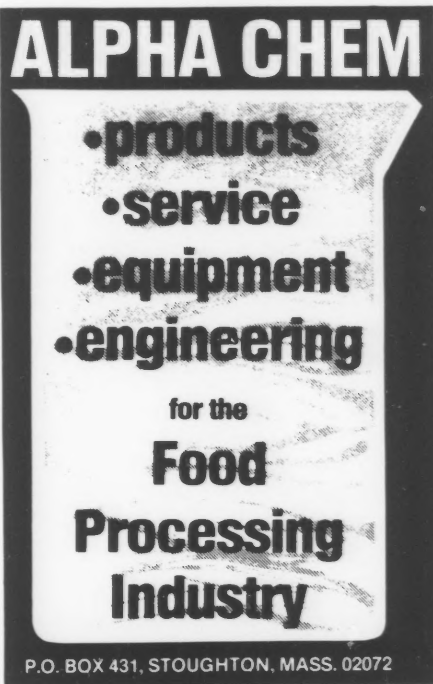
### *Purchase of Precision Testing Laboratory, Inc. by Silliker Laboratories*

On January 9, 1989, Silliker Laboratories, Inc., of Chicago, Illinois, purchased from Mr. Donald Sakiyama, Precision Testing Laboratory, located in Suite 205, 30993 Huntwood Ave., Hayward, California 94544.

The new name of the facility is Silliker Laboratories of Northern California, Inc., and will continue under the direction of Mr. Sakiyama.

Silliker Laboratories of Northern California, Inc., offers full service consulting and testing to the food and cosmetic industries, with special emphasis on spices, frozen and refrigerated foods, over-the-counter pharmaceuticals, and cosmetic testing.

Silliker Laboratories is one of the largest independent food testing laboratories in the United States. With the addition of Silliker Laboratories of Northern California, Inc., Silliker has six affiliate laboratories in Illinois, California, New Jersey, Pennsylvania and Canada. Its headquarters are located in Chicago Heights, Illinois.

A vertical rectangular graphic with a black background and white text. At the top, the words "ALPHA CHEM" are written in a bold, sans-serif font. Below this, a list of services is presented with bullet points: "•products", "•service", "•equipment", and "•engineering". Underneath the list, the text "for the" is in a smaller font, followed by "Food Processing Industry" in a large, bold, sans-serif font. At the bottom of the graphic, the address "P.O. BOX 431, STOUGHTON, MASS. 02072" is written in a small, sans-serif font.

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- equipment
- engineering

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## *The Best Possible Milk Supply for All The People*

Invitations are out to participate in the 22nd National Conference on Interstate Milk Shipments, perhaps better known as IMS Conference. It is scheduled for May 1-5, 1989 in Indianapolis at the Hilton-at-the-Circle Hotel.

This is a Conference that affects all dairy personnel. "Problems" introduced for discussion and action will certainly include such issues as preventing antibiotic residues in the milk supply, updating sanitary requirements to reflect advances in industry technology, and revising the methods for making sanitation ratings for milk plants and supplies. No doubt there will be proposed amendments to the Constitution and By-Laws.

Anyone interested in the freeflow of high quality milk from one state to another should give serious attention to attending this Conference. Likewise, anyone who believes present practices or regulations are inadequate or in error should submit the proper form to describe the perceived faulty situation along with its public health significance and proposed solution.

The National Conference on Interstate Milk Shipments (NCIMS) is a voluntary milk protection program which is the envy of many other food organizations. It is based on the cooperation of industry, state Departments of Agriculture or Health, and the Milk Safety Branch of the Food and Drug Administration. The first Conference was held in St. Louis in 1950, met every year through 1959, and has been meeting in alternate years since that time.

The basic purpose of the IMS program is to assure customers that our milk supply is safe and pure and that milk can move from one state to another without unwarranted restraints. The basic document is the Model Pasteurized Milk Ordinance (PMO) developed jointly by past Conferences and FDA. This is updated after each Conference when "Problem" resolutions are approved by state voting delegates and then approved by the IMS Board of Directors and FDA. Individual states voluntarily accept the PMO as their set of regulations for production and processing of milk.

This volunteer program assures that milk made available to consumers will be free of contaminants, meets stringent bacterial and temperature standards in production and processing, and has been transported and handled under well-defined sanitary conditions.

Dairy farms, and processing plants are inspected frequently by state or local inspectors trained by FDA approved and certified personnel. Violators face permit suspension and/or revocation. When "ratings" are positive, receiving states that participate in the IMS Program accept this milk without sending their own inspectors to the milk source.

This spirit of reciprocity is fundamental to the IMS Program. Each Conference addresses new issues but in the end each state agrees to accept the updated PMO as their official regulatory document. Industry avoids the costs and confusion of duplicate inspections and consumers are assured that milk purchased in one part of the country has been produced and handled under the same sanitary standards as in other areas.

All attendees at the Conference are encouraged to discuss problems that interest them in the general sessions. However, only representatives of the state regulatory and rating agencies get to vote at the final session on accepting or rejecting recommended changes in the PMO.

The IMS Conference is an excellent example that voluntary food protection programs can work. This one has been working to everyone's benefit for the past thirty-eight years. Uniformity and reciprocity are major tenets of the IMS Program. No one would want the dairy industry to return to the procedures of earlier years.

Bronson Lane, then with the University of Florida, wrote in the 1973 issue of the Journal of Milk and Food Technology that "This program has provided U.S. consumers with the safest milk and milk products in the world, encouraged free competition in the market place, and has helped prevent tax-draining multiple inspection programs."

The goal of the National Conference is "To promote the best possible milk supply for all the people". It has done it for 38 years and will continue to do it in the future as modern technology continues to bring changes to the industry.

For more information contact the Executive Secretary/Treasurer H.H. Vaux at 1235 Medinah Dr., Ft. Myers, FL 33919.



## An Important Point About Testing Sulfamethazine In Milk.

Testing for Sulfamethazine no longer requires expensive lab equipment or time consuming procedures.

Introducing LacTek™ a new, more sensitive assay developed by Idetek, Inc. Five easy steps give you results which can be read visually or by using a photometer. With LacTek™ you have the ability to test one sample or up to five samples at one time, making it the most flexible and cost-effective assay you can buy.

Specialized LacTek™ assays for other potential milk contaminants will soon be available from Idetek, Inc.

For more information or to order LacTek™ call:

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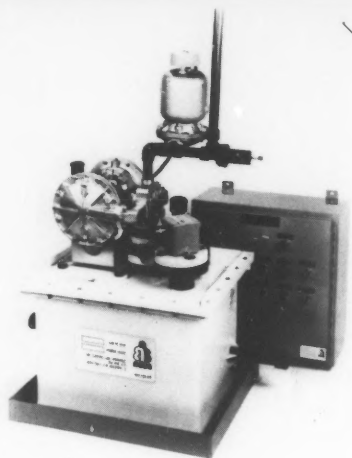
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# Industry Products



## Buda Liquid Waste Lift Station

The **Buda Liquid Waste Lift Station** is used to collect acid, solvent, chemical and plant waste and then pump them to a point where they will be treated.

Some of the quality features, insuring reliability and long service life are:

Tanks and covers are available in a variety of sizes and materials.

Pumps are either electrically or pneumatically operated. Both simplex and duplex units are available.

Control panel is initiated by the 4 point **Buda Liquid Level Control**. Included in the panel is a Programmable Logic Controller, insuring maximum flexibility. Power control function as well as alarms for high level, and tank leak detection, are included.

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## Sanitary Pump Transfer Peanut Butter with Ease

Graco's 5:1 ratio, Monark pump and air motor features stainless steel wetted parts for sanitary transfer of a wide variety of moderate to

heavy food products, such as peanut butter, shortening, coldpack cheese food, fruit pastes and dog food. The pump provides delivery up to 2.5 gpm. Fluid pressure ranges to 500 psi. Outlet size of the sanitary tube is 1-1/2".

The pump is mounted on a double-post, stainless steel pneumatic ram. The stainless steel ram plate with a single flat wiper is designed for 22-1/2" to 23" diameter straight-sided drums.

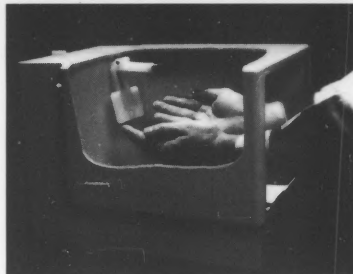
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## New 3M Petrifilm™ Plate Detects *E. coli* Bacteria

A fast, precise and easy-to-use test for *Escherichia coli* bacteria is now available from 3M in the form of a Petrifilm brand plate. 3M pioneered convenient microbiological testing with the development of Petrifilm plates for total aerobic count and coliform count.

The presence of *E. coli* in food or dairy products is a better indicator of fecal contamination than the total coliform count. *E. coli* tests often are performed during troubleshooting and for routine testing of potentially worrisome ingredients and finished product. However, conventional *E. coli* testing methods, such as the MPN (Most Probable Number) method, take up to six days to achieve results, which ties up inventory and delays resolution of problems. Also, conventional tests are tedious and labor intensive, and the results may not be precise.

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## Safer Than Clean

**Pacific Health Products Inc.** introduces a revolutionary patented hand sanitizing system. Lab tests show kills up to 99% of harmful bacteria on hands with cost effective, no mix, 2 second spray. This state-of-the-art, automatic system places hand sanitizing in visible management control and creates a FOCAL POINT for your sanitation program. A second line of defense not replacing but working with your present soap and water hand sanitation program. Ideal for employees returning from the restroom.

The PHP Hand Sanitizer was developed to help you prevent the spread of hand borne disease, which, according to the FDA, is the leading cause of food contamination and the illness it causes. Recent outbreaks of hand transmitted disease point out that even a well run company that is concerned about sanitation can have a breakdown in their program. Employees see nothing special in the commitment by a company to soap and water alone for sanitation. There is usually no germicidal action, not to mention that there has been over a 47% increase in food borne illness in the most recent two year period. This tells us that regular hand washing alone is not done adequately, if at all.

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## Klenzade Quality Pouch System

The new Quality Pouch System from **Klenzade, Division of Ecolab, Inc.** is a unique aseptic handcare and hand cleaning program that can help meet FDA hygiene standards through a cost-effective program. The soaps available for use in the airtight internal pump are Clean'N Smooth, Insurance and Scrubby. Each soap is "soil matched" to individual customer needs.

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## **A New Range of UV Sterilizers to Provide Low Cost Disinfected Water for the Process Industry**

**Bronzepam** UV Systems announce the launch of their new Willand range of ultraviolet water disinfection units. The range of medium pressure units has been developed from many years experience in supplying UV systems to provide low cost disinfected water for the process, pharmaceutical, biotechnology, microelectronics, beverage and allied industries.

**Bronzepam** says the units use a new design of UV light source which gives maximum power output making them more efficient than conventional systems. The units employ a unique variable lamp control which automatically maintains the ultraviolet light intensity inside the chamber ensuring correct dosage for the flow range. Because the systems are so efficient, **Bronzepam** says that in many of the existing installations running costs have proved to be low.

The company claims that these new improved UV disinfection units require less maintenance due to using fewer lamps than the conventional low pressure mercury vapour systems.

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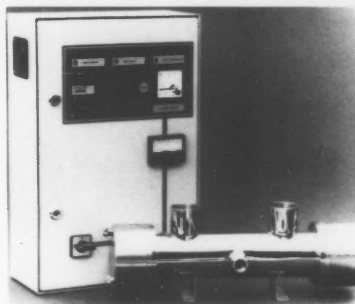
## **Drew Biosperse Microbiocide: A Total Microbial Control Program**

Drew's Biosperse microbiocide control program has become a standard for eliminating problems that stem from microbial growth, in all types of cooling water systems. Because microbiological growth can negate the effects of corrosion and deposit-inhibiting chemicals, destroy the wood in cooling towers, cause plugging, pitting, produce toxic substances, reduce heat transfer, and even create a mechanical failure, choosing the most effective treatment and control program is a very complex process. To complicate matters even more, not only is the ecology of each system different, but it is also undergoing constant change.

The Biosperse microbiocide control program was developed to address all of these issues. The Biosperse microbiocide product line consists of a wide range of chemical products allowing us to deal with any microbial problem you may have under various pH and temperature conditions. **Drew** also combines Biosperse microbiocide products with an antifoulant to remove any resulting biomass, eliminating potential nutrient sources for other microbes, and initiating control that can last more than 2.5 times longer than microbiocide, alone.

For brochure circle Reader Service No.

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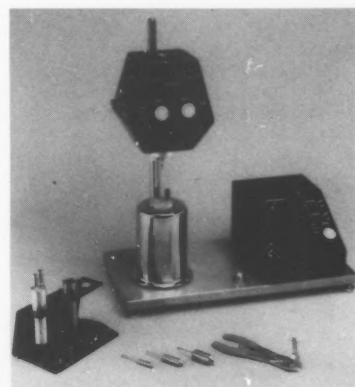
## **New Brochure Detailing Automatic Nitrogen, Carbon and Sulfur Analysis**

**HBI, Haake Buchler Instruments, Inc.**, Saddle Brook, NJ has available a new brochure detailing the Carlo Erba NA1500 - a fully-automated Nitrogen, Carbon and Sulfur Analyzer.

The Carlo Erba NA1500 Analyzer offers the simultaneous determination of Nitrogen, Carbon and Sulfur. The user's choice of three configurations allows N analysis in only three minutes; N,C analysis in only six minutes; and N,C,S analysis in only nine minutes. Typical sample types would include plant material, soils, plastic or petroleum products, foods, marine sediments, or geological substances.

This new brochure, available free of charge upon request, describes the advantages of the Carlo Erba NA1500 over more conventional techniques such as Kjeldahl - a wet chemical technique. It also details instrument specifications, sample size, measuring range and reproducibility data.

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## **Cooper Introduces New, Improved IT670A Thermistor-Based Digital Temperature Tester.**

**Cooper Instrument Corporation**, introduces a new, improved version of its Model IT670 Single-Probe, hand held, Thermistor-based Digital Temperature Tester. The Model IT670 has long been widely used in industrial application and in HVAC and Food Processing industries.

The new unit, called the Electro-therm IT670A, is lightweight, portable, and incorporates a wide variety of high-tech features, including a sealed membrane touch-pad, a back-lighted LCD display reading in either °F or °C, automatic high/low memory, temperature hold button, auto shut off or continuous on, a durable, shock resistant ABS plastic carrying case, and a detachable 10K thermistor probe. A 9 volt disposable alkaline battery is included with an optional AC adapter available.

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## **Direct Reading Rotational Viscometer**

**Nautilus Scientific** announces two new direct reading Rotational Viscometers. Models 4540 and 4546 are available with various spindle speeds, giving them a range of viscosity measurement capability from one Centipoise to 8 million Centipoise depending on the instrument selected.

For a fluid of a given viscosity, the drag will be greater as the rotational speed of the spindle, or its size, is increased. The viscometer is set up to take account of speed setting and spindle size to give direct readings in Centipoise. Combinations of spindles and speeds enable the user to choose an optimum range for any measurement within the range of the instrument. Calculations performed within the Viscometer from the torque measurement, the spindle speed and the spindle characteristics, give a direct readout of viscosity in Centipoise (mPas).

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### **Dynatech Enhances the Q-Trol™ Salmonella Test System: Four New Rapid Test Formats Now Offered**

Dynatech Laboratories, Inc. now offers four new Test Kits in the Q-Trol Salmonella Test product line. These are all new, high throughput, rapid, qualitative screening kits for the detection of Salmonella in food products and feeds. The Microtiter "sandwich" enzyme immunoassay is still used employing monoclonal antibodies to Salmonella antigen and a new chromogenic substrate. Now results can be read either visually or by inexpensive photometers.

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### **American Water Broom Introduces New, Low Priced, Heavy Duty Model**

American Water Broom has announced the introduction of a totally new line of Water Brooms. The new heavy duty line, in three popular sizes, is equal in durability to the well known C4-7 Water Broom; but at a price that will be very attractive for cost-conscious business owners.

American Water Broom also has medium duty steel and light duty aluminum Water Brooms, as well as a complete line of metal, aluminum and plastic homeowner model Water Brooms.

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### **Therm-L-Tec Systems Announces a New Rib Pattern**

Therm-L-Tec Systems, Inc., manufacturer of Therm-L-Bond insulated panels, has announced a new rib pattern for their cold storage and commercial insulated panels.

The new rib pattern, Therm-A-Rib, is more aesthetically pleasing to the eye while having the same strength qualities as the standard rib system. With the Therm-L-Bond semi-foamed in-place adhering system, Therm-L-Tec can manufacture units up to 45' in length with a standard width of 48". As with the standard Therm-L-Bond panel system, Therm-A-Rib panels may be manufactured with Expanded Polystyrene (EPS), Isocyanurate or Extruded Polystyrene.

The unique bonding process that Therm-L-Tec employs in their process is one of the most up to date technological advances known in the insulated panel industry. The process is on a continuous in-line system that makes most conventional methods presently used obsolete.

Therm-L-Tec will arrange a tour of their facility for anyone interested in learning more about Therm-L-Bond panels.

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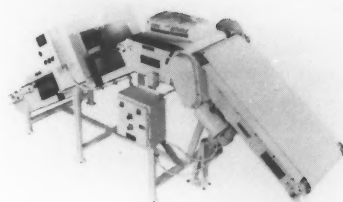
### **New Brochure Illustrates Rosemount's Control System Architecture**

A new brochure focusing on the architecture of the Rosemount System 3 Distributed Process Control System is now available from the company.

The 13-page, four-color brochure provides a brief overview of the Rosemount System 3, which combines control power and reliability with economy and ease of expansion. An introduction to the system's easy-to-use operator interfaces is enhanced with photos, illustrations and sample reports.

For catalog circle Reader Service No.

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### **E-Z Tec II Metal Detector Available with Conveyor or Vertical Reject System**

The E-Z Tec II Metal Detector, from Eriez Magnetics, protects product purity by detecting the presence of ferrous and non-ferrous metals.

These highly sensitive instruments are available with stainless steel or epoxy-coated steel conveyors to form an integral detection package. The conveyors range in length from 5 to 26 feet, with belt widths from 2 to 36 inches. They can be equipped with a choice of reject, marker and alarm devices, and variable speed drives in AC or DC.

A vertical drop option with reject valves is also available.

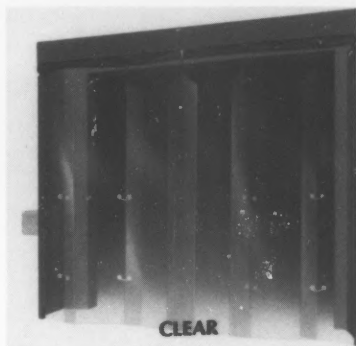
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### **EXAC Mass Flowmeter Authorized to Bear 3-A Symbol**

EXAC Corporation, a leading manufacturer of mass flowmeters has been granted a 3-A Symbol Authorization noting requirements met for the applicable 3-A Sanitary Standards.

The authorization to bear the 3-A symbol on EXAC's Model EX 12 sensor positions EXAC's Mass Flowmeter product line as suitable for milk and liquid milk products (#28-00). The 3-A certification program sets sanitary standards for increased safety and quality in the dairy and food industries, as well as pharmaceutical and biological engineering applications.

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### **ENVIRO** Introduces High Speed Bi-Folding Door

ENVIRO division of ASI Technologies, Inc. recently introduced the HYDRAFOLD bi-folding door. This new door combines the features of clear, high visibility panels with reliable, high speed performance as provided by the exclusive ENVIRO hydraulic operator.

The HYDRAFOLD door with transparent panels up to 1/2" thick enhance plant safety by providing a clear view of oncoming traffic or objects on the opposite side of the door so that accidents can be avoided before they happen.

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### **New Induction Cap Sealing Coil Provides Consistent Seals on Wide-Mouth Containers**

Food packagers utilizing wide-mouth plastic containers can achieve consistent induction cap seals to maintain product freshness, package integrity and tamper evidence, with a new cap sealing system from **Enercon Industries** (Menomonee Falls, WI).

The cap sealing system features a new coil, designed specifically for induction sealing wide mouth containers for peanut butter, mayonnaise, applesauce and other food products. Unlike traditional cap sealer coils which must be "skewed" to the line, the new **Enercon** system utilizes a unique in-line coil design, which provides even heating of the entire foil liner for consistent, reliable seals. The coil's even heating also prevents scorching of the cap and liner and provides complete wax melt.

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### **New Brooklyn Precision Digital Thermometer**

**Brooklyn** introduces a New economical digital thermometer using 10 K thermistor probes to achieve a 0.2° accuracy! This lightweight, portable unit boasts an expanded temperature range of -40 to 300°F (and -40 to 150°C) in 0.1° resolution. Using a low battery drain L.C.D. it also has a backlight switch for readability in dark environments. Membrane touch pad is sealed for

protection against liquid or corrosive chemical spills.

The #6661 Thermometer is ready to use in any application with the Utility Probe (liquids; semi-solids), Air Probe (exposed sensor for air temperature), or Surface Probe (machine surfaces, pipes, tanks, etc.).

**Brooklyn's** digital thermometer #6661 is priced at just \$79.00 including alkaline battery and storage case or with Nicad battery and re-charger at \$116.00. Probes additional.

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# Take action against contamination

The QMI Tru-Test™ aseptic sampling system is a unique, patented aseptic sampling system that, when combined with proper laboratory procedures, can help you:

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- Avoid the disaster of contaminated products.

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\*Manufactured for Food and Dairy Quality Management, Inc., under license from Galloway Trusts, Neenah, Wisconsin. U.S. Patent No. 3,779,062, Canadian Patent No. 975,401. Patented 1975.

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**Detect *E. coli*  
before you can say  
4-Methylumbelliferyl- $\beta$ -  
D-glucuronide**

Well... maybe not that fast. But when traditional tests for the presence of *E. coli* often take a week or longer, Marcor's overnight MUG (4-Methylumbelliferyl- $\beta$ -D-glucuronide) testing reagent seems awfully fast.

How does it work? Almost all strains of *E. coli* produce  $\beta$ -glucuronidase, an enzyme which hydrolyzes MUG. The result is 4-methylumbelliferone, a fluorogenic product which can be easily detected under long wave UV or 366-nm light. When MUG is incorporated into a modified MacConkey Agar or Lauryl Sulfate Broth, seeded with a single *E. coli* cell, fluorescence is usually detectable in 12 to 20 hours.

Plan now for future QC speed and economy. Perform both gas production and fluorescent tests simultaneously, and compare the results. For recommended test procedures and complete product specification, Marcor is just a phone call away.

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## NSI Introduces

the DIGITRON 3000 series of portable digital thermometers.

For precision temperature measurement in a wide variety of applications, this unique range of thermometers provide a reliable and cost effective solution.



**Features include:**

- 0.1 degree resolution.
- Degrees C or F readout.
- Differential temperature measurement.
- Display hold function.
- Temperature measuring range of -58 to +1999 degrees F.
- Rugged construction.
- Comprehensive range of probes.

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# Food and Environmental Hazards To Health

## An Outbreak of *Campylobacter jejuni* Gastroenteritis at a Resort - Ontario

On 3 November 1987, the Peterborough County-City Health Unit was notified of an outbreak of gastroenteritis among employees at a branch plant of a company in the area who had attended a conference at a resort in Peterborough County from 25 to 29 October. The plant physician reported that several employees had developed nausea, vomiting or diarrhea on or after the conference. An investigation was initiated upon notification of the Health Unit. The conference had been attended by employees from branches in other parts of Canada and the United States in addition to those from the Peterborough plant.

Cases were identified using the following case definition: a person having nausea, vomiting, or diarrhea within or shortly after the conference dates. A questionnaire based on suspect foods prepared and served on 25 and 26 October was administered to all employees who had attended the conference. Stool sample results from local employees who had been microbiologically tested by their physicians were made available to the Health Unit. Food handlers were instructed to submit stool samples for analysis.

The resort's kitchen was found to be in good sanitary condition. However, some refrigerators had no thermometers and the temperature in one was too high. None of the food that was served during the conference was available for analysis, but swabs from some eating utensils and a water sample were obtained.

The investigation revealed that the outbreak extended from 26 to 31 October. There were 31 cases among the total 81 employees (35%) who had attended the conference. Major symptoms were diarrhea, fever, nausea, and vomiting. Food-specific attack rates were calculated but no suspect food or water could be implicated with certainty as a vehicle of transmission.

*Campylobacter jejuni* was isolated by the Peterborough Regional Public Health Laboratory from the stools of 3 cases with bloody diarrhea. One of these cases had eaten at the resort only on 25 October and became ill 4 days later. The stool samples from 7 food handlers, the swabs from the eating utensils, and the water sample were all negative.

**Discussion:** *C. jejuni* was the probable cause of this outbreak. This organism causes acute, self-limited enteric disease characterized by nausea, vomiting, diarrhea, and fever and the incubation period is commonly 3 to 5 days.

The source of infection was most likely uncooked or food handled just prior to serving that had become contaminated by infected raw meat. *Campylobacter* is commonly isolated from poultry and cattle, and chicken and beef were

prepared and handled on 25 and 26 October. Food could have become infected through contact with contaminated surfaces or if handled in a non-hygienic manner.

No control measures were instituted because the resort had closed for the season. However, the Health Unit offered to conduct a seminar on the hygienic preparation and handling of food.

Can. Dis. Weekly Report 10/1/88

## Outbreak of Egg-Borne *Salmonella* Food Poisoning - Scotland

During the first weekend in November 1987, 9 members of a family who had gathered together at a home for a reunion and birthday celebration, became ill with symptoms of diarrhea, vomiting, and abdominal pain. Seven were so ill that they required hospitalization; the other 2 suffered only slight diarrhea and queasiness. Onset of symptoms for the 7 who were hospitalized occurred between 13 and 19 hours following consumption of a common meal on the evening of 6 November, and about 40 hours for the other 2. All 9 had eaten the main course which consisted of fried haddock, baked beans, bread and butter. Eight had eaten the dessert; the ninth, who was one of the 2 not hospitalized, had only tasted it during preparation.

The dessert "leche creme" had been prepared at approximately 12:30 h on 6 November. It consisted of margarine, flour and pasteurized milk heated to the boiling point to form a white sauce, which was then left to cool in the pan in a sink of cold water for about 30 min. The sauce was then enriched by beating in 2 raw egg yolks, and flavored with vanilla essence. At around 14:30 h the dessert was placed in the refrigerator where it remained until it was served that evening.

No leftover food from the meal was available for sampling. However, it was learned that the eggs used for the dessert had come from the household's hens, which were kept in a henhouse and run area in the back garden. Three eggs, 2 collected by the householder and the third obtained directly from the henhouse, were obtained and submitted for microbiological examination. Samples of fresh hen droppings, mud, straw bedding, a rat dropping, and hen feed taken from the henhouse, the run area and immediate vicinity were also examined. *Salmonella enteritidis* phage type 4 was isolated from fecal specimens of all 9 persons affected, from the hen droppings, and from the inside of the 2 eggs collected by the householder. Examination of the unwashed egg obtained directly from the henhouse, the shells of the all the eggs sampled, and all other samples were negative for *Salmonella* organisms. It was interesting to note that the

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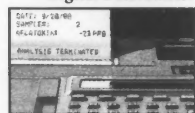
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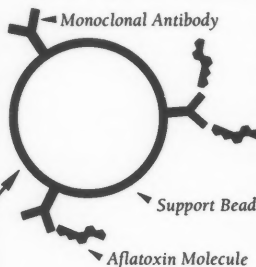


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eggs used in the preparation of the dessert, presumably infected, and the 2 collected by the householder and sent for examination and found positive for *S. enteritidis*, had all been washed to remove superficial fecal matter.

The "leche creme" was almost certainly the vehicle of infection, having been contaminated by the raw egg yolks. The eggs most probably became contaminated by infected fecal matter transmitted through the warm porous shells lying in contact with the damp henhouse floor or bedding. The washing of the eggs may have facilitated the access of *Salmonella* organisms through the shells by removing the protective gelatinous layer present at the time of laying. For this reason, washing of commercially produced top grade eggs is prohibited and/or discouraged in some countries including Britain. This incident demonstrates the potential for hen eggs, particularly from free-range production, to become contaminated by food poisoning organisms, and serves as a reminder of the consequences which may arise in the event of such eggs being consumed raw.

**Source:** Communicable Disease Scotland, Vol. 22, No. 11, 1988.

**Comment:** Grade "Cracked" eggs have long been known to carry *Salmonella* from fecal contamination which crosses the shell through the cracks. In 1981, in Canada, there was a major institutional outbreak of *S. enteritidis* attributed to the use of cracked eggs in an uncooked protein supplement.

About the same time as the above report from Scotland appeared, the Centers for Disease Control in Atlanta reported a series of *S. enteritidis* outbreaks traced to Grade A eggs. The working group established to investigate an increased isolation of *S. enteritidis* in the northwestern United States compiled reports of 65 outbreaks between January 1985 and May 1987. Of the 35 outbreaks with known vehicles, 27 (77%) were traced to eggs alone or egg-containing foods. In 7 outbreaks, eggs had been eaten raw (in caesar salad, hollandaise sauce, eggnog, and home-made ice cream) and in another 10, eggs had only been partially cooked.

The authors of the CDC report suggest that eggs may have become contaminated by transovarian transmission of *S. enteritidis* in healthy hens, rather than from fecal contamination of shells. As in the outbreak in Scotland, Grade A eggs were washed to remove superficial fecal matter.

In Canada, *S. enteritidis* is currently the third most commonly isolated *Salmonella* serotype after *S. hadar* and *S. typhimurium* with 3.5, 6.5 and 10.5 isolates per 100,000 respectively in 1987. One major outbreak involving *S. enteritidis* occurred in September 1986. The source was suspected to be cross-contamination of a bread crumb mixture from raw poultry, although eggs were also used in the preparation of the suspect vehicle (breaded chicken).

Whether *Salmonella* organisms are within the egg yolk or cross the cracked or intact shell when washed, the recommendation not to consume raw or incompletely cooked eggs is prudent, especially for infants and the elderly who are at the greatest risk of complications from any *Salmonella* infection. Experiments on the survival of *Salmonella* suggest that, even in the home, eggs should be boiled 7 minutes,

poached for 5 minutes or fried (over) for 3 minutes or until the white is set and the yolk is no longer runny. Institutional preparations containing eggs should be made with commercial pasteurized egg mixtures and cracked eggs should be avoided at all times.

There is a need for research to clarify the roles of transovarian and cross-shell contamination with *Salmonella* in order to adopt appropriate recommendations and control measures for prevention of illness and outbreaks.

Can Dis. Weekly Report 10-1-88

### Outbreak of *Shigella flexneri* in a Nursing Home - Alberta

On 4 August 1987, a local nursing home notified Calgary Health Services about an 82-year-old resident with shigellosis. This resident had entered the nursing home on 27 July, and the following weekend, apparently 3 other residents and 2 staff members had become ill. An investigation was conducted to determine whether this subsequent illness was due to shigellosis, and if so, to control further spread of the infection.

The 82-year-old index case had been admitted to the General Hospital on 28 June for chronic hypoxia. He developed diarrhea on 24 July and although stool culture and sensitivity were requested, a specimen was not sent to the hospital laboratory. Imodium was later prescribed. The patient was on a weekend pass on 24 July to visit his family, and on 27 July he was admitted to the nursing home experiencing diarrhea and fever. After 3 days his condition had not improved and he was returned to the hospital. The hospital laboratory isolated *Shigella flexneri* in stool specimens collected on 31 July and ceftazidime and gentamicin were prescribed.

It was the weekend of 1-3 August, shortly after the index case had returned to the hospital, that the 3 residents and 2 staff members developed diarrhea. During the next 7 days, a total of 6 staff members and 5 residents became symptomatic. *S. flexneri* was isolated from stools of 3 staff members and 3 residents; serotype 3 with similar antimicrobial patterns was identified in 5 of these cases.

The 82-year-old patient from the hospital was considered to be the index case. Case histories, room locations in the nursing home, and staff work schedules were obtained to possibly identify factors contributing to transmission of the organism. The residents who were ill did not have an apparent close contact with the index case nor was there any clustering of cases in shared rooms. In fact, none of the ill residents shared a room with another resident who was ill. However, all staff and residents who were ill were from the north wing of the complex. A total of 54 residents occupy this wing which has 2 common areas, the "large bathroom" and the "sun room".

The possibility of foodborne transmission was also considered. None of the kitchen staff reported gastrointestinal symptoms during the week prior to the onset of the illness. The residents who were ill normally consume meals in different locations, e.g., their own rooms, auxiliary dining room and main dining room, and there was little sharing of food among those who were ill. Staff members consume different food items, usually soup, sandwiches and dessert. Since illness was restricted to the north wing of the nursing home and only 11% of these residents were ill, foodborne transmission appeared unlikely.

One of the staff members who were ill works in the laundry room. She developed diarrheal symptoms on 7 August and went on vacation before stool specimens could be collected. Because of her illness, the housekeeping procedure for handling fecally soiled linen was thoroughly examined and it was found that precautions were minimal. It is possible that this laundry attendant may have acquired her illness as a result of exposure to fecally soiled linen collected from an ill resident.

Handwashing practices of nurses and nurses' aides were also examined. Washbasins are located in each resident's room but residents keep their own soap and towels. Nurses and nurses' aides are advised to use the washbasin, soap, and paper towels located behind the nursing station and not those in residents' rooms. Such a practice might preclude handwashing after contact with each resident.

Enteric precautions and receiving new admissions were discussed with nursing home staff. These discussions were

summarized in a letter from Calgary Health Services stating the Board of Health's position on the situation and recommending the following guidelines for control of the infections:

**Staff:** An accessible washbasin with liquid soap and paper towels should be available to staff in each room in the north wing for use after patient contact. All nursing home staff should be alerted to the outbreak and requested to report any gastrointestinal problems. Gloves should be used for handling fecally contaminated clothes and linen which should be put in double bags indicating to housekeeping staff that the contents are contaminated.

**Housekeeping:** All fecally soiled linen should be double bagged for transfer to the laundering facilities. Hands should be gloved to handle and launder the linen. Disposal of bags should be done carefully.

**Ill Patients:** Those symptomatic patients cared for at the home should be subject to enteric precautions since isolation is not practical. Strict limitation of contact with other residents, use of a commode or toileting at one location would be preferable. Conscientious personal hygiene and facility cleaning, with bleach or alternate disinfectant, are important. Food being brought in to patients from outside the facility should be discouraged.

**Foodhandlers:** All foodhandlers, including nurses and visitors, should be aware of the risk of transmitting the infection and should use strict hygienic practices. Anyone with symptoms should refrain from working, should visit a physician, and should notify the supervisor and the Health

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Since the index case came from the General Hospital, the hospital's infection control nurse was alerted to the situation on 4 August. It was learned that the index case and 2 patients sharing the same room had all had diarrhea on 27 July, but stool specimens collected later were all negative.

**Discussion:** It is not known whether the index case was originally admitted to the General Hospital with shigellosis or acquired it while in hospital. Because this case had had a 3-week hospital stay prior to the onset of diarrhea and the incubation period of *Shigella* is usually between 1 to 3 days, the hospital is the more likely source. One hypothesis is that the index case acquired the infection from a roommate while in the hospital. This roommate had had diarrhea since 2 July and often associated with native Indians and was considered a possible source of infection because of the prevalence of *Shigella* on Indian reserves. However, it was not possible to support this hypothesis because stool cultures from this roommate were negative. Moreover, the presence of serotype 3 is not restricted to Indian reserves.

There were no reports of unusual diarrhea in the nursing home prior to the arrival of the index case. The illness that occurred was thought to be due to person-to-person transmission. Implementation of the infection control recommendations appears to have effectively limited further spread.

Can. Dis. Weekly Report 6-11-88

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# Food Service Code Interpretations

by  
Homer Emery  
Food Service Interpretations Committee

Last month we provided a definition of interpretation: "to explain, to translate, to give one's own conception of". Everyone is certainly entitled to an opinion on food safety issues, but when it comes to food sanitation codes there can only be one official interpretation. Interpretations issued through FDA's Retail Food Protection Program Information Manual are the official interpretations that should be used in the field (note: my opinion).

While everyone may not agree on a particular issue we are obligated, as public health officials, to apply FDA interpretations through our own local, state, and agency codes. There may be more than one right answer, but if uniformity is a goal that is to be achieved there can only be one official interpretation to use for conducting inspections and evaluations. The preparation of raw fish (e.g. sushi, sashimi) is an excellent example of the need to recognize and apply only one official interpretation.

In November of 1987 FDA issued a code interpretation on the preparation of raw, marinated or partially cooked fishery products. One option for the preparation of these food items that was recognized by FDA was on-site freezing for parasite control. Specific FDA requirements for on-site-freezing included: "blast frozen to -31°F or below and held for at least 15 hours or regularly frozen and held at -10°F or below for at least 168 hours (7 days)".

A seafood industry advisory group also issued information in November of 1987 on the preparation of raw fish. Information provided to the public and industry for on-site freezing of raw fish was different from the FDA code interpretation. The advisory group recommended "freezing to an internal temperature of 0° to 10°F for at least 24 hours" for parasite control. The need for field sanitarians to know and apply FDA code interpretations is clear.

*Off the Clipboard:* Comments and descriptions of manager certification training programs are beginning to arrive (see February 89 issue). You still have a week or so to send in a

description of your local program. Several IAMFES members have suggested that the current name for this column is too restrictive and should be changed to reflect the total scope of the food industry (excluding milk). Suggestions for a better column name are requested.

The American Academy of Pediatrics in collaboration with the American Public Health Association is developing standards for out-of-home child care programs. We are looking for IAMFES members that would be interested in reviewing and commenting on draft standards pertaining to environmental quality. If you would like a copy of the FDA code interpretation on preparation of raw fishery products or to review the draft child care standards send a self addressed, stamped (2 stamps) envelope to: IAMFES FDA Interpretations Committee, P.O. Box 1832, Frederick, Maryland 21701.

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# Affiliate News

## Affiliate Bids to Host IAMFES Annual Meeting

The IAMFES Annual Meeting is hosted yearly by one of the IAMFES Affiliates. In order to bid on hosting an upcoming meeting, an affiliate should know the following:

1. The bid is presented to the IAMFES Executive Board, during the August meeting, 3 years prior. Example: August of 1989 the board will accept bids for the 1992 meeting. All information to follow will be based on a bid for the 1992 meeting.

2. Select a city and inform the Executive Manager by June 1, 1989 that you wish to place a bid during the August meeting.

3. The Executive Manager will check hotels within that city, along with flight information and other requirements for the meeting.

4. The Executive Manager will contact you by July 1 to let you know which hotels will work in the city you have selected. If by chance, the hotels will not work within that particular city, you will still have time to select another city before the August meeting.

5. You give a presentation (10 minutes) during the IAMFES Executive Board Meeting regarding the city you have selected.

6. The Executive Board makes the decision on who will host the meeting during their fall Executive Board meeting in November of 89.

7. The Executive Manager along with local arrangements people will conduct a hotel/site inspection by the spring of 90. The Executive Manager signs the contract with the hotel.

8. The Affiliate receives 50% of the profits of the meeting, as well as 1/3 of exhibit monies. Exhibit spaces are sold through the IAMFES office.

These are just the basics of the procedure. If you have any questions, please contact the IAMFES office at 515-232-6699.

## Upcoming IAMFES Affiliate Meetings

1989

MAY

**9, The Associated Illinois Milk, Food and Environment Sanitarians and The Chicago Dairy Technology Society Annual Spring Seminar -- Prevention: Key To Quality --** will be held at McDonald's Hamburger U, Oak Brook, Illinois. The session will open with a tour of the McDonald's facility followed by a p.m. program discussing trends in food, dairy and food service sanitation. For more information, contact: Clem Honer, Gorman Publishing Co., 8750 West Bryn Mawr Ave., Chicago, IL 60631. 312/693-3200.  
**15-17, PA Association of Dairy Sanitarians and Dairy Laboratory Analysts**, will hold its annual conference at Penn State University, University Park, PA. The person to contact for more information is: Sid Barnard, 8 Borland Lab, University Park, PA 16802 814/863-3915.

JUNE

**6-7, Texas Association of Milk, Food & Environmental Sanitarians** annual meeting to be held at the Green Oaks Inn, 6901 West Freeway, Fort Worth, TX 76116. For more information, contact: S. Edith Mazurek, 4032 Acacia St., Fort Worth, TX 76109. 817/921-4816.

SEPTEMBER

**19-21, New York State Association of Milk and Food Sanitarians**, to be held in Buffalo, New York, at the Sheraton-Buffalo Airport Hotel. For more information, contact: Paul Dersam, 27 Sullivan Rd, Alden, NY 14004, 716/937-3432.

**20-21, Wisconsin Association of Milk and Food Sanitarians annual meeting**, will be held at the Holiday Inn East, Madison, WI. Contact: Neil Vassau, PO Box 7883, Madison, WI 53707 608/267-3504.

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210 DAIRY, FOOD AND ENVIRONMENTAL SANITATION/APRIL 1989



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NATIONAL MASTITIS COUNCIL

*C. bovis* Increases Somatic Cell Counts

Minor mastitis pathogens cause "slight" increases in the somatic cell count when they infect the udder. *Corynebacterium bovis* is one of these "minor" pathogens. The exact source of *C. bovis* is not known, but *C. bovis* is very infectious and once a few quarters become infected, it can spread rapidly from infected quarters to uninfected ones.

No research data are available concerning effects of *C. bovis* on milk production and milk quality. Somatic cell counts of uninfected quarters may double when infected with this minor pathogen. Increases from 150,000 to 300,000 cells per milliliter are common. *C. bovis* rarely is isolated from quarters with clinical mastitis.

The greatest concern is quarters infected with *C. bovis* are more susceptible to infection with *Streptococcus agalactiae* and nonagalactiae streptococci than uninfected ones. These major mastitis pathogens can cause a dramatic drop in milk production and quality.

Prevention of *C. bovis* infections depends on effective udder hygiene - premilking udder preparation and postmilking teat dipping. Dry cow therapy eliminates most *C. bovis* infections. The prevalence of *C. bovis* is low in herds that practice teat dipping and dry cow therapy.

Incidence of *C. bovis* infection increases from calving throughout lactation in herds that have ineffective udder hygiene programs. Intramammary therapy of infected cows during lactation is not recommended because there is no economic advantage. It is more advantageous to dry-treat infected cows. Eradication of *C. bovis* is highly probable in well-managed herds under a rigid mastitis control program.

This article is one of a continuing series made available by the National Mastitis Council.

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**August 13-17, 1989**

**Hyatt Regency Crown Center**

**Friday, August 11**

8:00 - 5:00 IAMFES Board Meeting

**Saturday Morning, August 12**

8:00 - 12:00 IAMFES Board Meeting

DAIRY, FOOD AND ENVIRONMENTAL SANITATION/APRIL 1989 211

**Committees meet on Saturday afternoon and Sunday.  
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attend a committee meeting.**

**Saturday Afternoon, August 12**

1:00 - 2:00 Education and Training Committee  
2:00 - 3:00 Water Quality and Wastewater Committee  
3:00 - 4:00 Sanitary Procedures Committee  
4:00 - 5:00 Dairy, Food and Environmental Sanitation Committee

**Sunday, August 13**

9:30 - 10:15 Dairy Quality and Safety (FAS) Committee  
10:15 - 11:00 Dairy Quality and Safety (FAS) Committee  
10:00 - 5:00 Communicable Diseases and Food Safety Committee  
10:00 - 12:00 Constitution and By-Laws Committee  
11:00 - 12:00 Food Service Sanitation Committee  
1:00 - 2:00 Food Equipment Sanitary Standards Committee  
1:00 - 2:00 Applied Laboratory Methods Committee  
2:00 - 3:00 Retail Foods Committee  
2:00 - 3:00 Foundation Fund Committee  
2:00 - 4:00 Affiliate Council Committee  
3:00 - 4:00 Baking Industry Sanitary Standards Committee  
3:00 - 4:00 Nominating Committee  
3:00 - 5:00 FDA Interpretations Committee  
3:30 - 5:00 Journal of Food Protection Committee



**PROGRAM  
MEETING OF THE  
ASSOCIATION OF MILK,  
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*Association of Sanitarians*

7, 1989

**Kansas City, MO**

**Monday, August 12**

Planning Committee  
Wastewater Committee  
Diseases Committee  
Environmental Sanitation Com-

**August 13**

Safety (Farm Section)  
Safety (Plant Section)  
Diseases Affecting Man Com-

By-Laws Committee  
Sanitation Committee  
Sanitary Standards Committee  
Sanitary Methods Committee  
Committee  
Committee  
Sanitary Standards Committee  
Committee  
ns  
Protection Committee

**Sunday Evening, August 13**

**OPENING SESSION**

**Presiding R.B. Gravani and R. Case**

- 7:00 WELCOME TO THE 76TH ANNUAL MEETING  
7:20 \*Ivan Parkin Lectureship - R.P. Read, Vienna, VA.  
\*This lecture is sponsored by the IAMFES Foundation Fund and Sustaining Memberships  
8:15 Cheese and Wine Reception

**THE EXHIBIT HALL**

**WILL BE OPEN DURING THE MIXER**

**Tuesday Afternoon, August 15**

**Session: IAMFES Business Meeting**

- 1:25 Door Prize  
1:30 Welcome & Introduction  
1:40 Presidential Address - R.B. Gravani  
2:00 Business Meeting - R.B. Gravani  
3:30 Milk Break

**Thursday, August 17**

10:00 - 4:00 NCIMS Meeting

## MONDAY MORNING, AUGUST 14

Symposium: Modernizing the Dairy Plant  
Co-Conveners: R.L. SANDERS and M. BANNER

- 8:55 Door Prize
- 9:00 **Building Materials - Site Selection and Design** - W. SANDER, Hixon Incorporated, Architects Engineers, Cincinnati, OH
- 9:30 **Basic Equipment Design** - D.B. WHITEHEAD, Chairman, IAMFES Committee On Sanitary Procedures, Brandon, MS
- 10:05 **Computerized Public Health Control** - R. DICKERSON, FDA, Cincinnati, OH
- 10:30 Milk Break
- 10:45 Door Prize
- 10:50 **Designing For Efficiency and Sanitation** - D. SEIBERLING, Seiberling Associates, Roscoe, IL
- 11:20 **Operational Aspects: P.A.S.S.** - B. GARFIELD, MIF-ICA, Washington, D.C.
- 11:50 3-A Sanitary Standards Committee
- 12:00 Lunch

## TUESDAY MORNING, AUGUST 15

Session: Dairy Quality  
Co-Conveners: J. BRUHN and R. B.

- 8:25 Door Prize
- 8:30 **The Isolation and Identification of From Raw Milk** - R.L. PATTERSON, Zottola, University of MN, St. Paul, MN
- 8:45 **Environmental Sources of Listeria in Vermont Dairy Plants** - R.B. KLAUNIG & D.F. George, University of Vermont
- 9:00 **Growth and Survival of Salmonella Staphylococcus aureus and Pseudomonas in the Manufacture and Storage of Made From Pasteurized UF Concentrate** - ECKNER and E.A. Zottola, University of MN
- 9:15 **The Use of Chlorine and Iodine Sanitizers to Control Microorganisms in Sweet Water in Fluid Milk Processing Plants** - B.J. E.A. Zottola, University of MN, St. Paul, MN
- 9:30 **Evaluation of Air Samplers for Radioactively Generated Aerosols of Pure Controlled Environment** - Y. Kang and University of GA, Athens, GA
- 9:45 **Evaluation of Air Samplers for Radioactively Generated Aerosols in Dairy Processing Plants** - J.F. Frank, University of GA, Athens, GA
- 10:00 **The Effect of Dairy Plant Hygiene on the Contamination of Surfaces and Air** - K. ROSSMOORE, Diversy Wyandotte Corp., Wyandotte, MO
- 10:15 **Restriction Enzyme Analysis of Epitopes of Listeria monocytogenes** - I.V. Westwood, University of DC
- 10:20 Sanitary Procedures Committee -
- 10:30 Milk Break
- 10:45 Door Prize
- 10:50 **FDA Dairy Initiatives** - J. NICHOLS, University of DC
- 11:20 **Bacterial Quality of Shakes Purchased from Dairy Operations** - S.E. BARNARD, Pennsylvania State University, University Park, PA
- 11:35 **Composition of Shakes Purchased from Dairy Operations** - R.A. SMELTZ and S.E. BARNARD, Pennsylvania State University, University Park, PA
- 11:50 3-A Sanitary Standards Committee
- 12:00 Lunch

# ARNINGS)

, AUGUST 15

Quality  
and R. BISHOP

ification of *Listeria* Species  
TERSON, P.J. Pusch & E.A.  
St. Paul, MN

of *Listeria* and *Yersinia* in  
B. KLAUSNER, C.W. Don-  
ersity of VT, Burlington, VT  
*Salmonella typhimurium*,  
and *Pseudomonas fragi* Dur-  
Storage of Colby Cheese  
Concentrated Milk - K.F.  
University of MN, St. Paul,

odine Sanitizers to Control  
Water Used in HTST in  
ants - B.J. OVERDAHL and  
MN, St. Paul, MN

ers for Recovery of Artifi-  
of Pure Cultures in a Con-  
Kang and J.F. FRANK, Uni-

ers for Recovery of Biological  
sing Plants - Y. KANG and  
A, Athens, GA

Hygiene on Microbial Levels  
OSSMOORE and C. Drenzek,  
Wyandotte, MI

ysis of Epidemic Strains of  
I.V. Wesley, USFDA, Wash-

mittee -

NICHOLS - USFDA, Wash-

kes Purchased at Fast Food  
ARD, Penn State University,

urchased at Fast Food Op-  
and S.E. Barnard, Penn State  
x, PA

Committee

WEDNESDAY MORNING, AUGUST 16

Symposium: Dairy Residue  
Convener: J. BRUHN

8:25 Door Prize

Topics and speakers to be announced in the final  
program

## WHO'S THE SPEAKER?

The speaker's name is set in CAPITAL LET-  
TERS, and only the speaker's present affiliation  
is listed.

## MONDAY AFTERNOON, AUGUST 14

**Symposium: Continued - Modernizing The Dairy Plant**  
**Co-Conveners: R.L. SANDERS AND M. BANNER**

- 1:25 Door Prize
- 1:30 **New and Innovative Cleaning and Sanitizing Procedures** - J. NIX, Diversey-Wyandotte Corp., Wyandotte, MI
- 2:00 **Training The Modern Operators** - T. RYAN, Borden's Inc., Columbus, OH
- 2:30 **Maintaining a Modern Dairy Plant** - R. SMITH, Kraft Inc., Chicago, IL
- 3:00 Milk Break
- 3:15 Door Prize
- 3:20 **Modernizing the Laboratory and Quality Control** - R. FUQUA, Flav-O-Rich, Inc., Louisville, KY
- 3:45 **Modernizing the Regulatory Aspects** - J. SMUCKER, FDA, Washington, D.C.
- 4:10 **Industry Experiences in Modernizing Dairy Plants** - D. WELDE, Mid-America Dairymen, Springfield, MO
- 4:30 Adjourn

## TUESDAY AFTERNOON, AUGUST 15

**Session: Dairy Quality**  
**Co-Conveners: J. BRUHN and R. SANDERS**

- 3:45 Door Prize
- 3:50 **A Simple Plating Method for Estimating Shelf-Life of Pasteurized Fluid Milk** - R.D. BYRNE, Virginia Polytechnic Institute, Blacksburg, VA
- 4:05 **Improvement of Quality of Dairy Products** - B.J. DEMOTT and H.C. Holt, University of Tennessee, Knoxville, TN
- 4:20 **NCIMS Report** - L. TOWNSEND
- 4:45 **Development of a Ripening Coefficient for White Cheese** - F. YILDIZ, METU, Ankara, Turkey
- 5:00 Adjourn

### WHO'S THE SPEAKER?

The speaker's name is set in CAPITAL LETTERS, and only the speaker's present affiliation is listed.

ON, AUGUST 15

Quality  
IN and R. BISHOP

d for Estimation of Potential  
Fluid Milk - J. R. BISHOP and  
technic Institute and State Uni-

of Dairy Products in Tennes-  
C. Holt, University of Tennes-

WNSSEND

ning Coefficient for Pickled  
IZ, METU, Ankara, Turkey

WEDNESDAY AFTERNOON, AUGUST 16

## Lab Methods

Co-Conveners: J. BRUHN and R. BISHOP

- 1:25 Door Prize
- 1:30 **The Use of an ELISA, Listeria-Tek™ For the Rapid Detection of Listeria in Food and Environmental Samples** - R.J. DURHAM, B.T. Butman, and B. Robison, Organon Teknika Corp., Rockville, MD
- 1:45 **Chromogen-Labelled DNA Probe for the Listeria monocytogenes Hemolysin Gene Used in the Detection of Foodborne Listeria** - P.I. PETERKIN and A.N. Sharpe, Health & Welfare Canada, Ottawa, Ontario, Canada
- 2:00 **Rapid Simple Aflatoxin Analysis in Milk and Milk Products Using the Aflatest (TM) Method** - T.J. HANSEN, Vicam, Somerville, MA
- 2:15 **Measurement of Residual Alkaline Phosphatase in Dairy Products Using the Advance Fluorophos I Quantitative Assay** - R.M. ROCCO, Advanced Instruments, Inc., Needham Heights, MA
- 2:30 **A New Disc (C.I.A.) for the Detection of Sulfonamides, Betalactams, and Other Antibiotics** - S.E. CHARM, T. Lieu and E. Zomer, Penicillin Assays, Inc., Malden, MA
- 2:45 **Beta-Lactam Antibiotic Administration Study Comparing a Beta-lactam Assay in Microtitration Format with the B. Stearothermophilus disk Method** - T. LIN, S. Faust and E. Workman, IDEXX Corp., Portland, ME
- 3:00 Milk Break
- 3:15 Door Prize
- 3:20 **Applied Laboratory Methods Committee** -
- 3:30 **An Enzyme Immunoassay Screening Test for Antibiotic Residues in Milk** - B.P. RAM, P. Singh, L. Jang, D. Allison, A. Sinha, R. Afzal and D. Oliver, Idetek, Inc., San Bruno, CA
- 3:45 **The Use of Conductance Microbiology to Monitor Enterobacteriaceae Levels** - D.L. COUSINS and F. Marlatt, Radiometer America, Inc., Westlake, OH
- 4:00 **Presumptive and Confirmed Total Coliform MPN Estimations in a Single Disposable Device** - J. P. DES-ROSIER, K. Garbarino-Flowers, N.J. Mallinak and J. Ford, BioControl Systems, Inc., Bothell, WA
- 4:15 **Validation of EF-18 Agar With the ISO-GRIDHGMF System for Rapid Detection of Salmonella in Foods** - P. ENTIS and P. Boleszczuk, QA Laboratories, Toronto, Ontario, Canada
- 4:30 **BISSC Committee**
- 4:45 Adjourn

## MONDAY MORNING, AUGUST 14

Symposium: Seafood Safety  
Convener: E. TODD

- 8:55 Door Prize
- 9:00 **Paralytic Shellfish Poison** - S. HALL, FDA, Washington, D.C.
- 9:40 **Neurologic Shellfish Poison and Diarrhetic Shellfish Poison** - K. STEIDINGER, Florida Marine Research Institute, St. Petersburg, FL
- 10:00 **Ciguatoxin** - R. DICKIE, FDA Dauphin Island, AL
- 10:30 Milk Break
- 10:45 Door Prize
- 10:50 **Scombroid Poison and Allergic Reactions to Seafood** - S. TAYLOR, Dept. of Food Science and Technology, University of Nebraska, Lincoln, NE
- 11:20 **Amnesic Shellfish Poison (Domoic Acid)** - E. TODD, Health Protection Branch, Ottawa, Ontario, Canada
- 11:45 **Knowledge of Hazards Relating to Raw Oyster Consumption Among Selected Patient Risk Groups: Report of a Survey** - A.R. Anderson, A.R. Johnson and G.E. RODRICK, University of Florida, Gainesville, FL
- 12:00 Lunch

## WHO'S THE SPEAKER?

The speaker's name is set in CAPITAL LETTERS, and only the speaker's present affiliation is listed.

## FOOD (MORN

## TUESDAY MORNING, AUGUST 15

Session: Food Microbiology and Technology  
Co-Conveners: B. COLEMAN and A. L. HARRIS

- 8:25 Door Prize
- 8:30 **Indicators of Food Safety: Concepts and Applications** - M.H. BRODSKY, Ontario Agricultural College, Toronto, Ontario, Canada
- 8:45 **E. coli 0157:H7** - D. PUSCH, University of Minnesota, St. Paul, MN
- 9:15 **Occurrence and Significance of Listeria Bacterial Toxins** - R. BENNETT
- 9:45 **Food Protection Conference Report**
- 10:00 **Time-Temperature Pathogenicity Standards for Retail Food Operations** - S. SNYDER, Hospitality Institute of Management, St. Paul, MN
- 10:15 **Intracellular pH Effects in Lactic Acid Bacteria** - R. NANNEN and R. Hutkins, University of Minnesota, NE
- 10:30 Milk Break
- 10:45 Door Prize
- 10:50 **Comparative Analysis of Trypan Blue and Congo Red Agar for the Enumeration of Mold Using HGMF System** - R. A. L. HARRIS, M. Mo and D.Y.C. Fung, Kansas State University, Manhattan, KS
- 11:05 **The Evaluation of Various Growth Media to Determine Percent Mold Infection** - L.B. Bullerman, University of Minnesota, NE
- 11:20 **Rapid Presumptive Identification of Food Products** - C. LIANG and D.Y.C. Fung, Kansas State University, Manhattan, KS
- 11:35 **Inhibition of Growth and Aflatoxin Production of Lactic Acid Bacteria** - H. GOURARIAN and L.B. Bullerman, University of Minnesota, NE
- 11:50 **Retail Foods Committee - Report**
- 12:00 Lunch

# ARNINGS)

G, AUGUST 15

ogy and Toxicology  
N and A. DRAUGHON

y: Conceptions and Miscon-  
Y, Ontario Ministry of Health,

CH, University of Minnesota,

ance of Lesser Known Bacte-  
T

ence Report - J. KOZAK

thogenic Bacteria Growth  
Food Operations - O. P.  
nstitute of Technology and  
N

in Lactic Acid Bacteria - N.  
s, University of NE, Lincoln,

of Trypan Blue Agar and  
Enumeration of Yeast and  
em - R. A. HART, F. Borius, O.  
sas State University, Manhat-

ous Growth Media Used to  
d Infection of Grains - D.I.  
n, University of NE, Lincoln,

ntification of Yeasts in Meat  
d D.Y.C. Fung, Kansas State  
S

nd Aflatoxin Production by  
GOURAMA, A. Karunaratne  
ersity of NE, Lincoln, NE

WEDNESDAY MORNING, AUGUST 16

Symposium: *Salmonella enteritidis* and Eggs  
Convener: G. MORRIS

- 8:25 Door Prize
- 8:30 Egg Production and Processing - K. KLIPPEN, United Egg Producers, Decatur, GA
- 9:00 Increase in the Number of Cases of *Salmonella enteritidis* in the United States Due to Whole Chicken Eggs and the Implications to Food Handlers - J.M. MADDEN, Division of Microbiology, Food and Drug Administration, Washington, D.C.
- 9:30 The Veterinary Control Program - E. BRYANT, Poultry Diagnostic Laboratory, University of Connecticut, Storrs, CT
- 10:00 Survival of *Salmonella enteritidis* On and In Shelled Eggs, Liquid Eggs and Cooked Egg Product - R.C. BAKER, Cornell University, Ithaca, NY
- 10:30 Milk Break
- 10:45 Door Prize
- 10:50 Current ARS Research on *Salmonella enteritidis* in Chickens: Experimental Infections in Laying Hens - R. K. GAST, ARS, USDA, Athens, GA
- 11:20 Risk Assessment - G. K. MORRIS, Egg Nutrition Center, Alpharetta, GA
- 11:50 FDA Interpretations Committee
- 12:00 Lunch

## MONDAY AFTERNOON, AUGUST 14

Session: Food Microbiology  
Co-Conveners: D. GABIS and A. DRAUGHON

- 1:25 Door Prize
- 1:30 **Foodborne Pathogens in Perspective: The Ontario Experience** - M.H. BRODSKY, Ontario Ministry of Health, Toronto, Ontario, Canada
- 1:45 **Microbial Air Quality of a New Meat Laboratory Complex Before and After Occupancy** - M. ALDAGAL, D.Y.C. Fung and C.L. Kastner, Kansas State University, Manhattan, KS
- 2:00 **Survival of Campylobacter jejuni in Turkey Roll Stored at 4° and 21°C Under Varying Levels of Carbon Dioxide, Nitrogen and Oxygen** - R.K. PHEBUS, F.A. Draughon and J.R. Mount, University of TN, Knoxville, TN
- 2:30 **The Effect of Prior Heat Shock on the Heat Resistance of Listeria monocytogenes in Meat** - J.M. FARBER and B.E. Brown, Health & Welfare Canada, Ottawa, Ontario, Canada
- 2:30 **Bacterial Survival and Thermal Responses of Bentonite-Glycerol-BHI Broth Dispersions; A Simulation Model for Beef and/or Turkey Loaves in a Microwave Field** - W.S. LIN and C.A. Sawyer, Michigan State University, East Lansing, MI
- 2:45 **Inhibition of Listeria monocytogenes by Bacteriocin-Producing Fediococcus During the Manufacture of Fermented Sausage** - E.D. BERRY, M.B. Liewen, R.W. Mandigo and R.W. Hutkins, University of NE, Lincoln, NE
- 3:00 Milk Break
- 3:15 Door Prize
- 3:20 **Food Equipment Sanitation Standards Committee - Clostridium botulinum Growth in Fresh Fish Stores Under Modified Atmospheres. Use of Predictive Modeling in Quantifying the Risk of Toxicity in This and Other New Generation Refrigerated Foods** - D.A. BAKER and C. Genigeorgis, University of CA, Davis, CA
- 3:45 **Detecting Listeria spp. in Naturally Contaminated Seafoods Comparing Four Enrichment Procedures to a Modified Standard FDA Method** - C.W. NOAH and N.C. Ramas, FDA, Dallas, TX
- 4:00 **The Survival of Listeria monocytogenes in Aerosols** - A.T. SPURLOCK, E.A. Zottola and R.K.L. Petran, University of MN, St. Paul, MN
- 4:15 **Modified Agar Medium to Isolate Starter Culture from Raw Milk** - C.L.L.F. FERREIRA and P.R. Aurora, Univeridade Federalde Vicosa, Vicosa-M.G.
- 4:30 Adjour

## TUESDAY AFTERNOON, AUGUST 15

Session: Product Tampering  
Conveners: G. PRINCE

- 3:45 Door Prize
- 3:50 **Product Tampering Update** - 1  
FDA and the FBI will discuss recent  
tampering. These discussions will  
of alleged tampering problems and  
evidence for prosecution under the Fed  
Act. Who is responsible for the v  
investigation? Dealing with the ne  
interest of the public.



# ERNOONS)

ON, AUGUST 15

Tampering Update  
PRINCE

Update - Representatives from  
discuss recent trends in product  
ions will include investigation  
blems and development of evi-  
der the Federal Anti-Tampering  
for the various aspects of the  
with the news media in the best

WEDNESDAY AFTERNOON, AUGUST 16

Symposium: National View of Food Safety  
Convener: G. PRINCE

- 1:25 Door Prize
- 1:30 **Food Safety Concerns** - A panel discussion of food safety concerns from a national perspective. Retail Food and Dairy Products, J. Kozak - Food and Drug Administration; Meat and Poultry Products, C. E. Adams - USDA - Food Safety and Inspection Service; Update of Incidence of Foodborne Disease in the United States, TBA - Centers for Disease Control
- 3:00 Milk Break
- 3:15 Door Prize
- 3:20 **The Food Industry Responses to Product Safety** - A panel discussion by food industry representatives on product safety programs.
- 3:20 D. R. Hr'dman - National Food Processors Association;  
3:35 R. E. Harrington - National Restaurant Association;  
3:50 G. P. Witte - Milk Industry Foundation and International Ice Cream Association;
- 4:00 D. T. Farr - Food Marketing Institute
- 4:15 Panel Discussion

## WHO'S THE SPEAKER?

The speaker's name is set in CAPITAL LETTERS, and only the speaker's present affiliation is listed.

# ENVIRONMENTAL (

216 DAIRY, FOOD AND ENVIRONMENTAL SANITATION/APRIL 1989

## MONDAY MORNING, AUGUST 14

**Symposium: Solid Waste Challenge**  
**Convener: J. REED**

- 8:55 Door Prize
- 9:00 Topic to be announced in final program - M. NAGEL -  
Mid America Regional Council, Kansas City, MO
- 9:45 Topic to be announced in final program - D. EWBank  
- Public Works Dept. of Kansas City Missouri, Kansas  
City, MO
- 10:30 Milk Break
- 10:45 Door Prize
- 10:50 Topic to be announced in final program - B. FRANKLIN  
- Franklin Association, Ltd., Prairie Village, KS
- 11:25 Topic to be announced in final program - D. SWYERS -  
Deffenbaugh Industries, Shawnee Mission, KS
- 12:00 Lunch

## TUESDAY MORNING, AUGUST 15

**Session: Environmental Control**  
**Convener: R. RICHARDSON**

- 8:25 Door Prize
- 8:30 FDA Issues
- 9:00 Radon Concerns
- 9:30 Biodegradable Plastic Films - W  
Lawrence Starch, Co., Canada
- 10:00 Application of SBR (Sequencing  
Technology to Food Waste - K  
Aqua-Aerobic Systems, Inc., Rock
- 10:15 Water Quality Waste Disposal Co
- 10:30 Milk Break
- 10:45 Door Prize

**Education and Training Session**  
**Convener: TBA**

- 10:50 Implementation of Hazard Analysis  
Programs in Local Health Depart  
ERY and J. Henneke, U.S. Army, Ft
- 11:05 Attitudes, Behavior and Goals - I  
Food and Milk Supplies - N.E.  
Transformation Associates, Inc., M
- 11:20 Practical Proposals for Training  
Staff for Microbiological Air and S  
Ligugnano and D.Y.C. FUNG, Kan  
Manhattan, KS
- 11:35 Germbusters -- A Sanitation Edu  
Elementary Schools - H.C. EMER  
U.S. Army, Frederick, MD
- 11:50 Education and Training Commit
- 12:00 Lunch

### WHO'S THE SPEAKER?

The speaker's name is set in CAPITAL LETTERS, and only the speaker's present affiliation is listed.

# L (MORNINGS)

ING, AUGUST 15

ental Concerns  
HARDSON

Films - W. MADDEVER, St.  
anada

Sequencing Batch Reactor)  
aste - K.A. MIKKELSON,  
nc., Rockford, IL

isposal Committee

ining Session  
TBA

ard Analysis Based Inspection  
lth Departments - H.C. EM-  
S. Army, Frederick, MD

Goals - Keys to Defect-Free  
es - N.E. SCHMITT, Quality  
es, Inc., Minneapolis, MN

Training of Food and Dairy  
Air and Surface Hygiene - R.  
JUNG, Kansas State University,

ation Education Program for  
I.C. EMERY and F.P. Emery,  
D

Committee

WEDNESDAY MORNING, AUGUST 16

Symposium: Pest Control  
Convener: G. MCARTHUR

- 8:25 Door Prize
- 8:30 **Pest Control and Food Integrity** - J. RAYTO, FDA
- 9:00 **Integrated Pest Control Management** - F. RAF-  
FAELO, Food Technology International
- 9:30 **What's New in Controlling Cockroaches** - J. BERGER,  
Whitmers Research
- 10:00 **Rodent Combat Tactics** - W. PURSELY, American  
Institute of Baking
- 10:30 Milk Break
- 10:45 Door Prizes
- 10:50 **Pesticides in a Food Plant Environment** - D. WILBER,  
Industrial Fumigant Co.
- 11:20 Audio Visual Committee
- 11:30

## MONDAY AFTERNOON, AUGUST 14

### Concerns in Seafood Convener: G. PRINCE

- 1:25 Door Prize
- 1:30 **Current Microbiological Concerns** - J.E. KVENBERG, FDA, Washington, DC
- 2:00 **Problems Related to the Management of High Quality Fresh Fish** - G. FLICK, Virginia Tech, Blacksburg, VA
- 2:30 **Industry Response to Seafood Safety** - Speaker to be announced in final program
- 3:00 Milk Break
- 3:15 Door Prize

### Pesticide Residue Concerns and Food Safety

- 3:20 **Public Perception of Pesticide Residues in Food Safety** - R. RICHARDSON, Many questions on the safety of the food supply has been raised. These concerns relate to the approval process of pesticide compounds, establishing safe tolerances, and residue monitoring programs. An expert panel will discuss the latest in the pesticide issues and will look forward to alternatives in producing a safe food supply.

## TUESDAY AFTERNOON, AUGUST 15

### Session: Unique Diseases Convener: M. BANERJEE

- 3:45 Door Prize
- 3:50 **Giardia** - G. JACKSON - USA
- 4:15 **Legionella Disease** - M. F. COLEMAN, Cobourg, Ontario, Canada
- 4:40 **Lyme Disease** - speaker to be announced in final program
- 5:05 Adjourn

# L (AFTERNOONS)

WEDNESDAY AFTERNOON, AUGUST 15

Food and Disease Vectors  
M. BANNER

Speaker - USFDA, Washington, DC

Speaker - M. F. Coughlin, Bird Archer, Inc.,  
Canada

Speaker to be announced in final pro-

WEDNESDAY AFTERNOON, AUGUST 16

Symposium: Sanitation in Day Care Centers  
Convener: G. OVERFELT

1:25 Door Prize

1:30 **Development of National Health and Safety Performance Standards for Out-of-Home Child Care Programs** - G. Kupfer and P. SCHLOESSER, Kansas Dept. of Health and Environment, Topeka, KS

**Family Style Meal Service From an Environmental Point of View** - K.J. TIGGS, Environmental Health Dept., Albuquerque, NM

**Food Product Liability in Child Care** - G. OVERFELT, Child, Inc., Austin, TX

**Human Services Liability Loss Control: What it is/ What it isn't** - J. STRICKLAND, Ph.D. - Human Services Risk Management, Austin, Texas

## WHO'S THE SPEAKER?

The speaker's name is set in CAPITAL LETTERS, and only the speaker's present affiliation is listed.

## SPECIAL EVENTS PROGRAM

### Monday, August 14

10 a.m. -  
Noon Hallmark Center Tour

### Tuesday, August 15

10 a.m. -  
3 p.m. A Day of Kansas City Sightseeing

### Wednesday, August 16

10:30 a.m. -  
Noon Candyland Tour

See page 221 for more information on  
Special Events

## INVITED GUESTS

### Monday Morning, August 14

7:00 IAMFES Committee  
Breakfast Meeting

### Tuesday Evening, August 15

5:30 - 6:30 Presidential Reception  
7:00 Past Presidents' Dinner

**GUESTS**

**ng, August 14**

Committee Chairperson  
Meeting

**ng, August 15**

Reception  
Members' Dinner

**SPOUSE/FRIEND ACTIVITIES**

**Sunday, August 13**

8:00 - 10:00 Early Bird Reception - Cheese &  
Wine

**Monday Evening, August 14**

Kansas City Gala

**Wednesday Evening, August 16**

6:00 - 7:00 Reception  
7:00 Annual Awards Banquet

## ADVANCED REGISTER

Date	Pre-registration	IAMFES MEMBER	SPOUSE/GUEST (not company representative)	STUDENT
8/13	Cheese & Wine	<input type="checkbox"/> \$60 <input type="checkbox"/> FREE	<input type="checkbox"/> \$15 <input type="checkbox"/> FREE	<input type="checkbox"/> \$15 <input type="checkbox"/> FREE
8/14	Kansas City Gala	<input type="checkbox"/> \$25	<input type="checkbox"/> \$25	<input type="checkbox"/> \$25
8/16	Awards Banquet & Reception	<input type="checkbox"/> \$25	<input type="checkbox"/> \$25	<input type="checkbox"/> \$25

## REGISTRATION

Sunday, August 13 .....  
 Monday, August 14 .....  
 Tuesday, August 15 .....  
 Wednesday, August 16 .....

## TABLETOP DISPLAY

Sunday, August 13  
 Monday, August 14  
 Tuesday, August 15  
 Wednesday, August 16

9 a.m. - Noon Exhibitor set up and  
 8 p.m. - 10 p.m. Exhibits open after  
 7:30 a.m. - 9 a.m. Exhibits open, coffee  
 breaks and lunch.\*\*\* 3 p.m. - 4 p.m.  
 7:30 a.m. - 9 a.m. Exhibits open, coffee  
 breaks and lunch.\*\*\* 3 p.m. - 4 p.m.  
 7:15 a.m. - 9 a.m. Exhibits open, coffee  
 breaks and lunch.\*\*\* 1:30 p.m. Exhibits

\*\*\*A lunch will be available to all meeting attendees in the Exhibit Hall. Tentative plans call for an Apron Lunch. Another change for exhibitors this year is that now up to three (3) people can represent your exhibitor. Registration rates will apply to the additional people. All of your registered representatives will be able to attend a



## REGISTRATION FEES

STUDENT	NON-MEMBER	*Registration & IAMFES Membership	
<input type="checkbox"/> \$15	<input type="checkbox"/> \$99	<input type="checkbox"/> \$93	Indicate Attendance Children 12 & under No. <input type="checkbox"/> \$12.50 each
<input type="checkbox"/> FREE	<input type="checkbox"/> FREE	<input type="checkbox"/> FREE	
<input type="checkbox"/> \$25	<input type="checkbox"/> \$25	<input type="checkbox"/> \$25	Children 12 & under No. <input type="checkbox"/> \$12.50 each
<input type="checkbox"/> \$25	<input type="checkbox"/> \$25	<input type="checkbox"/> \$25	

\*Includes Dairy, Food and Environmental Sanitation  
(Foreign add \$12 for postage).

## REGISTRATION TIMES

..... 10:00 A.M. - 3:00 P.M.  
 ..... 9:00 A.M. - 4:00 P.M.  
 ..... 8:00 A.M. - 4:00 P.M.  
 ..... 8:00 A.M. - Noon

## DISPLAY HOURS

Set up and registration only. 1 p.m. - 5 p.m. Exhibits open during meeting registration.  
 Open after opening meeting session during Wine and Cheese Reception in the Exhibit Hall.  
 Open, coffee will be served in Exhibit Hall. 10 a.m. - 1:15 p.m. Exhibits open during meeting  
 n. - 4 p.m. Exhibits open during meeting breaks.  
 Open, coffee will be served in Exhibit Hall. 10 a.m. - 1:15 p.m. Exhibits open during meeting  
 n. - 4 p.m. Exhibits open during meeting breaks.  
 Open, coffee will be served in Exhibit Hall. 10 a.m. - 1:15 p.m. Exhibits open during meeting  
 p.m. Exhibitor tear down only. (NO EARLY TEAR DOWN)

Open Apron Lunch which will allow people to view the exhibits and have lunch at the same time.  
 Open exhibit space with no additional registration fee. If you have more than three representatives, reg-  
 to attend any meeting function open to regular attendees.

**EXHIBITORS**  
(as of March, 1989)

Advanced Instruments .....	Needham, MA
Becton Dickinson Microbiology Systems (BBL). ....	Cockeysville, MD
Capitol Vial, Inc. ....	Fonda, NY
DFISA .....	Ottawa, Ontario, Canada
Difco Laboratories .....	Detroit, MI
Diversey Wyandotte .....	Wyandotte, MI
Educational Foundation of National Restaurant Assoc. ....	Chicago, IL
Educational Testing Service .....	Princeton, NJ
Foss Food Technology Corp. ....	Eden Prairie, MN
Gene-Trak .....	Framingham, MA
GHR .....	Logan, UT
Golden Star Inc. ....	Kansas City, MO
Gundle Lining .....	Houston, TX
IDEXX .....	Portland, ME
KC Valve and Fitting .....	Solon, OH
NASCO .....	Fort Atkinson, WI
National Food Lab. Microbiology Services .....	Dublin, CA
Organon Teknika .....	Durham, NC
Oxoid USA Inc. ....	Columbia, MO
Radiometer America .....	West Lake, OH
Remel .....	Lenexa, KS
Silliker Laboratories Inc. ....	Chicago Heights, IL
Smithkline Animal Health Products .....	West Chester, PA
Soap & Detergent Association .....	New York, NY
Sparta Brush Co. Inc. ....	Sparta, WI
Summit Laboratory Supply Inc/Deibel Labs .....	Madison, WI
Swagelok Company .....	Solon, OH
3M Microbiology Products .....	St. Paul, MN
Tufco Flooring .....	Gentry, AR
Walker Stainless Equipment Co .....	New Lisbon, WI
X-O Corp. ....	Dallas, TX

**PROGRAM COMMITTEE**

IAMFES Chairperson .....	Ron Case
Program Coordinator .....	Don Bechtel

**LOCAL ARRANGEMENT COMMITTEE**

Chairman .....	Don Bechtel
----------------	-------------

Registration .....	
Finance .....	
Publicity/Correspondence .....	
Hospitality Packets .....	
Early Bird Reception .....	
Meeting Rooms/Visual Aids .....	
Door Prizes .....	
Exhibitor Liaison .....	
Refreshment Breaks .....	
Special Events .....	
Past Presidents Dinner .....	
Kansas City Gala .....	
Photography .....	
Hospitality Room .....	
Information/Transportation Center .....	

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### JOURNAL OF FOOD PROTECTION

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 Managing Editor ..... Kathy R. Hathaway, Ames, IA  
 Technical Copy Editor ..... Maralyn Schulze, Marshalltown, IA

### DAIRY, FOOD AND ENVIRONMENTAL SANITATION

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### SPECIAL THANKS TO THE Kansas Association of Sanitarians The Kansas Local Arrangements Committee



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# IAMFES

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## 76th Annual Meeting Special Events Program

### HALLMARK CENTER TOUR

*August 14, Monday*  
10:00 a.m. - Noon

A guided tour of world famous Hallmark Cards production center. Seeing greeting cards being made is just the beginning of this tour. You can watch craftsmen at work, make your own ribbon bow or hear greetings in various languages. Located in the Crown Center Complex, adjacent to the Hyatt Regency, the Hallmark Visitors Center brings you the sights and sounds of Hallmark through 12 extraordinary exhibits. Hallmark produces 11 million greeting cards and 1.5 million other products each day. There is a special area of entertainment for children ages 5-12 called Kaleidoscope. You will exit onto the Crown Center Shopping Center where you may take lunch on your own at any of the many eateries, and get acquainted with the shopping complex. An all-weather skywalk will return you to your hotel. Cost: Adults *FREE*; Children *FREE*.

### A DAY OF KANSAS CITY SIGHTSEEING

*August 15, Tuesday*  
10:00 a.m. - 3:00 p.m.

A bus tour of historical westport district, the famous Plaza shopping area with its many fountains. Lunch at the Rozzelle Court Restaurant (Gourmet). A guided tour of the world famous Nelson-Atkins Museum Of Art. Time to browse the Plaza shops. Cost: Adults \$22.50; Children (12 and under) \$12.50.

### CANDYLAND TOUR

*August 16, Wednesday*  
10:30 a.m. - Noon

Your host will guide you through the plant where you can learn how chocolate is made and sample treats right off the production line. Witness the making of a batch of old-fashioned peanut brittle (and enjoy a complimentary bag of this specialty) Cost: \$5.50 Per Person.

### OTHER SPECIAL EVENTS

We will have an information booth available for events you may attend on your own. Events in which you may be interested include Worlds of Fun and Oceans of Fun, K.C. Royals baseball game, American Heartland Theatre (Broadway Productions), Movie Theatre Playings at Crown Center, famous restaurants, etc. Remember, you will be in the heart of a beautiful complex with many things to see. We did not want to over schedule so you would have time to enjoy Crown Center. The Crown Center is only a 2 block walk from the Hyatt Regency.

### SOCIAL EVENTS THROUGHOUT THE MEETING

*Cheese & Wine Reception with Exhibits, Sunday Evening*  
*K.C. Gala, Monday Evening A festive occasion*  
*(You will enjoy the tastes and sounds of Kansas City)*  
*Awards Banquet & Reception, Wednesday Evening*

# ADVANCE REGISTRATION FORM

## IAMFES

76TH ANNUAL MEETING REGISTRATION  
August 13-17, 1989

Hyatt Regency Crown Center  
KANSAS CITY, MISSOURI

First Initial \_\_\_\_\_ Last Name \_\_\_\_\_

**ADVANCE REGISTRATION PRICES deadline Aug. 1, 1989**

Please Print or Type

NAME \_\_\_\_\_  
TITLE \_\_\_\_\_

ORGANIZATION \_\_\_\_\_

IS THIS:  PRIVATE INDUSTRY  GOVERNMENT or  ACADEMIA?

STREET ADDRESS \_\_\_\_\_

CITY, STATE/PROVINCE \_\_\_\_\_

COUNTRY \_\_\_\_\_ ZIP CODE \_\_\_\_\_

TELEPHONE (Day) \_\_\_\_\_  
(Night) \_\_\_\_\_

Is this your first IAMFES Meeting?  YES  NO

Professional Area: Dairy \_\_\_\_\_ Food \_\_\_\_\_ Environmental \_\_\_\_\_ Other \_\_\_\_\_

Spouse Name \_\_\_\_\_

Children's Names \_\_\_\_\_

Please check where applicable:

IAMFES MEMBER \_\_\_\_\_ STUDENT \_\_\_\_\_

NON MEMBER \_\_\_\_\_ 30 YR. MEMBER \_\_\_\_\_ 50 YR. MEMBER \_\_\_\_\_

EXECUTIVE BOARD \_\_\_\_\_ PAST PRESIDENT \_\_\_\_\_

AFFILIATE MEMBER ONLY \_\_\_\_\_ SPEAKER \_\_\_\_\_

AFFILIATE DELEGATE \_\_\_\_\_

FOR OFFICE USE ONLY	
Date Received _____	
Confirmation Sent _____	
IAMFES Member _____	
Re-bill _____	Date _____
PIF _____	

REGISTRATION FEES		Student Spouse	Amount Enclosed
Pre-registration	Member \$60	\$15	\$ _____
On-site registration	Member \$90	\$20	\$ _____
<input type="checkbox"/> I would like to become an IAMFES member and take advantage of the member discount. I am enclosing \$33.00 IAMFES membership fee along with the member registration fee. Includes 12 issues of Dairy, Food & Environmental Sanitation magazine. Foreign add \$12 for postage. US FUNDS-ONLY.			
OTHER FEES (Per Person)		# of tickets needed	
SUN., AUG. 13 8-10 p.m.	Cheese & Wine Reception	_____	-\$0- _____
MON., AUG. 14 10 a.m.-noon	Hallmark Center Tour	_____	-\$0- _____
MON., AUG. 14 Evening	Kansas City Gala	_____	_____
TUES., AUG. 15 10 a.m.-3 p.m.	Kansas City Sightseeing	_____	_____
WED., AUG. 16 10:30 a.m.-noon	Candyland Tour	_____	_____
WED., AUG. 16 Evening	IAMFES Awards Banquet & Reception	_____	_____
TOTAL AMOUNT ENCLOSED			\$ _____

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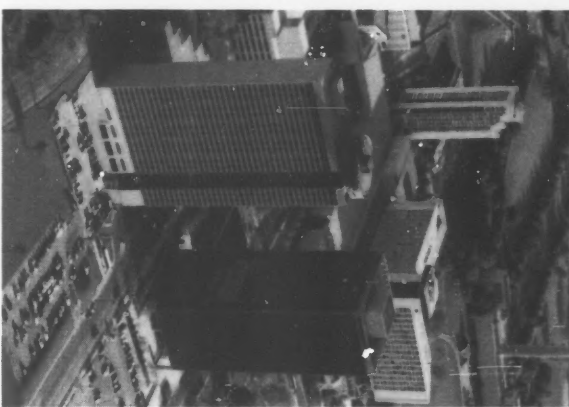
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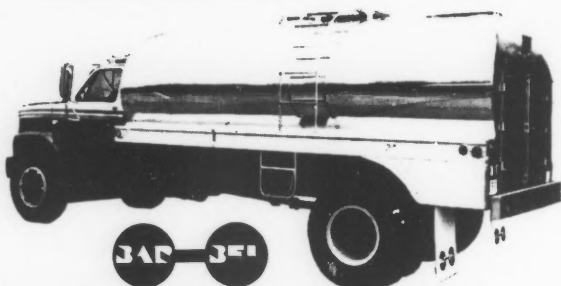
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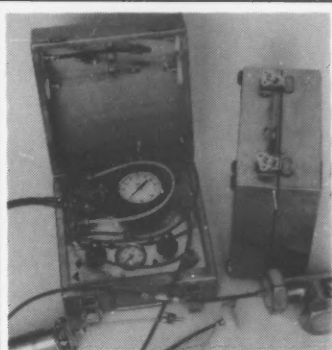
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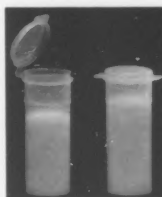
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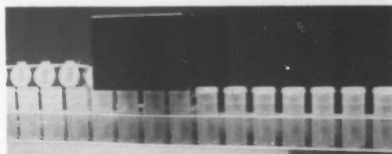
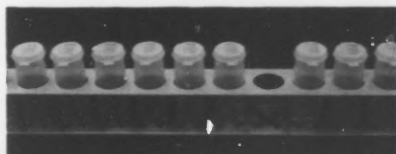
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# Coming Events

1989

## MAY

• **9, The Associated Illinois Milk, Food and Environment Sanitarians and The Chicago Dairy Technology Society Annual Spring Seminar** -- Prevention: Key To Quality -- will be held at McDonald's Hamburger U, Oak Brook, Illinois. The session will open with a tour of the McDonald's facility followed by a p.m. program discussing trends in food, dairy and food service sanitation. For more information, contact: Clem Honer, Gorman Publishing Co., 8750 West Bryn Mawr Ave., Chicago, IL 60631 312/693-3200.

• **15-17, PA Association of Dairy Sanitarians and Dairy Laboratory Analysts**, will hold its annual conference at Penn State University, University Park. For more information, contact: Sid Barnard, 8 Borland Lab, University Park, PA 16802 814/863-3915.

• **15-18, Aseptic Processing and Packaging Workshop**. Enrollment is limited to 40 for this class to be held at Purdue University. For information, contact: James V. Chambers, Food Science Dept., Smith Hall, Purdue University, West Lafayette, IN 47907 317/494-8279.

• **16-18, Basic Pasteurization Course**, will be held at the Holiday Inn, 1575 Regal Row, Dallas, TX. For more information, contact: Ms. Janie F. Park, TAMFES, PO Box 2363, Cedar Park, TX 78641-2363 512/458-7281.

• **17, Connecticut Association of Dairy & Food Sanitarians**. For further information, contact: Dr. Lester Hankin, 203/789-7219.

## JUNE

• **5, Pesticide Applicator Certification Seminar**, Okumura Biological Institute, Clarion Hotel, Sacramento, CA. Contact: George Okumura, 6669 14th St., Sacramento, CA 95831 916/421-8963.

• **6, Fumigation Seminar 1989**, Okumura Biological Institute, Clarion Hotel, Sacramento, CA. Contact: George Okumura, 6669 14th St., Sacramento, CA 95831 916/421-8963.

• **6-7, Texas Association of Milk, Food & Environmental Sanitarians**, annual meeting to be held at the Green Oaks Innc, 6901 West Freeway, Fort Worth, TX 76116. For more information, contact: Ms. Edith Mazurek, 4032 Acacia St., Fort Worth, TX 76109. 817/921-4816.

• **13-15, Hazardous Materials Management International Conference and Exhibition '89**, will be held at the Atlantic City Convention Center, Atlantic City, New Jersey. For additional information, contact: Mary Jo McGuire, Group Show Director, Tower Conference Management Co., 800 Roosevelt Rd., Bldg E -- Suite 408, Glen Ellyn, IL 60137-5835 312/469-3373.

## JULY

• **7-14, 9th International Workshop on Rapid Methods & Automation in Microbiology**, to be held at Kansas State University, Manhattan, Kansas. For more information, contact: Dr. Daniel Y. C. Fung, 913/532-5654. Certified by the American Society of Microbiology.

• **9-12, International Conference on Technical Innovations in Freezing and Refrigeration of Fruits and Vegetables**. For more information, contact: Robert C. Pearl, Food Science & Technology, University of California, Davis, CA 95616 916/752-0981.

## AUGUST

• **13-18, The Society for Industrial Microbiology** announces the 1989 Annual Meeting to be held at the Westin Hotel, Seattle, Washington. For more information, contact: Mrs. Ann Kulback, Business Secretary, Society for Industrial Microbiology, PO Box 12534, Arlington, VA 22209-8534 703/941-5373.

• **14-18, Biotechnology: Principles and Processes** to be held at the Massachusetts Institute of Technology, Cambridge, Massachusetts. For more information, contact: Director of Summer Session, MIT, Room E19-356, Cambridge, MA 02139 or Anthony J. Sinskey, Dept. of Biology, MIT, Cambridge, MA 02139 617/253-6721.

## SEPTEMBER

• **11, Pesticide Applicator Certification Seminar**, Okumura Biological Institute, Clarion Hotel, Sacramento, CA. Contact: George Okumura, 6669 14th St., Sacramento, CA 95831 916/421-8963.

• **12-14, Basic Pasteurization Course**, to be held at Howard Johnson, 8887 Gateway West, El Paso. For more information, contact: Ms. Janie F. Park, TAMFES, PO Box 2363, Cedar Park, TX 78641-2363 512/458-7281.

• **19-21, New York Association of Milk and Food Sanitarians**, will hold its annual meeting in Buffalo at the Sheraton-Buffalo Airport Hotel. For information concerning the meeting, contact: Paul Dersam, 27 Sullivan Rd., Alden, NY 14004, 716/937-3432.

• **25-27, Acceptance Testing**. Developing a product acceptance capability; qualification of employees and consumers; procedures for laboratory, central location, and home-use testing; design and analysis of acceptance tests. For more information contact: Marjorie Sterling Stone 415/365-1833.

• **25-28, 103rd AOAC Annual International Meeting and**

Exposition to be held in St. Louis, Missouri. For more information contact: Marilyn Taub, AOAC, Suite 400, 2200 Wilson Blvd, Arlington, VA 22201-3301. 703/522-3032.

• 27-28, The 1989 Annual Convention of the South Dakota Dairy Association will be held at the Ramkota Inn, Sioux Falls, SD. For information, contact: Dr. John Parsons, Dairy Science Dept., SDSU, Box 2104, Brookings, SD 57007 605/688-4116.

• 27-29, Liquitec Expo '89. For more information contact: Carolyn Mesce, Marketing Manager, Liquitec Expo Inc., PO Box 630, West Paterson, New Jersey 07424 201/256-0011.

## OCTOBER

• 23-24, Pests Associated with Food Industry and Environmental Sanitation Seminar. Okumura Biological Institute, Holiday Inn, Elk Grove Village, IL. Contact: George Okumura, 6669 14th St., Sacramento, CA 95831 916/421-8963.

• 23-25, Quality Control and Stability and Testing. Organizational approaches to establishing product quality monitoring systems within manufacturing and R&D: methods for measuring product quality and stability, including design and analysis. For more information, contact: Marjorie Sterling Stone 415/365-1833.

• 25-26, Advanced Course on Pest Recognition and Food Industry Problems, Okumura Biological Institute, Holiday Inn, Elk Grove Village, IL. Contact: George Okumura, 6669 14th St., Sacramento, CA 95831 916/421-8963.

## NOVEMBER

• 11-15, Dairy and Food Industries Supply Assoc., Inc. McCormick Place, Chicago, Illinois.

To insure that your meeting time is published, send announcements at least 90 days in advance to: K.R. Hathaway, Editor, IAMFES, PO Box 701, Ames, IA 50010.

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# From the Ames Office



By  
Kathy R.  
Hathaway

By this time, hopefully many of you have pre-registered for the Annual Meeting in Kansas City this August. Pre-registration before August 1 entitles you to a reduced rate as well as expediting your registration pick up at the meeting. Also, please keep in mind that the hotel convention rates are good only until July 12, so PLEASE make your reservations early while space is still available.

As you may be aware, pre-registration is being handled through the Ames office. Once your registration form and payment is received and processed, you will receive a confirmation letter. If you have any questions regarding pre-registration, please contact the Ames office at 515-232-6699, 800-525-5223.

To all things there is an end . . . change being an inevitable part of the life process. After seven years with IAMFES I have chosen new direction. Specifically to move to Ohio near the south shore of Lake Erie to become one of the "married" fold again. My last day with IAMFES will be June 2, 1989.

I proposed relocating the office to Ohio, however the IAMFES Board chose to keep the office in Ames. I am proud of the accomplishments of the membership, the Ames staff and myself over these past years. We've come a long way and there is no reason to plateau now. This industry becomes more vital daily with all that is going on in this world. I see nothing but further progression and success for IAMFES. The membership is the reason for our being.

Many of you have been truly supportive and sincere friends over the years. I have grown professionally and personally and have learned a great deal. I'll miss seeing all of you at the Annual Meetings.

As Dorothy said to the scarecrow as she left the Land of Oz, "I think I'll miss you most of all," . . . Henry Atherton. You've been a great friend and "father" to me.

Happiness and good health to all of you!

Sincerely,  
Kathy R. Hathaway

## IAMFES EXECUTIVE MANAGER SEARCH

The International Association of Milk, Food and Environmental Sanitarians (IAMFES) is seeking an Executive Manager. IAMFES is a 76 year old professional association having 3300 members.

The office with six-full time people is located in the University city of Ames, Iowa.

The Executive Manager will manage the affairs of the association, including the publication of two monthly journals, organization and direction of the association Annual Convention, membership services, marketing/advertising, liaison with state affiliate associations, budgetary and financial affairs. The Executive Manager reports directly to the Executive Board. Some travel required.

The ideal candidate will have demonstrated outstanding organizational and communication skills and will have a bachelor's degree in a business-related field with at least five years experience.

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Robert B. Gravani, Ph.D., IAMFES President  
8A Stocking Hall, Cornell University  
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2. **JOURNAL OF FOOD PROTECTION**, also monthly, on a scientific level, comprised of research and general interest manuscripts.
3. There are over 20 committees of which you can participate, from Food Equipment Sanitary Standards to Communicable Diseases Affecting Man.
4. As a member you are entitled to vote on important matters affecting your association, as well as voting for officers.
5. A Secretary is elected by the members each year and serves on the Executive Board of IAMFES, moving up in position each year to presidency. You as a member can run for office.
6. The Educational Conference of IAMFES is held each August in a selected city in the U.S. or Canada. As a member you receive a special discount on the registration fee.
7. Free Lending Library. As a member you may check out educational materials from the IAMFES Lending Library. These educational materials are available in slide series as well as VCR tapes. The IAMFES Lending Library is supported by the Foundation Fund through IAMFES Sustaining Members.
8. IAMFES Awards are presented yearly at the Annual Meeting Banquet in August. As a member you are eligible to nominate and be nominated for these prestigious awards.
9. As a student member, graduate students are encouraged to participate in the Developing Scientist Award. Papers are presented and judged during the Annual Meeting with five award winners.
10. The call is on us! A toll free number outside Iowa and inside the U.S. enables members to call the office at no charge, 800-525-5223. FAX 515-232-4736.

For further information about becoming a member of IAMFES fill in the card and mail today or call 1-800-525-5223. For Iowa and Canada call 515-232-6699.

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## IAMFES

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