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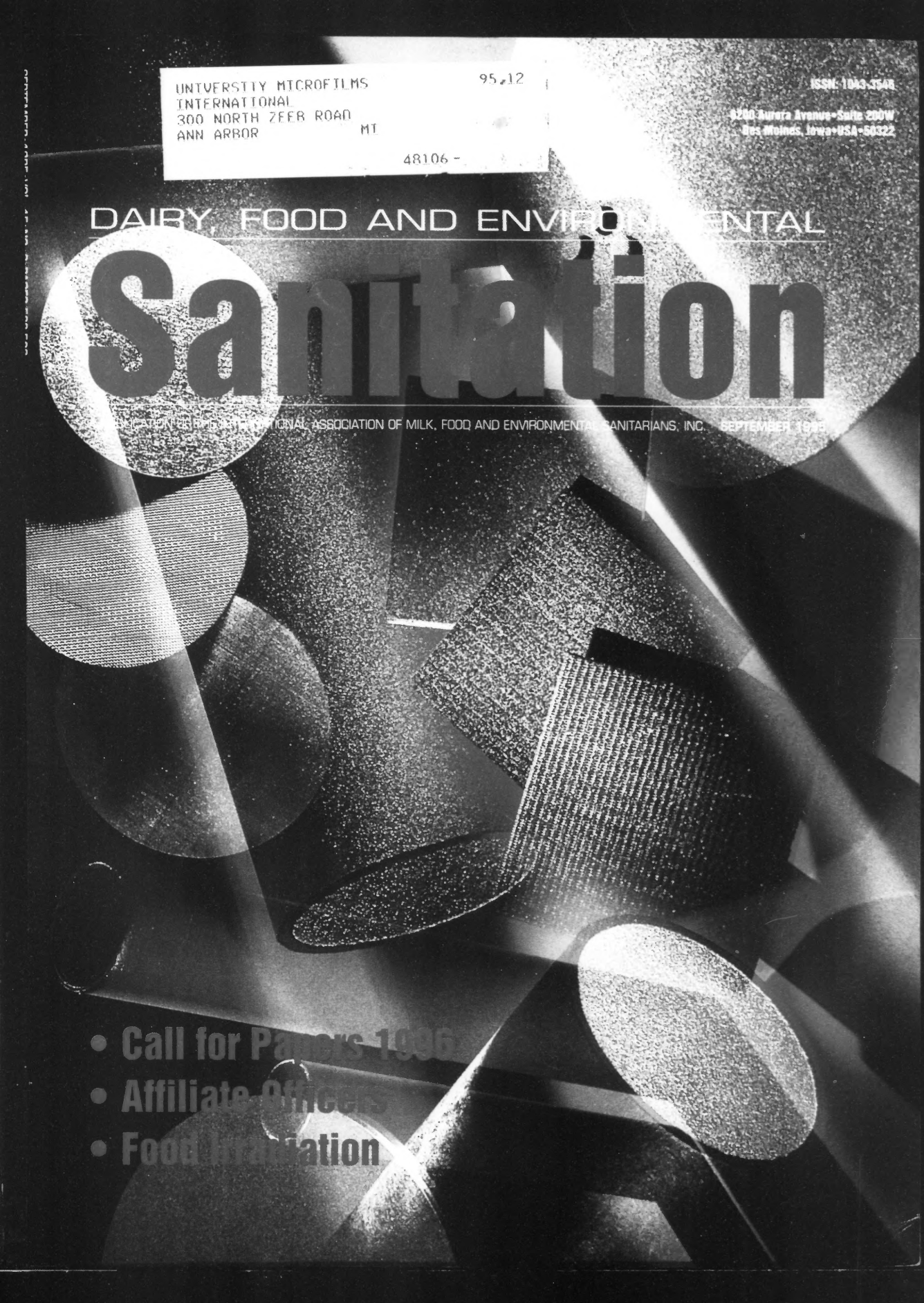
DAIRY, FOOD AND ENVIRONMENTAL

Sanitation

PUBLICATION OF THE INTERNATIONAL ASSOCIATION OF MILK, FOOD AND ENVIRONMENTAL SANITARIANS, INC. SEPTEMBER 1995



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DAIRY, FOOD AND ENVIRONMENTAL
Sanitation
A PUBLICATION OF THE INTERNATIONAL ASSOCIATION OF MILK, FOOD AND ENVIRONMENTAL SANITARIANS, INC.

ARTICLES

ASSOCIATION NEWS

Editor's Note:

We have chosen to reprint two articles from the *Journal of Food Protection*, February 1995 issue because we feel the information they provide would be beneficial to our DFES readers who may not receive the *Journal of Food Protection.*

The following is a correction from the article "The Quest for Quality, Similar but Different" on page 212, line 37 in the April issue of *Dairy, Food and Environmental Sanitation*: the word lactose appeared and it should have read lactase.

In the August issue of *Dairy, Food and Environmental Sanitation:* on page 510, the 3-A Holders List should have been effective August 1995 and not February 1995.

We apologize for the error.

DEPARTMENTS

EXTRAS

DAIRY, FOOD AND ENVIRONMENTAL

Sanitation

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THOUGHTS

FROM THE PRESIDENT

By F. ANN DRAUGHON,
IAMFES President

"The best we can give is ourselves"

Today, I am thinking about our annual meeting in Pittsburgh and how much I enjoyed the educational program and talking with old friends and new in both formal and informal settings. The programs, workshops and expos had such enthusiasm, such vitality and were so well organized! The loyalty, creativity and accomplishments of our IAMFES staff in putting this meeting together are deeply appreciated by the Board.

I watched with admiration and amazement at the annual meeting as our committees organized information and generated so many new ideas. The talent, dedication and sheer brain power of our members is really astounding to observe when they get together. On behalf of the Board, I would like to recognize the creativity and accomplishments of our committees, professional development groups, task forces, the affiliate council and local arrangements and especially thank Michael Brodsky and the chairpersons who kept committee members motivated, involved and productive. Coaches of winning sports teams often attribute their success to good recruitment, keeping players informed of their job and many practice sessions so that players learn to work as a team. The same can be said of highly successful IAMFES committees–the committee chair is a key player in the success of IAMFES. I hope you were involved in at least one of these groups. If not, please look over the list in your directory and see if there isn't one to which you could lend your talents.

Wilbur Feagan, the sponsor of our Black Pearl Award, and I spoke for some time on opening night of the annual meeting about service and about the sharing of our talents and resources. After a rather philosophical discussion, we agreed that our deepest commitment to the way human life should be lived involves some form, sometimes many forms, of volunteerism. I encourage you to be active in IAMFES and assure you that you will receive more than you give. If there isn't a professional development group in which you're interested, write me and organize one that excites and stimulates your mind while strengthening your commitment to IAMFES.

It is my duty to announce that Mr. Steven Halstead is no longer with IAMFES. The Executive Board has appointed Mr. David Tharp, our Finance Director, as Acting Administrator of IAMFES until the position of Executive Manager can be filled (the title will be Executive Director if the membership approves the constitution change). The Board has appointed a search committee which I will chair and will immediately initiate a nationwide search for the most qualified candidate to serve in this important position. I will welcome your comments and suggestions.

Support Your IAMFES Foundation Fund

To support the IAMFES Foundation Fund, send donations (**marked Foundation**) to:
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What is the IAMFES Foundation Fund?

The Foundation Fund is supported by membership of IAMFES sustaining members. Sustaining members are corporations, companies and individuals whose business interests reflect the goals and mission of IAMFES. Funds in the Foundation are kept totally separate from the operating funds of IAMFES and are used for worthy causes which enrich the Association.

What does the Foundation Fund support?

The income from the Foundation Fund currently supports the IAMFES:

- Ivan Parkin Lecture
- Audio-Visual Lending Library
- Developing Scientist Oral and Poster Competition
- Shipment of volumes of surplus JFP and DFES journals to developing countries through FAO in Rome
- Recruitment of exceptional speakers for IAMFES Annual Meetings on late breaking topics

Why should I contribute to the IAMFES Foundation Fund?

Any contribution, no matter how large or how small will help build a secure Foundation for the future of IAMFES. The future of IAMFES depends on how well we can meet the needs of our membership in providing educational programs, journals, products, and services, and on how well IAMFES fulfills its mission. The Foundation Fund was created to provide a long-lasting legacy of information and service for protecting the milk, food, water, and environment throughout the world.

A MESSAGE

From the Home Office

"IAMFES is in a time of transition"

Change seems to be the one constant we have come to depend on at the IAMFES office. As many of you know, IAMFES is in a time of transition; a time where we see the Association working to position itself through the use of our past wisdom and new potential as a valuable source for food safety professionals well into the new century. These transitions are being guided by your dedicated Executive Board and Committees. However, there are those who work quietly behind the scenes to assist these groups and the membership as a whole in reaching these goals. The silent few are the staff at the IAMFES office in Des Moines, Iowa.

Even though much of our work is done behind the scenes, we felt it would be beneficial for you, as a member, to know who we are and the work we accomplish. The office is sub-divided by the services provided. This includes Membership Services, Marketing, Finance, Fulfillment, and Publications. As a means to help you become familiar with the staff and their responsibilities, we will be providing a short portrait of each person and their respective responsibilities in this column.

David Tharp is our Director of Finance and in this time of transition he has assumed responsibilities as Acting Administrator. David has been with IAMFES for two and a half years, during which he has directed important changes and improvements in the accounting process for IAMFES. This improved system has allowed for more timely financial reports which helps to make our annual audit run smoothly. Other changes include implementing a more efficient invoicing system, directing association investments and analyzing association purchase decisions, all of which helps the IAMFES office to better meet the needs of our members. As Acting Administrator he will direct the administrative tasks of the office and help to maintain and guide the staff during this transition period.

Another staff member that many of you have probably spoken to or received correspondence from, is Julie Cattanach (Heim). Julie is our Membership/Meeting Coordinator and has seen several changes in her ten years of employment. Currently, she is guiding our membership enrollment, renewals, journal mailing, and Annual Meeting registration. This involves managing the membership database, answering questions regarding membership renewals and enrollment, solving problems incurred in receiving journals, and handling Annual Meeting registrations for attendees, presenters, and exhibitors. As you can see, her role is vital to maintaining reliable services for our membership. Julie's experience and dedication is what assures quality in our Membership Services area. Look for additional staff profiles in the upcoming issues of *Dairy, Food and Environmental Sanitation*.

Remember, the IAMFES staff is here to serve you and provide the services you desire. To enable us to provide better services, however, we need to hear from you. If you have any questions, concerns or ideas contact the IAMFES office. Office hours are from 8:00 a.m. to 4:30 p.m. Central Time, Monday through Friday. Our telephone number is (800)369-6337 or (515)276-3344. If these hours are not convenient (as they may not be for many of our members outside the U.S.) our fax is available twenty-four hours a day at (515)276-8655. When sending a fax be sure to include your return fax number and telephone number, including city and country code, if international.

Dairy, Food and Environmental Sanitation, Vol. 15, No. 9, Pages 546-548

Public Health in Belize

Kevin F. Anderson, R.S., M.S. George W. Beran, DVM, Ph.D. & LHD

ABSTRACT

The threat of cholera transmission through contaminated food and water remains a very real possibility throughout South and Central America. This report examines what one Central American country is doing to combat cholera transmission.

In May 1993, Dr. Vladimir Rathauser, director of the Pan American Health Organization Belize regional office of the World Health Organization, received a formal request from the Belize Public Health Organization to arrange a technical assistance review for the purpose of improving the Belize Food Sanitation Program.

Participants in the training workshop would include all Public Health personnel in Belize (one Principal Public Health Inspector, and one Senior Public Health Inspector, 17 Public Health Inspectors, one Medical Officer of Health, one Sanitary Engineer, and one Water Analyst).

The objectives of the workshop were to be twofold: First, to review the food sanitation program of the Belize Public Health Bureau, and secondly, to train public health inspectors in food sanitation issues.

The main training aid to be used was **Safe Food Handling**, a training guide for managers of food service establishments, by Michael Jacob, WHO Geneva, 1989.

From September 29 to October 7, 1993, the training workshop was conducted by Dr. George W. Beran, Distinguished Professor of Veterinary Medicine at Iowa State University, Ames, Iowa, and Kevin F. Anderson, City Sanitarian with the City of Ames, Iowa.

In preparing for the workshop, we were informed that there was no written program of food sanitation in the Public Health Bureau, but that inspectors were instructed on a day to day basis. Therefore, a review of the existing practices and comparison with other countries or standards should lead to modification if necessary. Also, since more than half of the Public Health Inspectors were untrained, the second objective (training) would be as important as the first one.

Soon after our arrival in Belize, it was made clear that our objectives were about to change. In various meetings and interactions with Public Health personnel we observed and learned that the inspectors were quite capable in their job functions, with many having college educations and years of experience in the field and that there was a great concern about cholera spreading throughout the country. The Public Health personnel wished to concentrate the training workshop on street food vending and the prevention of cholera in Belize, and so our new objectives were established.

Cholera Update

Update: Cholera—Western Hemisphere

1992 Epidemic cholera continues to spread throughout Central and South America.

In 1992, 339,561 cholera cases and 2,321 cholera-related deaths were reported from 21 countries in the Western Hemisphere, bringing to 731,312 cases and 6,323 deaths the total numbers reported since the beginning of the epidemic in January 1991 *(1)*.

From Table 1 it can be seen that Belize and the United States were very close in numbers of reported cholera cases to the Pan American Health Organization for 1991 and 1992. The concern, though, comes from Belize's neighboring countries of Guatemala, Mexico, and Honduras where high numbers of cholera cases have been reported; many street vendors found in Belize have immigrated from these countries.

To emphasize further the concern, the following article excerpts appeared in the Belize City newspaper **Amandala** during our visit.

Cholera Reinvades Belize (Thursday September 30, 1993)

Belizean Health authorities confirmed today that Belize has been reinvaded by the cholera bacteria, almost one year after it first entered the nation.

San Ignacio Health authorities successfully treated 11 victims confirmed by tests to have contracted the disease. Today they reported that they have treated 13 confirmed cases of the disease.

Health authorities in the neighboring Guatemalan town of Melchor de Mencos are fighting a major outbreak of the disease. They have over 90 suspected cases and have confirmed and treated 56 cases, including two Belizeans.

All cross-border traffic in meat and vegetables was suspended this week by health authorities in both countries.

Table 1. Cholera cases reported to the Pan American Health Organization—Western Hemisphere, 1991-1992

Country	1992 Cases	1992 Deaths	1991 Cases*
Peru	206,565	709	322,562
Ecuador	31,870	208	46,320
Brazil	24,039	312	2,101
Bolivia	21,324	383	206
Guatemala	15,178	207	3,674
Colombia†	15,129	158	11,979
El Salvador	8,109	45	947
Mexico	7,814	99	2,690
Nicaragua	3,067	46	1
Venezuela	2,456	62	13
Panama	2,416	49	1,178
Argentina	553	15	0
Honduras	384	17	11
Guyana	290	4	0
Belize	154	4	0
United States	102	1	26
Chile	71	1	41
French Guyana	16	0	1
Surinam	12	1	0
Costa Rica	12	0	0
Canada	0	0	1
Total	339,561	2,321	391,751

*1991 deaths = 4002.
†Data for 1992 are preliminary.

Belize health authorities do not believe that the disease will plague Belize as virulently as it has plagued Guatemala and Honduras due to the fact that Belize has demonstrably better sanitary facilities, better health outreach and education programs and a much smaller population. In any case, they are taking no chances *(2)*.

In order to meet our new objectives, the following meetings and tasks were performed:

- Meeting at the Public Health Bureau Headquarters, Belize City, to plan a workshop on Food Safety.
- Tour of Belize City to observe food sales operations.
- Workshop on Food Safety at San Ignacio, Belize.
- Field trip to Benque Viejo del Carmen (during the workshop); participants traveled from San Ignacio to the village of Benque Viejo del Carmen on the Guatemala border to observe street food-vending operations.
- Visiting a cholera patient in a local hospital in San Ingnacio.
- Meetings at Public Health Bureau Headquarters to finalize decisions and recommendations.
- Meetings at Pan American Health Organization, Belize City, for collaborative planning.

The most important aspect of the training was the 3-day Food Safety workshop held in San Ignacio. The focus of the workshop was declared to be inspection and control of street food-vending operation in Belize. The urgency for strengthening inspection and control of street food vending is the risk of transmission of cholera, epidemic in neighboring countries and recognized to have entered Belize. The goals of the workshop were to develop strategies, procedures, and guidelines for inspection and control of street food-vending operations. It was felt by all involved that the goals were met.

Major accomplishments from the workshop included the development of a food-handler ID card, a street food premises inspection guide, and a street food premises inspection checklist.

Other recommendations included:

- Long range education in food safety is needed. It is important that annual workshops for training and interaction be held for public health inspectors.
- A modular advanced training program has been suggested for public health inspectors.
- It is important that liaison and collaboration between Public Health Bureau and all Public Health related organizations in Belize be fostered.
- The establishment of a Public Health Association should be considered.
- Inspections by Public Health Inspectors should be scheduled to maximize their coverage of their districts.
- Public Health Inspectors should be provided greater authority to take immediate action when they identify deficiencies which endanger public health.
- Development of a food laboratory in Belize would be an asset to food-safety programs.

Conclusion

Public Health activities in the country of Belize encompass a list of twenty different public and environmental health programs that are com-

petently carried out by the Public Health Inspectors. Belize is divided into six districts and all are served by at least one Public Health Inspector (usually more).

Our consultation dealt strictly with food safety. The consultants express appreciation to the entire Public Health Bureau of the Belize Ministry of Health as extensive interaction occurred with the Medical Officer for Health, the Principal P.H. Inspector, the Senior P.H. Inspector and the field P.H. Inspectors. They comprise a very competent organization for food safety. Appreciation is also expressed to other officials of the Ministry of Health in the Epidemiology Department, the Water Laboratory, and Public Health Nurses. Gratitude is expressed to Dr. Vladimir Rathauser and Arend Van de Kerk of the Belize office of Pan American Health Organization.

The focus of consultation was on street food vending which must receive prompt attention in preventing the potential transmission of cholera from carrier persons through contamination of foods vended.

The strengthening goals of the Public Health Bureau are large, but their base is competent and functioning. It is anticipated that real progress will be achieved both in short-and long-range efforts.

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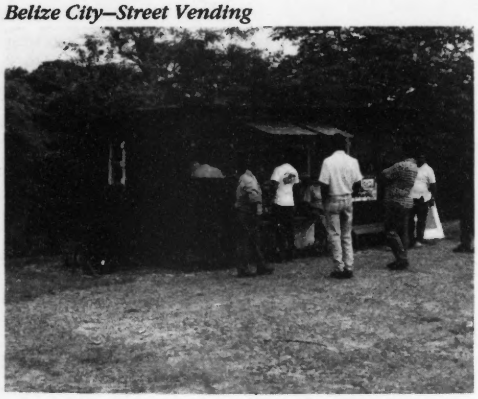
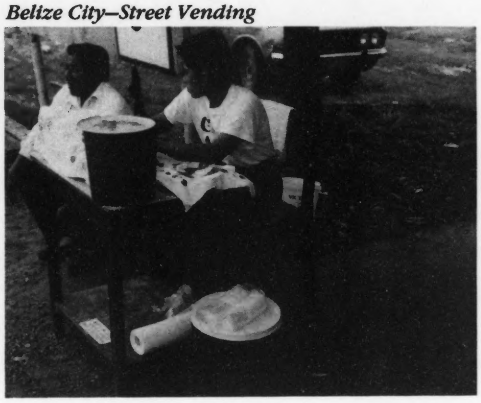
Belize City–Street Vending



Belize City–Street Vending



Dairy, Food and Environmental Sanitation, Vol. 15, No. 9, Pages 549-553

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by Richard F. Stier and Michael M. Blumenthal

PLANT SELF INSPECTION

HERE'S WHAT TO LOOK FOR... AND HOW TO TELL IF YOUR INSPECTIONS ARE EFFECTIVE

Why should a food processor conduct internal inspections? To many companies to whom self inspection is an integral part of their quality or safety programs, this may seem like a rather silly question. Self inspection is, in most cases, considered by management to be critically important. But there are operations which have no such programs and have never even considered implementing them.

So why should a processor conduct internal inspections? There are several reasons. Among them are assuring product quality, compliance with the current Good Manufacturing Practices (GMPs), maintenance of good sanitary practices, having accurate records and observations of plant practices and changes to enhance operations, assuring that the facility is safe to the workers (*1*) and, finally but most important, assuring the production of safe and wholesome food. That last point is one required by the United States government under the provisions of the Pure Food, Drug and Cosmetic Act. This point is also the cornerstone of a HACCP (Hazard Analysis Critical Control Point) program. Looking at it in this light, inspection almost evolves into a legal requirement.

Inspection is generally only a part, albeit an important one, of a company's quality assurance program. It may be even used as a quality control check. Before going further, it is essential that the difference between quality control and quality assurance be understood. Quality control is part of a quality assurance program and may be defined as:

"The scientific evaluation of production consisting of on-line evaluation of finished products, raw materials and packaging to determine adherence to accepted standards."(*2*)

By using an inspection to evaluate adherence to accepted practices, it becomes part of the quality assurance program. Quality assurance has been defined as:

"All encompassing programs, including such aspects as quality control programs, setting of standards, evaluation of incoming materials, development of tracking and coding systems, and adherence to GMPs, designed to ensure to an established degree of confidence that products are produced, packaged, distributed and ultimately reach the consumer in a given condition."(*2*)

The key phrases are "all encompassing programs" and "degree of confidence." These concepts reflect an organized and systematic approach to achieving a goal, that is, a safe food meeting well-defined parameters.

The final benefit of inspection programs is financial. It makes simple good economic sense to have programs in place to assure your facilities are operating within regulatory guidelines and your own operational rules. A clean and well-run facility becomes a more desirable supplier or co-packer, there is usually reduced waste, and there is a potential for reducing insurance premiums. The literature, particularly *Food Chemical News*, is full of citations where operations "got out of control" resulting in lost product, adverse publicity and even plant closures. These situations may never have been developed if internal inspection programs were in place. Management, particularly in the U.S., has to realize that their food safety and quality departments should not be treated as cost centers. They are **cost savings centers**–a point not usually recognized until too late.

Keys to the Program

There are many kinds of self inspections, so the remainder of this paper will focus on how one might conduct a **sanitation** inspection. This kind of inspection is aimed at evaluating sanitary practices and uses the current GMPs as guidelines, but it is also a very effective means of determining unsafe practices that might result in product adulteration and "getting a handle" on management commitment to proper food handling.

The first key is having someone on staff who is capable of conducting

"INSPECTION EVALUATES SANITARY PRACTICES AND USES CURRENT GMPS AS GUIDELINES, BUT IT IS ALSO EFFECTIVE IN DETERMINING UNSAFE PRACTICES THAT MAY RESULT IN PRODUCT ADULTERATION."

such inspections. There are different ways that companies go about developing this resource. An organization may already have one or more persons on staff with the knowledge of what is required to conduct a sanitation inspection. If this expertise is not on staff, the next best thing is to work with an outside expert and have he or she provide the appropriate education to members of your staff. Be forewarned that proper education is not cheap and that one or two lessons does not a sanitarian make. If you elect to go this route, allow the contractor to complete the full education program. The final way to have a sanitarian on staff is simply to appoint someone. This is not recommended, unless there is a commitment to educate that person. Surprisingly, this last option is employed by many companies, who then neglect the training part.

The American Institute of Baking provides sanitation and safety inspection services on a contractual basis. The Institute also offers periodic seminars covering food plant and warehouse sanitation and safety matters.

The inspectors or sanitarians must have basic knowledge and understanding of a number of different areas. These include:

1. Plant or warehouse operations and protocols that include standard operating procedures for production, cleanup and maintenance. They should have access to all manuals elucidating these operations. They should also be aware of how staff are educated. For example, are employees given basic education in food plant sanitation and good manufacturing practices?

2. Current Good Manufacturing Practices (3). It is the c-GMPs that should be used as the basis of sanitation inspections. The c-GMPs are what may be called "interpretive" regulations. They provide Food and Drug Administration investigators with a great deal of leeway in interpreting what is and what is not an adequate practice. The regulations use the terms *should* and *shall*. Practices that "should" be done are mandatory. To obtain a further understanding of how F.D.A. conducts investigations, there are several pieces of information that may be useful. Stier and Blumenthal (*4*) recently outlined how processors should prepare for an F.D.A. inspection. It is also possible to obtain a copy of the *F.D.A. Inspection and Operations Manual* (*5*) which is what the agency uses when training investigators.

3. Pest control protocols or practices. Many companies employ outside agencies to control, discourage or kill pests. The inspector should work with these individuals to learn why they do what they do and to assure your company that these outside services are doing their job. Your company is paying for a service, so be sure it is being done right.

4. Local, state and federal regulations. Inspectors should familiarize themselves with all regulations that affect their operation. They should also know the agencies and investigators who will be coming to their plant. Working with regulatory agencies is much easier than trying to work against or outsmart them. The agencies usually win in the end.

5. Labor issues. Do you work in a union shop? Who is the steward? Any changes or improvements that are recommended as a result of your work will affect how the plant operates. Getting these things done may be impossible without the cooperation of labor.

The next key is establishing criteria for evaluation. How will you weigh violations? How will you score the plant as a whole or individual areas? This is an area of much debate. Many organizations that do inspections under contract use a score sheet, awarding or deducting points for different areas and totalling the results to give the plant a final grade. Score above a set value, and the facility is considered to be "within compliance."

These systems have their pros and cons. Everyone likes to have a number to target, but there are times when numbers can cause problems. For example, a plant may "pass" but have some deficiencies. Management may feel "since we passed, there is no need to address these issues." Operations degenerate, and suddenly there is a problem.

> "INSPECTORS SHOULD LOOK AT AREAS AWAY FROM THE PLANT. RODENT AND PEST INFESTATIONS OFTEN ORIGINATE OFF-SITE. YOU WANT TO KNOW IF YOUR NEIGHBORS ARE A SOURCE FOR YOUR PROBLEMS."

Another mode of scoring is used by the sanitarians at the National Food Processors Association (*6*). They grade facilities using two criteria. The first is a numerical grade ranging from one for the lowest to four for the highest. They employ pluses and minuses to enhance this range. The second criteria is called the "p Factor" which ranges from 0 to 1.0. This is the inspector's determination of the probability that an F.D.A. investigator will have adverse findings. The higher the "p Factor," the greater the chance of adverse findings. A "p Factor" of 0.7, for example, says that you definitely have problems.

There are also those who simply favor using just a notebook to write down observations, both good and bad. These observations may then be written up in more detail at a later date.

Others favor the use of checklists specifically designed for a given plant. These, too, have their advantages and disadvantages. Checklists provide a means to "dry lab" the work. If a checklist is used, it is suggested that a scale of some sort be used for each point that must be graded and that a place for comments be provided. Two types of checklist designs may be seen here in Examples 1 and 2 on page 553. Which will provide greater assurance that the inspector really looked at things?

The final key is the most important. This is management support. Without the support of management, any program, be it sanitation inspection, HACCP or statistical quality/process control, is doomed to failure. If your company believes self inspec-

tion is important, get it in writing from the top. Be sure that this person or group of persons has committed money, support the protocols established for inspection and correction of deficiencies, and understands how important these programs are. There is nothing more frustrating than to conduct a project believing that management is behind you and then see it die on the vine. Get their support, and work to keep it.

Preparing to Inspect

How does one go about preparing for an inspection? That really depends upon the inspection. There are two basic kinds of sanitation inspections; routine and detailed. The routine inspections are just that; routine. They may be conducted on a daily or weekly basis and may be as simple as walking through the warehouses or processing facilities to just look at what is going on. They may involve the use of a checklist and be targeted at assuring yourself the pest control agent has checked all the traps or that cleanup was conducted as it was designed. Most plants' employees get used to seeing their sanitarian or inspector in the plant everyday. Just hope that they do not begin to take him for granted.

Detailed inspections are designed to take a comprehensive look at the facility's overall compliance with the c-GMPs, to determine if any potentially unsafe situations are developing and to determine if there are any situations that may result in compromised product. These inspections should examine a plant from top to bottom. It is this kind of inspection that most F.D.A. investigators will do when they come to your plant (5). Before conducting such an inspection, be it in your own facility or in a sister operation, do not announce your intentions. Once people learn that they are going to be inspected, they start to clean up or change their habits. The objective of the inspection is to view normal operations and recommend changes, if changes are in order.

The inspector should dress appropriately. A three-piece suit or business dress is not appropriate. The inspection will be from top to bottom, so the inspectors are going to get dirty. Rugged yet clean clothes, such as "whites" or a jumpsuit are often worn. Hair nets and beard nets are to be worn if necessary. All jewelry, watches and objects that could get into food should be removed. A bump cap is highly recommended—the more one works in plants, the more one realizes this. The inspector should set an example for the plant staff.

There are certain tools that the inspector should carry during the inspection. A notebook (or score sheet) and pens will be necessary. The latter should be secured or kept in hand so that they will not be lost. A flashlight is also a necessity, preferably one with an unbreakable lens. Other recommended tools are a hand lens, a knife (Swiss Army, for example), a black light to test for rodent urine, Whirl-Pak bags or plastic petri dishes for sample collection, markers and copies of pertinent regulations. Securing these tools (flashlight, knife and pens) in a scabbard hung on a belt is one way to protect the tools from being lost and keep them easily accessible.

Conducting Inspections

Food processing plants and warehouses are frequently huge operations, so a "plan of attack" for the facility needs to be developed. The first step is to simply walk through the plant. Begin at the receiving docks, and follow the process flow through the plant to the finished goods warehousing area. If looking at a plant for the first time, this provides an idea of the product flow. If it is your own plant, it can reacquaint you with the facility and set the stage for the inspection.

The inspection should begin with the grounds. The inspectors should walk the property lines and look at areas away from the plant. Rodent and pest infestations frequently originate off-site. You want to know if your neighbors are a possible source for your problems. Look at how the grounds are maintained and how vegetation is controlled. Do areas drain properly? (Pests are attracted to water.) Are materials stored properly? Are roads or lots a source of dust and dirt? And if there are pest control measures being taken, are they being applied properly?

Next, walk around each building, and, if possible, get up on the roof of each. Is there adequate storage for all non-food materials, and are they stored properly? Are there harborage sites for insects and rodents? Are walls, windows and doors designed to exclude pests? Are screens maintained? Are there situations that could compromise your product? Questions related to the interior of the building and equipment design are best asked when looking at those operations.

Now, move to the receiving docks. Do not just look at how the area is set up, watch what is going on. Are the employees doing their jobs properly? Are plant protocols being followed? Are there situations developing that may compromise product safety? Are recording devices functional and being maintained? This is especially important when dealing with refrigerated products. Are incoming trucks clean and well maintained?

Follow the process flow through the plant, and ask similar questions for each unit operation. Take note of the employees. They are an excellent barometer of management commitment to food safety and quality. If they appear slovenly, fail to use hand washing stations, expectorate on the floors, are wearing jewelry or chewing gum, you have a problem.

It is during this phase of the inspection that you should examine equipment and plant design and maintenance. Food handling and food contact equipment should be constructed

"TAKE NOTE OF EMPLOYEES. THEY ARE AN EXCELLENT BAROMETER OF MANAGEMENT COMMITMENT TO FOOD SAFETY AND QUALITY."

of easily cleanable materials. Belts should be in good condition, constructed of cleanable materials and properly joined. Floors should be clean; drains should drain properly; and walls, windows, screens and ceilings should be well maintained. The plant should also smell clean. Odors indicating spoilage or product degradation reveal that there is a problem somewhere.

Warehouses should be properly maintained. Corridors between product stacks and walls should be maintained at least 18 in.; spills should be cleaned immediately; temperature recording devices and alarms should be maintained; temperatures should be kept at specified levels; chemicals and cleaning materials should be properly stored and protected by locks in areas designed to contain spills; and protocols to exclude pests should be in place.

Employee facilities must also be included in the inspection. Break rooms should be clean; toilet and hand washing stations should be clean and supplied with the necessary accoutrements; signs telling employees to "Wash hands before returning to work" must be posted; lockers should be clean; and employees should be aware of basic GMPs. Employees' lockers have served as points where pest infestations have spread to entire plants.

The audit should also review record keeping procedures. Are records, particularly those related to assuring food safety, maintained properly? Are there records of equipment, instrument and recording device maintenance and standardization? These are the questions the investigators from government agencies will ask, so it behooves you to ask them first.

Finally, the inspector should be sure to observe cleanup. Is the crew cleaning the plant properly? Are they being monitored? Are there any means to evaluate their performance? Are they forgetting things? Are they cleaning up in such a way that they may be compromising overall plant sanitation? *Listeria* has been determined to be a major environmental problem. Blasting drains with high-pressure hoses may cause the organism to become part of an aerosol, spreading it through the plant. Proper cleaning and sanitizing is essential to good plant operations.

When conducting the inspection, it is essential to keep your eyes and ears open. Talk to employees on the line and in different areas, if possible. These people may give you other insights into potential problems. Finally, be tough. Record all potential concerns, no matter how minor they may seem. The small problems may grow into larger ones, and if you can see them, who is to say an investigator from an agency will not. And take your time. Sitting or standing in one place and watching an operation for a period of time may reveal a problem in the making.

Reporting and Correcting

Once the inspection is completed, the inspector should sit down with plant staff and review his or her observations. This "exit interview" should be a summation of the overall plant condition, highlighting major concerns that should be addressed immediately.

The next step is to prepare a detailed report based on observations. The report should incorporate the following:

1. Observations. All suspect and potential adulteration of safety issues should be described.

2. Degree of concern. So that issues of most concern are addressed first, a grading system for observations should be established. An example might be to use the terms *critical*, *major* and *minor*, whereas:

Critical designates a situation that will result in product adulteration requiring immediate attention.

Major signals a situation that could result in adulteration in the near future.

Minor points to situations of concern that may or may not result in future adulteration.

Using a grading system does have the inherent problem that some concerns may be ignored, but the hope is that it would be the minor concerns that receive short shrift.

3. Recommendations. Recommendations for addressing each area of concern should be made.

4. Time lines. Provide an area on the reporting form to allow those responsible for making changes to establish time lines for completing those tasks. They should also use this form to describe their corrective actions. This term is what is used on many forms.

This report should group observations by area. For example, observations pertaining to the receiving dock should be combined. This allows that part of the report to be given to the supervisor responsible for that area. It will be his responsibility to address all deficiencies.

A typical report form could resemble the one offered in Example 3 on page 553. The completed report using this or another format is then submitted to management. It will be management's responsibility to call a meeting of key staff to address the concerns described in the report. Now assuming that management has already agreed to support this inspection program, the meeting date will be set quickly, perhaps within a day or so of when the actual inspection was conducted.

At the staff meeting, the complete report should be reviewed. There will obviously be discussion of observations, degrees of concern and recommendations, and the inspector will have to defend his report. Let people know why observations were made; cite the regulations; make sure they understand the concerns and their importance to the whole operation. The key again is management support. If the support is there, the concerns will be addressed. The ideal situation for the inspector would be for management to simply say, "Get those sections of the report related to your areas back to me within a set period with actual or proposed corrective actions and time lines for when you will have completed the work." This puts the onus on the different supervisors or foremen.

As the initiator, it will be the inspector's responsibility to evaluate whether the observations have been addressed and report to management. The inspector should also work with

the different persons responsible for implementing the recommendations to ensure that they are done right the first time.

Evaluating Effects

This may be the hardest part of the program. How does one evaluate how well something is working? The first and most obvious way is during follow-up inspections, either routine or detailed. If fewer suspect practices are observed, if changes are made and maintained, and if the operations appear improved, then progress is being made. This kind of observation is somewhat subjective, however. What else should one look for?

Look at the employees next. It has already been stated that they are a mirror of management's commitment to safety and quality. Are they supportive of the program? Do they seem to take added pride in their work? Is their overall appearance improved? Ideally, the good supervisor should have gotten his employees involved when making the recommended changes. Their involvement provides a "sense of ownership" and pride. This evaluation approach, too, is somewhat subjective.

Since management has given their support for the self inspection program, they will need to see results. Management's idea of results all too often distills down to "the numbers." How is this program improving our operation's bottom line? Where are the numbers? They can be found, but it will take more work on your part. There are several areas of operation where enhanced safety and quality resulting from the inspection program may show up. These include reduced rework, improved operational efficiencies, reduced downtime, fewer consumer or buyer complaints, fewer product returns, reduced waste and the potential for eliminating recalls. Each of these—and there are undoubtedly more—can be measured, and the bottom line is reduced costs. Remember, operations such as plant inspection, quality assurance and food safety should be viewed as cost savings centers, which they truly are.

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EXAMPLE 1: BLUE MOON BAKERY—SANITATION CHECKLIST

Inspector _____ Date _____
Reviewed _____ Date _____

UNIT OPERATION	Excel	Good	Fair	Need	Poor	Comments
RECEIVING						
COLD STORAGE						
DRY STORAGE						

Key: Excellent, Good, Fair, Needs Work, Poor

EXAMPLE 2: BLUE MOON BAKERY—SANITATION CHECKLIST

Inspector _____ Date _____

UNIT OPERATION	OKAY	NOT OKAY	COMMENTS
RECEIVING			
COLD STORAGE			
DRY STORAGE			

EXAMPLE 3: POST-INSPECTION CHECKLIST

PLANT _____ DATE OF INSPECTION _____

OBSERVATION	DEGREE OF CONCERN	RECOMMENDATION	CORRECTIVE ACTION

Key: Degree of Concern—Critical, Major, Minor
Corrective Action—To be filled out by Section Heads

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Strategies for Communicating the Facts on Food Irradiation to Consumers

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ABSTRACT

The majority of consumers will respond positively to irradiated foods when the advantages of the process are explained and when safety, nutritional value, and worker and environmental concerns are addressed. Communication strategies involve identifying the audience, selecting the communication medium, presenting the benefits of the process, and addressing myths. The most significant public-health benefit of irradiation is the reduction of foodborne pathogens. Irradiation should be described in lay terms and presented as an additional step which enhances microbiological safety. Nutritional safety and environmental myths must be addressed. Multimedia presentations utilizing the popular press are most effective. Since health authorities are the most credible spokespersons, opportunities for information exchange between health officials and community leaders should be developed. Consumer resources are listed.

Attitude studies and market tests demonstrate that, when given the opportunity, consumers accept irradiated foods. The majority have not had that choice, and their knowledge of the technology is limited. Consumers want information about the benefits and safety of the food and the irradiation process. Information should not be limited to food safety and wholesomeness considerations, however. An increasing number of consumers are concerned about the economic, ethical, and environmental impact of technology in general. When the public has little understanding of these issues, they can be manipulated by special-interest groups bent on halting the application of irradiation.

It is not unusual for consumers to express concern about a new technology. Many express concern about technologies generally recognized as safe (*16*). Expressions of concern should not halt the adoption of a technology that offers advantages; rather they highlight the importance of educational programs.

People differ in their confidence in regulatory agencies, personal value orientation, and interest in processed food. Some will not select irradiated foods, but attitude and market studies indicate the vast majority prefer the advantages this technology offers (*3, 5, 6, 7, 15, 19, 20, 23, 24*).

Communication strategies involve identifying the target audience, selecting the communication medium, and focusing the message to present the benefits of the technology from the consumer's perspective, to respond to environmental and worker safety issues, and to put to rest the myths perpetuated by special-interest groups.

Target Audience

Irradiation can provide higher quality food to the consumer, permit the safe transport of produce from insect-quarantine areas, replace less-safe chemical fumigants, and extend product shelf life. The benefit that is most poignant, however, is enhanced microbiological safety. A significant number of consumers are concerned about the potential hazards of bacteria (*8*). Without doubt the tragic *Escherichia coli* outbreak in the West has increased consumer awareness and concern. Irradiation significantly reduces the hazard of foodborne illness by destroying these foodborne pathogenic organisms. This role of irradiation should be highlighted in public communications. The use of irradiation to replace chemical treatment is important from an environmental perspective. Other benefits of irradiation may be positioned less prominently at this time.

Anyone can enjoy higher food quality, longer shelf life, and wider product availability. Those most at risk will reap the greatest benefit from increased safety. This includes children under five years, older adults, and people whose immunity is compromised by illness or disease. Target audiences for the food-safety irradiation message would be parents of young children, adults over fifty, and anyone who needs the safest food.

Communication Medium

The controversy of 1989 over the use of Alar® on fruit demonstrated that messages are most effective when repeated in multiple sources. Consumers indicate they get the majority of science and food-safety informa-

tion from television, newspapers, magazines, and the radio (*2, 13*). The goal of a communication campaign would be to present information in media specific to the target audience, such as the magazine *Modern Maturity* to reach seniors, Parent-Teacher Association (PTA) newsletters and parenting magazines to reach parents of young children, as well as sources to reach a general audience.

Multiple coverage could be achieved by expanding a model developed by Dr. Loaharanu, of the International Atomic Energy Agency/ World Health Organization. Leaders of consumer groups, representatives of groups at risk, and media persons could be invited to attend a nationwide workshop in which they have the opportunity to develop a dialogue with public health officials and scientists regarding the significance of foodborne illness and the potential of food irradiation to enhance health by increasing food safety. The role of irradiation to replace less safe chemical fumigants, such as methyl bromide, could also be included. When presented on a small scale in Thailand and Mexico, this type of program attracted local media and generated numerous factual media pieces about food irradiation.

To maintain momentum in this educational effort the message must be picked up in the popular and professional press. Materials could be written for the public and for health professionals, press kits prepared for the media, and editorials written for newspapers. A letter could be sent to the syndicated newspaper columnists Ann Landers or Dear Abby describing the irradiation process and making a case for consumer choice in the market place. Review articles could be prepared for health professionals and submitted to the appropriate professional journals.

Communication strategies should not be limited to workshops and media pieces. The food label, point-of-purchase informational flyers, and other educational material facilitate information exchange. Consumer flyers could be made available through Cooperative Extension and The U.S. Department of Agriculture Food Safety and Inspection Service (FSIS) and offered to the meat and poultry industry and supermarkets.

Message

Irradiation should be explained in lay rather than technical terms. The phrase "exposing food to nuclear magnetic energy" is not easily understood by the public. A more consumer friendly definition is "Irradiation is treatment of food with energy from X-rays or gamma rays for a specific purpose." Comparisons made to other food treatments could build on the familiar and increase understanding of the role of irradiation in reducing pathogens, e.g., "Irradiation is like pasteurization, except that pasteurization uses heat energy and irradiation uses another form of energy."

Product attributes play an important role in acceptance of technological innovations (*18*). In market tests, irradiated mangoes, papayas, strawberries, and other produce items had an easily identified superior attribute, good flavor. Enhanced microbiological safety is also an attribute consumers view positively. Presented without a background explanation, however, irradiation could be viewed as a substitute for proper food sanitation. Consumers need information about microorganisms and food safety which includes these points: (1) Microorganisms are a natural part of the ecosystem. *Salmonella* and *E. coli* are found in healthy animals. (2) Microbiological safety must be achieved; it does not occur automatically, even in a visually clean environment. Since bacteria are ubiquitous, measures must be taken to control them. These include chemical dips or sprays, treatment with energy, i.e., food irradiation, or treatment with heat. (3) The methods of control should be compared for effectiveness, safety, effect on flavor, and effect on nutrition. Proper cooking destroys *Salmonella* and *E. coli*; however, the potential for cross-contamination is increased when raw contaminated food enters the kitchen. Chemical or energy treatment destroys the microbes before they are brought home.

Many people recognize personal responsibility in selecting safe food and maintaining that safety (*17*). A comparison of the risks and benefits inherent in different choices builds consumer knowledge and can impact current and future decision making. When presented with more complete information, many people prefer irradiation (*22*).

More complete background information is also needed on treatment of spices. Consumers believe the choice is natural, wholesome spices or irradiated spices. When told that most spices are fumigated to control insects and/or microorganisms, the majority prefer irradiated spices (*22*).

The perspective of a comparison is critical. Consumer confidence is lowered by "changing science," i.e., something is considered safe today, but hazardous tomorrow (*4*). Fumigation should not be presented as hazardous; sanitation is improved compared to the untreated product. *Irradiation, rather, is a positive move along the continuum of safety.* Ten, twenty, or fifty years from now another process could replace irradiation, but today, it offers the greatest safety and quality.

Consumer concerns about pesticide residues remain high, even though many have heard that the benefits of pesticide use exceed potential risk (*8*). In attitude studies many consumers indicate they would prefer irradiated to fumigated fruits (*22*). As a replacement for methyl bromide, irradiation offers the opportunity to move along the continuum for environmental safety. Consumer interest in irradiated soft fruits, where irradiation is used to control molds, is less than in other applications; however, actual marketplace behavior demonstrated strong acceptance. (*15, 19, 22*).

Special-interest groups opposed to irradiation build on fear of the unknown and the public's limited understanding of nuclear science. Recognizing that irradiation sounds

similar to radiation, they compare treating food by radiation to exposing the human body to radiation. In fund-raising literature and media conferences they allude to dangers from nuclear bombs, raise fears of leaks from nuclear power facilities, and explicitly state that eating irradiated foods causes cancer. Misconceptions communicated to the press should be clarified.

Myth: Irradiation is not safe, and the scientific community opposes its use

Respected national and international organizations, such as the American Medical Association and the World Health Organization, endorse the safety of irradiated foods. Scientists acknowledge that no process can be *proven* safe; rather, scientists develop scenarios to test safety. Irradiated food has been fed to multiple generations of laboratory animal and to human volunteers with no ill effects (*10, 11, 12*).

Opponents claim that irradiation produces unique compounds and specifically cite benzene and formaldehyde as hazardous by-products of the irradiation process. Chemicals are formed during irradiation; however, they are similar to those formed when food is cooked. Benzene and formaldehyde may be formed in some products; however, the level is many times lower than found in commonly eaten foods. It is not the presence of a compound that is hazardous, but the quantity. Animal and human testing indicate no harmful effect, even when 100% of the diet is irradiated.

Some scientists contend that irradiation should be treated like food additives, that is, compounds extracted from irradiated food and then concentrated in the diet. Others respond that the amount of compounds formed are so minute this task would be technically difficult. Additionally it would not provide meaningful data for human evaluation. Current testing in which the complete diet is irradiated is a sufficient testing parameter.

Opponents say irradiated food causes cancer in children. An Indian study in which five malnourished children were fed freshly irradiated wheat is the basis for this claim. When it is cited by opponents, this study must be fully explained, and the fallaciousness of the interpretation developed by opponents revealed (*21*).

Myth: The public will not know what foods are irradiated

Labeling of irradiated foods is required, except in restaurant foods and when irradiated spices and dried vegetables are used as flavorings in mixed dishes. Opponents cite increased purchasing of food away from home and want labeling on restaurant foods. If accompanied by an educational program, consumers may prefer the safety of irradiated foods compared to the potential foodborne illness from nonirradiated food.

Myth: The food irradiation industry safety record is poor

Today's consumers are increasingly concerned about environmental and worker safety (*8, 17*). Since there are about 40 irradiators in the United States, a safety record is readily available. A facility using cesium 137 experienced a leak of radioactive material in 1988. This was cleaned up with no damage to the surrounding community (*26*). Because cesium is soluble in water, it is difficult to contain. Therefore, one type of cesium 137 capsule has been withdrawn from use in pool sources. The most commonly used source material is cobalt 60 encapsulated in stainless steel. All facilities are carefully monitored for leaks.

Myth: Transportation of radioactive cobalt is hazardous and people will be harmed by accidents. Community safety is not protected

Transportation of radioactive material has occurred for more than 40 years. Containers and irradiation facilities must meet specific standards of safety (*26*).

Myth: Irradiation facilities will add significant amounts of radioactive waste to the environment

Cobalt used in food irradiation facilities could be "recycled" from that used to sterilize medical equipment. Nordion, the North American company that produces cobalt 60, estimates that all the cobalt 60 they produced could be stored in a space the size of an office desk. When the technology evolves sufficiently, machine generated energy sources may replace radioactive material.

Myth: Activist groups reflect public views and protect the public interest

Activists groups have their own agendas, and they differ in their reliance on science-based information. All groups, however, rely on membership for fund-raising. There is therefore a strong incentive to identify "risks" and solicit funds in order to "protect the public interest" while maintaining the financial solvency of the organization.

Myth: Irradiation destroys the nutritional content of food

There is some loss of vitamins, but it is comparable to that of other processing technologies. Opponents claim high losses because they refer to studies that expose food to high doses not permitted in the United States or they refer to older studies that failed to accurately measure nutritional value (*9, 25*).

Myth: Consumers do not want and will not accept irradiated foods

Marketing studies clearly demonstrate that consumers will select irradiated over nonirradiated food if they perceive benefits (*15, 19, 20*).

Credibility of spokespersons

Consumers indicate that they evaluate the credibility of a message by the credibility of the person conveying the message, by their personal judgment if the message makes sense, and by the frequency with which they hear the message (*7, 14*). People who have purchased irradiated food generally trust the industry and the scientific community to make correct judgments. Government agencies such as the FDA/USDA however, are not powerful endorsement bodies (*22*). Consumers have less confidence in the credibility of government information compared to that

from health professionals (*8, 13*). Endorsements by the American Medical Association and the World Health Organization should be widely used because of their higher credibility (*1*).

Consumer Resources

The following science-based educational materials are recommended for the lay audience:

Facts about Food Irradiation, a booklet produced by the World Health Organization which addresses all areas of consumer concern.

"Food Irradiation: A Hot Issue," an article in *Harvard Health Letter* 17 (10), August 1992.

"Food Irradiation, The Story Behind the Scare," an article in *American Health*. December, 1992 - clearly summarizes information on irradiation and includes a critique of Food and Water, Inc., an irradiation opponent.

"Food Irradiation: Toxic to Bacteria, Safe for Humans" and "The Growing Use of Irradiation to Preserve Food," articles in the *FDA Consumer*, November 1990 and July 1986, respectively; good overviews of irradiation, although they do not reflect current FDA approvals.

"Free and Informed Consumer Choice: The Case for Food Irradiation," a book by Morton Satin, (*21*) a lucid piece emphasizing the dangers of foodborne illness, with a particularly clear section on the Indian study.

"Irradiated Foods," a booklet by the American Council on Science and Health, 1995 Broadway, New York, NY 10023-5860.

"The Future of Food Preservation: Irradiation," a video developed by Olivia Wood at Purdue University.

Future Benefits

Many consumers are ready to buy irradiated food today. However, the majority want information about the benefits of the process, food safety, and worker/environmental safety. An investment in consumer education is required to open the market for irradiated food, but the rewards in food safety, food quality, and environmental safety are substantial.

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FDA Regulatory Aspects of Food Irradiation

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ABSTRACT

The Federal Food, Drug, and Cosmetic Act requires that a food that has been irradiated may not be sold in the United States unless the Department of Health and Human Services finds that the food is safe and issues a regulation specifying safe conditions of irradiation. This presentation briefly outlines the types of information needed to issue an authorizing regulation, describes the conditions under which food may currently be irradiated, and discusses the basis for current regulations.

The role of the Food and Drug Administration (FDA) in determining whether foods may be irradiated in this country stems from the passage in 1958 of the Food Additives Amendment to the Federal Food, Drug, and Cosmetic Act in that legislation; Congress explicitly included a source of radiation under the food additive provisions of the law. The Food Additives Amendment provides that a food is adulterated (that is, it cannot be marketed legally) if it has been intentionally irradiated, unless the irradiation is carried out in conformity with a regulation prescribing safe conditions of use. The FD&C Act and FDA's regulations describe the kinds of information and data that are required to be reviewed by the FDA before a food additive regulation can be issued. In this article, we will briefly outline these requirements, focusing on some areas of special relevance to food irradiation regulations, and summarizing major features in the current regulations.

Petitions for an authorizing regulation

In general, the food additive regulations may be amended in one of two ways. In the first, FDA proposes a regulation on its own initiative. The public is given an opportunity to comment on the proposal, and all substantive comments are considered. This procedure is used relatively infrequently and usually only in special circumstances. (In fact, FDA did use this procedure in the mid-1980s to amend the food additive regulations regarding food irradiation; however, it is unlikely that FDA will undertake on its own initiative to amend these regulations again in the near future.)

Far more commonly, the food additive regulations are amended in response to petitions filed by proponents of an additive's use. In this case, the sponsor petitioning for a regulation authorizing a new use of an additive bears the entire burden of demonstrating that the requested use is safe. The petitioner is responsible for assembling the data and information necessary for the agency to reach a safety decision.

The petition is a scientific and legal document that forms the basis of the administrative record underpinning the agency's decision. That decision must be based on a record that is explicit, complete (showing, for example, that all reasonable safety questions have been addressed), and unassailable (if a regulation is challenged, it is the agency that will go to court to defend it).

Furthermore, a petition must contain information adequate to demonstrate that the additive is safe under all conditions of use to be permitted. When FDA issues an authorizing regulation, that regulation is all that is needed for anyone, not only the petitioner, to use the additive in conformance with the specified conditions of use. That is, authorization is granted generically; FDA does not approve particular products or companies, and there are no further licensing or other requirements. Therefore, the agency must establish any limitations necessary to assure safe use **before** authorization is granted.

Data requirements

Section 409 of the FD&C Act lists the information that must be reviewed by the agency before a food additive regulation can be issued. These requirements are described in greater detail in FDA's regulations in Title 21, Part 171, of the Code of Federal Regulations (CFR). These data include the identity of the food additive, conditions of proposed use, the intended technical effect, a method for determining the quantity of the additive, an assessment of the effect on the environment, and, of course, information to establish safety.

In the specific context of food irradiation, then, what kind of information is needed in each of these areas?

Identity of the food additive. A petition should specify the sources of radiation that are proposed to be used.

A number of sources are currently authorized in FDA regulations in Section 179.26 of Title 21 of the CFR (21 CFR 179.26). The authorized sources include gamma rays from sealed units of cobalt 60 or cesium 137, electrons generated from machine sources at energies not to exceed 10 million electron volts, and x-rays generated from machine sources at energies not to exceed 5 million electron volts.

Conditions of proposed use. Required data concerning conditions of proposed use would include information such as foods to be irradiated, dose limits proposed, and specific processing conditions (e.g., if the food is to be irradiated fresh or frozen, cooked or uncooked, etc.). Where particular conditions of use are necessary to ensure safety, the petition should be as explicit and specific as possible because, as noted earlier, the data in the petition must be adequate to support safety of an additive under all conditions of use to be permitted.

Intended technical effect. A petition should clearly lay out what it is that irradiation will accomplish, and how much radiation it will take to do it. Again, the petition should be specific and explicit.

Method for determining the quantity of the additive. A petition should discuss methods to be used to ensure that the food receives the intended dose (i.e., dosimetry).

Assessment of the effect on the environment. This requirement is not mandated by the FD&C Act; rather it is required to assure compliance with the National Environmental Policy Act (NEPA). Like all government agencies, FDA must consider the effect on the environment of its actions, including the issuance of a food additive regulation. Therefore, a food additive petition must include an environmental assessment that contains data that must be evaluated by the agency to determine whether a finding of no significant impact on the environment can be supported.

In the context of irradiation, examples of data needed in an environmental assessment might include information relating to the disposal of used dosimeter materials and evidence of compliance with pertinent standards of other regulatory agencies, such as the Nuclear Regulatory Commission. An environmental assessment must be prepared as a self-contained, stand-alone document that contains the information necessary to show that there is no reasonable potential for an adverse impact on the environment.

Information to establish safety

The issuance of an authorizing regulation also requires, of course, information to establish the safety of the petitioned use. In the case of irradiated food, consideration of wholesomeness (that is, safety for human consumption) requires that four broad areas be addressed: radiological safety, toxicological safety, microbiological safety, and nutritional adequacy.

In the remainder of this article, we want to very briefly pose some questions that each of these areas raises and that must be adequately addressed for the proposed conditions of use of irradiation.

Radiological safety. Here, the question is, will radioactivity be induced in the food?

In early work on food irradiation, sources of sufficiently high energies to induce radioactivity in foods were sometimes used. As research continued, sources whose energies are too low to induce radioactivity were adopted by the international community. Therefore, this issue is of no concern when currently approved sources of radiation are used, but must be addressed if other sources are being considered.

Toxicological safety. Among the questions that have been raised in attempting to establish the toxicological safety of irradiated food are: (1) Is there evidence of adverse toxicological effects that can be attributed to toxic substances produced by irradiating the food? (2) What should be tested? (3) What tests provide useful information?

Answering these questions has, over the years, proven difficult, as the toxicological evaluation of irradiated foods has presented special challenges. Toxicological safety of typical food additives has traditionally been assessed by using animal feeding studies. Such studies typically involve determination of the highest dose of a tested substance that causes no toxic effects and application of "safety factors" (usually 100-fold) to account for individual variability and for uncertainty in extrapolating from animals to humans. For substances like irradiated whole foods, which may become a large proportion of a diet, application of a 100-fold safety factor is impossible; attempts to exaggerate the amount of irradiated food in the diet have produced adverse nutritional effects that have confounded the results of many feeding studies.

Over time, however, our knowledge of the changes caused in food by radiation has grown. This has provided a basis for estimates of the amounts, types, and potential toxicity of the compounds formed upon irradiation (so-called radiolytic products). A little more than a decade ago, FDA established a committee (the Bureau of Foods Irradiated Food Committee, BFIFC) to, among other things, recommend toxicological testing requirements appropriate for assessing the safety of irradiated foods. The Committee considered the characteristics and quantities of radiolytic products, estimates of projected levels of human exposure, and sensitivity of state-of-the-art toxicity testing, and made several recommendations that have guided subsequent agency decisions.

Specifically, BFIFC recommended that foods irradiated at doses of less than 1 kilogray (kGy),[1] or foods representing a very small fraction of the diet, should be exempt from requirements for toxicological testing. For other irradiated foods, the Committee recommended testing consisting of a battery of short-term mutagenicity tests conducted under conditions that maximize the concentration of radiolytic products and 90-day feeding studies in two species (one rodent and one non-rodent). Further testing could be required to

clarify any inconclusive findings in the basic battery of tests.

Following the issuance of the BFIFC report, the agency established a Task Group to review the available animal feeding and mutagenicity studies. The Task Group found that the studies did not appear to show any toxicological effects of irradiated food. The Task Group concurred with the BFIFC recommendation that toxic effects would not be expected from foods irradiated at doses below 1 kGy, and that such foods did not require further toxicological testing. Thus, toxicology data would not be required in a petition for irradiation of food under conditions of use in which the maximum dose would not exceed 1 kGy.

Because many of the studies reviewed by the Task Group were incompletely reported or inadequately designed, the Task Group concluded that the available data were not adequate to evaluate the safety of irradiation of all foods at doses greater than 1 kGy. The Task Group recommended that the agency consider requests for authorization of irradiation at these doses of foods that are consumed in significant amounts on a case-by-case basis.

Microbiological safety. In general, the issue of microbiological safety of irradiated foods has raised two questions: (1) Can irradiation mutate microorganisms, producing more virulent pathogens? (2) Will irradiation reduce the numbers of spoilage organisms, allowing pathogens to grow undetected without competition?

The first question is generally not an area of concern. There is no evidence that mutants that may be produced by irradiation are any more virulent than the parent microorganism; in fact, the opposite is more likely to be the case. It is the second question that is of special relevance to most of the applications of irradiation of interest that have not been already authorized by FDA, i.e., irradiation at doses that do not sterilize the food, but that are high enough to appreciably reduce the number of spoilage organisms and to alter the makeup of the residual microbial population.

In these instances, the petition must contain evidence that the proposed conditions of use (dose and temperature of irradiation, for example) are adequate to achieve the intended microbiological technical effect and, most particularly, to ensure that irradiated food is not potentially less safe than nonirradiated food because of the possibility of undetected pathogen outgrowth or toxin production before spoilage is evident. This safety must be demonstrated under all realistic scenarios that may occur in commercial practice, even conditions of temperature abuse or of high initial pathogen loads. The organism that has been of greatest interest in this regard is *Clostridium botulinum*, both because of its public health significance, and because the spores of this organism are among the most resistant to radiation. Other relatively radiation-resistant pathogens may also be relevant, depending on the particular food and specific proposed conditions of use.

Nutritional adequacy. With regard to nutritional issues, the agency's concern is for nutritional effects of dietary significance. Two questions are relevant: (1) Does irradiation under the proposed conditions of use result in a significant loss of any nutrient in the food? (2) Is this food an important dietary source of the affected nutrient?

In general, nutrient loss depends on many factors, such as radiation dose, temperature of irradiation, food composition, and the presence or absence of oxygen. At the doses relevant to irradiation of food, losses of micronutrients, particularly vitamins, may be of concern. A petition should address the issue of possible vitamin loss under the specific proposed conditions of use. If there is evidence that any vitamin level is affected significantly under the proposed conditions, data to show that these losses are not significant with respect to the overall diet will be needed.

Current regulations

Based on the considerations previously stated, the FDA has found irradiation of food to be safe under several conditions. Authorizing regulations have been issued both in response to petitions and at the FDA's initiative. In sum, the FDA has issued broad approvals for irradiation: of food at doses not to exceed 1 kGy to control insects and other arthropods and to inhibit maturation (e.g., ripening or sprouting) of fresh foods; of pork at doses between 0.3 and 1 kGy to control *Trichinella spiralis*; of poultry at doses not to exceed 3 kGy to control foodborne pathogens; of dry or dehydrated enzymes at doses not to exceed 10 kGy to control microorganisms; and of dry or dehydrated aromatic vegetable substances (e.g., spices and seasonings) at doses not to exceed 30 kGy to control microorganisms. These foods either are minor ingredients in the diet or are irradiated at doses below 1 kGy, except for poultry. The poultry regulation was supported by animal feeding studies. The regulations prescribe irradiation conditions where the microbiological impact is small, where the foods are too dry to support microbiological growth or where microbiological data show that temperature abuse would lead to organoleptic spoilage before development of botulinum toxin.

Labeling

Because irradiation, like other forms of processing, can affect the characteristics of food, the FDA has found it necessary to inform the consumer that an irradiated food has been processed. For situations where the processing is not obvious, such as whole foods that have been irradiated, FDA requires that the label bear the radura symbol and the phrase "treated with radiation" or "treated by irradiation." If irradiated ingredients are added to foods that have not been irradiated, no special labeling is required on retail packages because it is obvious that such foods have

been processed. Special labeling is required for foods that will undergo further processing, however, to ensure that foods are not irradiated multiple times.

Packaging

Irradiation can cause chemical change in packaging, as well as in food, and this can affect migration of the package components to food. Irradiation can cause cross-linking, which would likely reduce migration, but it also can cause decomposition to lower molecular-weight entities, with increased migration characteristics. Sometimes, irradiation has been used in the manufacture (or sterilization) of packaging. The FDA considers this use to be the same as any other manufacturing process, namely, the final irradiated packaging must comply with the appropriate regulations and must not otherwise adulterate food, e.g., by releasing decomposition products that may render the food injurious. The FDA believes that, as part of good manufacturing practice, manufacturers must always consider the effects of changes in their manufacturing processes.

Irradiation of food in a package is a special case, however, because any volatile decomposition products that might be released during irradiation would migrate directly into food. This is different from irradiation during the manufacture of the packaging material because, in that case, a volatile decomposition product may not be present when the food is put into the package. Therefore, the FDA requires that packaging that holds food during irradiation comply with regulations (21 CFR 179.45) based on appropriate testing. It is important to note, however, that these regulations have been amended only once in recent years. The FDA urges packaging manufacturers and others interested in using a packaging material for holding food during irradiation to check these regulations early in their planning for commercial development, either to ensure that the proposed packaging has been listed in the regulations for packaging to be used during irradiation or to submit a petition for approval of additional packaging materials. In brief, a petition to permit irradiation of packaging material otherwise approved for food use must show that migration from the irradiated material does not raise new issues not considered in the earlier approval. The FDA would be happy to provide guidance to anyone interested in submitting such a petition.

In summary, petitions for a food additive regulation authorizing irradiation of food must include data and information adequate to demonstrate safety. The information needed would be that required to show that irradiation under the proposed conditions of use will not cause adverse toxicological, microbiological, nutritional, or environmental effects. Proposed conditions of use of irradiation at doses exceeding 1 kGy are considered on a case-by-case basis; the type of data necessary would be that described here, and could vary in detail, depending on the specific authorization requested. Therefore, any potential petitioner might find it helpful to consult with the FDA early in the process of preparing a submission. A food that has been irradiated must be so labeled. Finally, packaging used to hold food during irradiation must have been tested and a regulation issued for that use.

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Notice of 3-A Sanitary Standards Committees Action

During the May 1995 meeting of the 3-A Sanitary Standards Committees there were 12 tentative 3-A Standards, including amendments, revisions or new standards, approved for signature, publication and general distribution.

The following amendments establish weight gain limits for four generic plastics to the 3-A Sanitary Standards for Multiple-Use Plastic Materials Used as Product Contact Surfaces for Dairy Equipment, Number 20-17 as amended. They will be effective August 25, 1995.

Amendment 4: Copoly-ether-ester, Polybutylene Terephthalate, Polytetrahydrofurane (PBT-PTHF)

Amendment 5: Polytetramethylene Terephthalate

Amendment 6: Polyetherimide

Amendment 7: Polysulfone–PTFE (Alloy)

The 3-A Committees also recommended CFR references be added to the Table–1 of 3-A 20-17 as an additional column. When reprints are available all seven amendments will be incorporated and the serial number increased to 20-18.

The following amendments, revisions or new 3-A standards will have effective dates of November 25, 1995.

Amendment 1 to 3-A Sanitary Standards for Centrifugal and Positive Rotary Pumps for Milk and Milk Products, Number 02-08.

Revisions to 3-A Sanitary Standards for Multiple-Use Rubber and Rubber-Like Materials Used as Product Contact Surfaces in Dairy Equipment, Number 18-01.

Amendment 1 to 3-A Sanitary Standards for Batch and Continuous Freezers for Ice Cream, Ices and Similarly Frozen Dairy Foods, Number 19-04.

Amendment 1 to 3-A Sanitary Standards for Flow Meters for Milk and Milk Products, Number 28-01.

Amendment 3 to 3-A Sanitary Standards for Diaphragm-Type Valves for Milk and Milk Products, Number 54-00.

Amendment 1 to 3-A Sanitary Standards for Boot Seal-Type Valves for Milk and Milk Products, Number 55-00.

Amendment 1 to 3-A Sanitary Standards for Tank Outlet Valves for Milk and Milk Products, Number 57-00.

New 3-A Sanitary Standards for Caged-Ball Valves for Milk and Milk Products, Number 63-00.

The following two E-3-A Standards were rescinded effective immediately. The USDA-Egg Products Inspection Division-FSIS is using the current and corresponding dairy standards for inspection purposes. Thus fabricators and users should be using them also.

E-3-A Sanitary Standards for Flow Meters for Liquid Egg Products, Number E-28-00.

E-3-A Sanitary Standards for Noncoil-Type Batch Processors for Liquid Egg Products, Number E-24-00.

For more information about 3-A Sanitary Standards and the amendments made at the May meeting, contact: Dr. Thomas Gilmore, 3-A Secretary, DFISA's Technical Director; telephone (703) 761-2600; fax (703) 761-4334; or write him at: 1451 Dolley Madison Boulevard, McLean, VA 22101-3850.

Read any good books lately?

If you have recently read or heard about an interesting and informative book relative to food science, safety, or sanitation, and would like to recommend it for our **Book Review Column**, please contact:

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IAMFES Secretary Nominations Due for 1996 Election

Nominations are now being taken for Secretary for IAMFES. This year a regulatory representative will be elected.

Once all nominations are received by the nominating committee, two persons will be chosen to run for the office. This is a five-year term, moving up yearly until he or she is President of IAMFES, then serving one year after as Past President. The term of office begins the last day of the 1996 Annual Meeting. All IAMFES Executive Board Members meet at least three times a year.

The two people selected are placed on a ballot. The winner is determined by a majority vote of the membership through a mail vote in the spring of 1996.

Please send a biographical sketch and photograph NO LATER THAN NOVEMBER 1, 1995 to the Nominations Chairperson:

Robert Sanders
3061 Knotty Pine Dr.
Pensacola, FL 32505-1855
(904) 476-3929

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THANKS!

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- Type abstract in space provided on the abstract form. Abstracts must be double-spaced in a font size no small than 12 point. Left and right margins must be no less than 1/2 inch.
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Enclose two self-addressed postcards. Two cards must be included with each abstract that is submitted. One will be returned to acknowledge receipt of the abstract and the other to notify the author of acceptance or rejection.

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The abstract should describe briefly: (a) the problem studied, (b) methods applied, (c) essential results, and (d) conclusions.

Presentation Format
Papers may be presented orally or by poster format at the discretion of the Program Committee. Oral presentations will be scheduled so a speaker has a maximum of 15 minutes, including a 2-4 minute discussion. Carousel projectors for 35 mm slides will be available.

Overhead projectors are not to be used and none will be available.

Subject Matter for Papers
Papers should report the results of applied research on: food, dairy and environmental sanitation; foodborne pathogens; food and dairy microbiology; food and dairy engineering; food and dairy chemistry; food additives and residues; food and dairy technology; food service and food administration; quality assurance/control; mastitis; environmental health; waste management and water quality.

Developing Scientist Awards Competitions
The **Oral Competition** is open to GRADUATE students enrolled at accredited universities or colleges whose research deals with problems related to environmental, food and/or dairy sanitation, protection and safety. Candidates cannot have graduated more than one (1) year prior to the deadline for submitting abstracts.

This year the Oral Competition will be limited to up to ten (10) finalists and awards will be given to the top three presenters. The papers should be approximately fifteen (15) minutes, including a 2-4 minute discussion.

The **Poster Competition** is open to UNDERGRADUATE and GRADUATE students enrolled at accredited universities or colleges whose research deals with problems related to environmental, food and/or dairy sanitation, protection and safety. Candidates cannot have graduated more than one (1) year prior to the deadline for submitting abstracts.

Up to 10 finalists will be selected for the Poster Competition. The presentation must be mounted on an 8' by 4' display board (provided at the meeting) for the entire duration of the Poster Session at the Annual Meeting. The presenter must be present at their poster for a specific time during the session. **(For more information on the Developing Scientist Awards Competitions, see the following pages.)**

All winners are presented and honored at the Annual Awards Banquet. The finalists will receive complimentary tickets and are expected to be present at the Banquet.

Additional Abstract Forms
Extra copies of the abstract forms may be obtained from the IAMFES office, or you may photocopy this one.

Membership in IAMFES
Membership in IAMFES is NOT a requirement for presenting a paper at the IAMFES Annual Meeting.

IAMFES Abstract Form

DEADLINE: DECEMBER 15, 1995

Title of Paper _____

_____

Authors _____

_____

Name and Title of Presenter _____

_____

Institution and Address of Presenter _____

_____

Office Phone Number (___) ___ - _____

Fax Number (___) ___ - _____

Developing Scientist Awards Competition ☐ Yes ☐ Oral ☐ Poster

General Subject Area

☐ Quality Assurance/Control	☐ Food Service
☐ Food Microbiology	☐ Sanitation
☐ Dairy Microbiology	☐ Food Safety
☐ Waste Management	☐ Processing
☐ Lab Methods	☐ Epidemiology
☐ Foodborne Pathogens	☐ Other_____
☐ Chemical Residues	_____
☐ Environmental Health	_____

Check the format you prefer.

☐ Oral ☐ Poster

☐ Video Theater ☐ No Preference

Major Professor/Department Head approval (signature and date)_____

Selected presentations, with permission, will be recorded (audio or visual).

I authorize IAMFES to record my presentation.

Signature _____. Date: _____

I do not wish to be recorded.

Signature _____. Date: _____

Please TYPE abstract, DOUBLE-SPACED, in the space provided here.

Announcement:
Developing Scientist Awards Competitions
(Supported by Sustaining Members)

IAMFES is pleased to announce continued extension of its program to encourage and recognize the work of students in the field of food safety research. In addition to the Oral Developing Scientist Awards Competition, IAMFES will again offer a Poster Presentation Award Competition.

Purpose

1. To encourage graduate and undergraduate students to present their original research at the IAMFES meeting.
2. To foster professionalism in students through contact with peers and professional members of IAMFES.
3. To encourage participation by students in IAMFES and its annual meeting.

Developing Scientist Oral Competition:

The Oral Competition is open to GRADUATE students enrolled in M.S. or Ph.D. programs at accredited universities or colleges whose research deals with problems related to environmental, food and/or dairy sanitation, protection and safety. Candidates cannot have graduated more than one (1) year prior to the deadline for submitting abstracts.

This year the Oral Competition will be limited to ten (10) finalists and awards will be given to the top three (3) presenters. The papers should be approximately fifteen (15) minutes long including a two to four (2-4) minute discussion.

Awards: First Place: $500 and a Plaque; Second Place: $300 and a certificate of merit; Third Place: $100 and a certificate of merit. All of the winners will receive a one-year membership including both *Dairy, Food and Environmental Sanitation* and the *Journal of Food Protection*.

Developing Scientist Poster Competition:

The Poster Competition is open to UNDERGRADUATE and GRADUATE students enrolled at accredited universities or colleges whose research deals with problems related to environmental, food and/or dairy sanitation, protection and safety. Candidates cannot have graduated more than one (1) year prior to the deadline for submitting abstracts.

Up to ten (10) finalists will be selected for the Poster Competition. The presentation must be mounted on an 8' by 4' display board (provided at the meeting) for the entire duration of the Poster Session at the Annual Meeting. The presenter must be present at his/her poster for a specific time, approximately two hours, during the session.

Awards: First Place: $500 and a Plaque; Second Place: $300 and a certificate of merit; Third Place: $100 and a certificate of merit. All of the winners will receive a one-year membership including both *Dairy, Food and Environmental Sanitation* and the *Journal of Food Protection*.

Instructions to Developing Scientist Awards Competitions Entrants (Oral and Poster):

***Note:** Abstracts must be submitted to the IAMFES office no later than December 15, 1995. No forms will be sent to entrants. Enclose two self-addressed postcards with your submitted abstracts. One will be used to notify author of receipt of abstract, the other to notify the author of acceptance or rejection.

1. One original and four copies of an abstract of the paper must be submitted on the abstract form found in the September or October issues of the IAMFES journals. Indicate on the abstract form whether the presentation is submitted for the Oral or Poster Competition.
2. The presentation and the student must be recommended and approved for the Competition by his/her Major Professor or Department Head, who must sign the abstract.
3. The work must represent original research done by the student and must be presented by the student.
4. Each student may enter only one (1) paper in either the Oral or Poster Competition.
5. All students will receive confirmation of acceptance of their presentations along with guidelines for preparing their Oral or Poster Presentations.
6. All students with accepted abstracts will receive a complimentary membership which includes their choice of *Dairy, Food and Environmental Sanitation* or the *Journal of Food Protection*.
7. Winners are announced at the Annual Awards Banquet. The finalists for the Oral Competition and the Poster Competition will receive complimentary tickets and are expected to be present at the banquet.

Judging Criteria for Developing Scientist Awards Competitions

Judging

The abstracts and presentations will be evaluated by an independent panel of judges. Selection of up to ten (10) finalists for both the Oral and Poster Competitions will be based on evaluations of the abstracts and the scientific quality of the work (see judging criteria). All entrants in the Developing Scientist Awards Competitions will be advised of the judges' decisions by March 31, 1996.

Only the ten (10) finalists in each category will be judged at the Annual Meeting and will be eligible for the final awards. All other entrants who submitted papers accepted by the IAMFES Program Committee will be expected to present their papers/posters as part of the regular Annual Meeting program, but their presentations will not be judged and they will not be eligible for awards.

Judging Criteria

ABSTRACT

Clarity, comprehensiveness, conciseness;

SCIENTIFIC QUALITY

Adequacy of experimental design;

Extent objectives were met;

Difficulty of research, depth;

Validity of conclusions based upon data;

Technical merit, contribution to science;

ORAL PRESENTATION or POSTER PRESENTATION

Organization: clarity of introduction, objectives, methods, results and conclusions;

Quality of visuals;

Quality and poise of presentation and in answering questions.

***NOTE: Your abstract must be submitted to the IAMFES office no later than December 15, 1995. No forms will be sent to entrants. Enclose two self-addressed postcards with your original abstract and four copies.**

Please read! If your paper or poster does not comply with the following IAMFES guidelines, it may not be approved for presentation or publication in the abstracts at the Annual Meeting. You will be notified by the Chair of the Program Advisory Committee (PAC) if any issues need to be addressed. You must communicate with your session chair or workshop or short course coordinator regarding the commercialism guidelines governing your particular session.

IAMFES POLICY ON COMMERCIALISM

1. INTRODUCTION

IAMFES technical sessions and symposia are not to be used as platforms for commercial sales or presentations. IAMFES enforces guidelines to restrict commercialism in technical manuscripts, poster presentations and symposia papers, so that scientific merit is not diluted by proprietary secrecy.

Excessive use of brand names, product names or logos, failure to substantiate performance claims and failure to objectively discuss alternative methods, processes and equipment are indicators of sales pitches. Restricting commercialism benefits both the presenters and the IAMFES attendees.

These guidelines have been written to serve as the basis for identifying commercialism in papers and graphics prepared for technical sessions, symposia and posters, as well as for all seminars, short courses and related presentations and discussions offered under the auspices of IAMFES.

2. TECHNICAL CONTENT OF PAPERS

2.1 Original Work

The presentation of new technical information is to be encouraged. Papers containing information that has been previously published and repeated tutorial presentations from IAMFES symposia, seminars and short courses will be evaluated on a case by case basis by the session chair, chair of the PAC and IAMFES staff before inclusion in the program.

2.2 Substantiating Data

Papers should present technical conclusions derived from technical data. If products or services are described, all reported capabilities, features or benefits and performance parameters must be substantiated by data or by an acceptable explanation as to why the data are unavailable. Only conclusions that might be reasonably drawn from the data may be presented. Claims of benefit not supported by the presented data are prohibited.

2.3 Trade Names

Excessive use of brand names, product names, trade names or trademarks is forbidden. A general guideline is to use proprietary names once and thereafter to use generic descriptors or neutral designations. Where this would make the paper significantly more difficult to understand, the PAC chair and session chair will judge whether the use of trade names etc. is necessary and acceptable.

2.4 "Industry Practice" Statements

It may be useful to report the extent of application of technologies, products or services; however, such statements should review the extent of application of all generically similar technologies, products or services in the field. Specific commercial installations may be cited to the extent that their data are discussed in the paper.

2.5 Ranking

Although general comparisons of products and services are prohibited, specific generic comparisons that are substantiated by the reported data are allowed.

2.6 Proprietary Information (see also 2.2)

Some information about products or services may be proprietary to the author's company or to the user and may not be publishable; however, their scientific principles and validation of performance parameters must be described. Conclusions and/or comparisons may only be made on the basis of reported data.

2.7 Capabilities

Discussion of corporate capabilities or experiences are prohibited unless they pertain to the specific presented data.

3. GRAPHICS

3.1 Definition

The term graphics refers to slides, photographs, videos, illustrations, art work and any other visual aids appearing with the printed text or used in the presentation.

3.2 Purpose

Graphics should be included only to clarify technical points. Graphics which primarily promote a product or service will not be allowed. (See 4.6)

3.3 Source

Graphics should relate specifically to the technical presentation. General graphics regularly shown in, or intended for, sales presentations cannot be used.

3.4 Company Identification

Names or logos of companies supplying the goods or services must not appear on the graphics, except on the first slide of the presentation. Slides showing products may not include predominant nameplates. Graphics with commercial names or logos added as background borders or corners are specifically forbidden.

3.5 Copies

Graphics that are not included in the preprint may be shown during the presentation only if they have been reviewed in advance by IAMFES staff and have been determined to comply with IAMFES' commercialism guidelines. Copies of these additional graphics must be available from the author on request by individual attendees. It is the responsibility of the session chair to verify that all graphics to be shown have been cleared by IAMFES staff, or other reviewers designated by the PAC chair.

4. INTERPRETATION AND ENFORCEMENT

4.1 Distribution

These guidelines will be sent to all authors of technical papers, posters, symposia workshops and all participants in panel discussions.

4.2 Assessment Process

Reviewers of papers will accept only those that comply with these guidelines. Drafts of papers shall be reviewed for commercialism concurrently by both IAMFES staff and technical reviewers selected by the PAC chair. All reviewer's comments shall be sent to and coordinated by either the PAC chair or the designated IAMFES staff. If manuscripts or graphics are found to violate IAMFES guidelines, authors will be informed and invited to resubmit their materials in revised form before the designated deadline.

4.3 Author Awareness

In addition to receiving a printed copy of these commercial guidelines, presenters of technical papers, posters, symposia etc., will be reminded about these guidelines by their session chair.

4.4 Monitoring

Session chairs are responsible for ensuring that presentations comply with these guidelines. If violations occur, the session chair will publicly request the author to stop and will notify the PAC chair of the action taken.

4.5 Enforcement

While both IAMFES staff and technical reviewers will check manuscripts and graphics for commercialism, ultimately it is the responsibility of the PAC chair to enforce the guidelines through the sessions chairs.

4.6 Penalties

If the author of a technical paper, poster or panel participant thoughtlessly violates these guidelines, the agency or company they represent will be notified in writing about the violation by the PAC chair. If gross violations or continued violations after a warning, occur, IAMFES will have the right to ban the author's agency or company from making presentations at IAMFES conferences for a period of up to two years after the violations took place.

Dairy, Food and Environmental Sanitation, Vol. 15, No. 9, Pages 571-572

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1995-96

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Compliance Policy Guides Manual; Availability

{Docket No. 95D-0115}

AGENCY: Food and Drug Administration, HHS.

ACTION: Notice.

SUMMARY: The Food and Drug Administration (FDA) is announcing the availability of a new bound edition of the "FDA Compliance Policy Guides" (CPG manual). The CPG manual is intended to provide guidance to FDA district offices by offering a convenient and organized system for statements of FDA compliance policy, including those statements containing regulatory action guidance information.

ADDRESSES: The CPG manual may be ordered from National Technical Information Service (NTIS), U.S. Department of Commerce, 5285 Port Royal Rd., Springfield, VA 22161. Orders must reference NTIS order number PB95-915499 for each copy of the manual. Payment may be made by check, money-order, charge card (American Express, VISA, or Mastercard), or billing arrangements made with NTIS. For telephone orders or further information on placing an order, call NTIS at 703-487-4650. The CPG manual is available for public examination in the Dockets Management Branch (HFA-305), Food and Drug Administration, rm. 1-23, 12420 Parklawn Dr., Rockville, MD 20857, between 9 a.m. and 4 p.m., Monday through Friday.

FOR FURTHER INFORMATION CONTACT: Barbara A. Rodgers, Office of Regulatory Affairs (HFC-230), Food and Drug Administration, 5600 Fishers Lane, Rockville, MD 20857, 301-827-0417.

Enzyme Preparations from Animal and Plant Sources; Affirmation of Gras Status as Direct Food Ingredients

21 CFR PART 184

{Docket No. 84G-0257}

AGENCY: Food and Drug Administration, HHS.

ACTION: Final rule.

SUMMARY: The Food and Drug Administration (FDA) is affirming that certain enzyme preparations derived from animal and plant sources are generally recognized as safe (GRAS) for use as direct food ingredients. This action is a partial response to a petition filed by the Ad Hoc Enzyme Technical Committee (now the Enzyme Technical Association). The following enzyme preparations derived from animal sources are affirmed as GRAS in this final rule: Catalase (bovine liver), animal lipase, pepsin, trypsin, and pancreatin (as a source of protease activity). The following enzyme preparations derived from plant sources are affirmed as GRAS in this final rule: Bromelain, ficin, and malt.

DATES: Effective June 26, 1995. The Director of the Office of the Federal Register approves the incorporation by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51 of a certain publication listed in 21 CFR 184.1024(b), 184.1034(b), 184.1316(b), 184.1415(b), 184.1443a(b), 184.1583(b), 184.1595(b), and 184.1914 (b), effective June 26, 1995.

FOR FURTHER INFORMATION CONTACT: Laura M. Tarantino, Center for Food Safety and Applied Nutrition (HFS–206), Food and Drug Administration, 200 C St. SW., Washington, DC 20204; telephone (202) 418-3090.

Indirect Food Additives: Adjuvants, Production Aids, and Sanitizers

21 CFR PART 178

{Docket No. 94F-0451}

AGENCY: Food and Drug Administration, HHS.

ACTION: Final rule.

SUMMARY: The Food and Drug Administration (FDA) is amending the food additive regulations to provide for the safe use of copper chromite black spinel as a colorant for all polymers intended to contact food. This action is in response to a petition filed by The Shepherd Color Co.

DATES: Effective June 14, 1995; written objections and request for a hearing by July 14, 1995.

ADDRESSES: Submit written objectives to the Dockets Management Branch (HFA-305), Food and Drug Administration, rm. 1-23, 12420 Parklawn Dr., Rockville, MD 20857.

FOR FURTHER INFORMATION CONTACT: Vir D. Anand, Center for Food Safety and Applied Nutrition (HFS–216), Food and Drug Administration, 200 C St. SW., Washington, DC 20204; telephone (202) 418-3081.

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UpDates

John Sofos Appointed Co-Editor for *Journal of Food Protection*

Dr. John N. Sofos, Professor in the Department of Animal Science at Colorado State University has been appointed to a four-year term as Co-Editor of the *Journal of Food Protection*. Dr. Sofos received his B.S. degree from the Aristotle University of Thessaloniki, Greece in 1971. He received his M.S. and Ph.D. degrees from the University of Minnesota in 1975 and 1979, respectively. He has published over ninety refereed publications, one book, eighteen book chapters, over one hundred abstracts, 32 popular press articles and 35 conference proceedings. He has served on the Editorial Board of *Lebensmittel-Wissenschaft and Technologies* (acting editor, 1993), *Journal of Food Protection* and *Journal of Muscle Foods*. He received the Distinguished Research Award from the American Meat Science Association in 1994 and was named a fellow of the American Academy of Microbiology in 1995. IAMFES is truly fortunate to welcome John Sofos as our new Co-Editor of the *Journal of Food Protection*. John will join Dr. Lloyd Bullerman and Dr. Larry Beuchat as a Co-Editor on September 1, 1995. Dr. Bullerman will retire as Co-Editor of the *Journal of Food Protection* on December 31, 1995.

Copesan Services Names New Director—National Accounts

Copesan Services, Inc. announces the naming of Greg Sacco to their National Accounts Sales Team. Sacco will serve as Director–National Accounts responsible for Copesan's sales efforts nationwide.

Sacco comes to Copesan with over 21 years experience in sales and sales management, to include 10 years selling to national accounts. Sacco is a graduate of the University of Illinois-Urbana, and has completed courses at the UCLA Graduate School of Food Management.

Copesan Services is a nationwide pest management company specializing in national and regional commercial accounts. Copesan serves the United States, Canada, Mexico and the Caribbean with over 600 service locations throughout North America.

Educational Foundation Names Marjorie McCartney Association Sales Manager

The Educational Foundation of the National Restaurant Association announces that Marjorie McCartney has been named Association Sales Manager.

In her new position, Ms. McCartney will oversee The Educational Foundation's sales of educational and training products and services to state and allied associations in the United States, as well as distributors worldwide.

Prior to joining The Educational Foundation, Ms. McCartney spent five years with the Anvan Corporation representing both the Knickerbocker Chicago Hotel and Geneva Lakes Resorts, in Lake Geneva, WI as their Chicago Regional Sales Manager.

She is the immediate past-president of Chicago Women in Hospitality, a charter member in the marketing section of the American Society of Association Executives and a Team Leader in Meeting Professionals International, Chicago Area Chapter. She received a bachelor of arts degree in communications from Bethany College in Bethany, West Virginia.

The Educational Foundation of the National Restaurant Association, a nonprofit organization based in Chicago, is dedicated to enhancing the professionalism of the foodservice industry through education and training. The Foundation develops and offers training products and services in areas including food safety, responsible alcohol service, safety and security, foodservice management, and profitability.

Paul Knight Named President and CEO of Lynnwood Industries

Paul L. Knight has been named to the positions of president and CEO by Lynnwood Industries Inc., Hawthorne, NJ. He was previously executive vice president of the national marketer of industrial valves, hose stations and plant hygiene systems.

Knight joined Lynnwood as a sales engineer in 1984. In 1987 he was named product manager of the company's Plant Hygiene Division. In his position he was responsible for developing Lynnwood's best-selling Steamix™ line of steam/water hose stations. Appointed to the position of vice president of sales and marketing in 1989, he directed a four-fold growth in sales for the

division. He was promoted to executive vice president in 1992. Prior to joining Lynnwood, Knight worked as a marketing manager in the textile industry.

Tri-Clover Names Domanico Pump Product Specialist

The appointment of Edward M. Domanico as a pump product specialist has been announced by Tri-Clover Inc.

In his new capacity, Domanico will provide technical support for pump applications, serving distributors and customers in the western United States. He will cover the company's positive rotary lobe pumps, as well as Tri-Clover's recently introduced line of air-operated diaphragm pumps.

Domanico rejoins Tri-Clover whom he served as a technical sales engineer between 1983 and 1987. He most recently served as a senior process development engineer with Molecular Bio Systems, San Diego, CA, where he was involved in automated processing systems, including CIP and SIP.

Chr. Hansen Names New Dairy Division Assistant Product Manager

Chr. Hansen, Inc., of Milwaukee, Wisconsin, announces the appointment of Lisa Lecher as Assistant Product Manager, Dairy Ingredients Division. Her duties include product line marketing, advertising and promotional programs, and product management support.

Lecher was most recently a Sales Secretary at Chr. Hansen, reporting directly to the Vice President of Sales and Marketing. Prior to that position, she was a Marketing Secretary at Chr. Hansen. Lecher's nine years of experience at Chr. Hansen includes increasing levels of responsibility in the support of sales, marketing, and direct customer services. Lecher has an Associates Degree in Business Management from Stratton College, Milwaukee, where she was a Dean's List Honor's student. She is a member of the Administrative Management Society.

Chr. Hansen is a leading developer and producer of cultures, enzymes, flavors and coloring agents for the food, dairy and agricultural industries.

DFISA's Technical Director Elected to USNAC Board

Dr. Thomas Gilmore, DFISA's Technical Director, has been elected to the Board of Directors of the United States of America National Committee of the International Dairy Federation (USNAC). Dr. Gilmore was elected to the 17-member Board on April 19, 1995, for a three year term.

In 1981, USNAC was formed to represent the United States dairy interests in the international dairy community. USNAC represents the U.S. dairy industry in the International Dairy Federation (IDF) and serves as the liaison between the IDF and America's dairy interests.

Established in Brussels in 1903, the IDF has grown to become the only organization representing the interests of the dairy industry at world level. The IDF is an independent, nonprofit association which aims to promote scientific, technical and economic progress in the international dairy field. It has 37 member countries.

International Dairy Congresses—originally the IDF's raison d'etre—are held every four years, with participation varying from 1,500 to as many as 4,000.

Wills Appointed Flavorite Account Executive

Memphis-based Flavorite Laboratories, Inc., a leading manufacturer and marketer of seasonings, ingredients and flavors to the food industry, announces the appointment of Gary Wills as Flavorite Account Executive for the North Central states area. Wills' responsibilities include serving food processors and food service operators in a six state region that includes Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. His office is in Orland Park, Illinois.

Wills joins Flavorite from Champlin Industries where he served as National Accounts Manager. He has also worked in sales with Quest Bio Products, Deltown, and Griffith Laboratories.

Mr. Ice Cream has a Fat Fetish

It's the fat–the creamy feel of tiny balls of flavor rolling over your tongue–that really gives ice cream its flavor," Mr. Ice Cream said.

"Trying to mimic that ball-bearing, roll-over-the-tongue effect with non-fat substitutes is a real challenge!"

Mr. Ice Cream, also known as Robert Marshall, University of Missouri professor of food science, is working on an enzyme that would affect milk protein in such a way that ice cream made from non-fat substitutes could still fool people into thinking the product was fat and creamy.

Normally, ice cream contains 10 percent fat. Marshall who gets his "Mr. Ice Cream" nickname because of all the improved ice cream products he has developed, is working with a lowfat ice cream containing 5 percent fat and is adding 5 percent fat replacers made out of whey or starch.

To make good-tasting, creamy ice cream the lowfat way, Marshall uses an enzyme to modify casein (milk protein) in the ice cream formula.

The key to ice cream taste is the fat flavor balls, which are relatively large (more than one micrometer) compared to the non-fat substitutes that do not carry flavor as does fat.

"The fat balls melt on your tongue. It's that lubricity we have a tough time duplicating with non-fat substitutes," Marshall said.

But he has a plan: Get the fine casein particles to stick together to make them behave more like fat but without the calories.

Casein is like fine clay suspended in water, Marshall explained. "In our research, we cause the fine particles to stick together to form balls several times larger and to give lowfat ice cream the same roll-over-the tongue effect you get from normal ice cream."

The search for ice cream that would keep dieters happy involves chemical and sensory analyses–from sophisticated computers to dozens of volunteers who happily compare the best of the University of Missouri's ice cream products, including Marshall's "Tiger Stripe." They also get a taste of the creamiest commercial ice creams and the lowfat and non-fat mimetics (fat replacers), reacting to each by moving a computer mouse to indicate likes and dislikes.

The best way to produce the casein mimetic is to add the enzyme to very hot milk, so the enzyme is destroyed in a very short time. "This gives us more of a milk-fat texture," Marshall said.

"We have been working with a batch process. Now we want to develop a continuous process that will allow ice cream makers to use the development in large equipment. The enzyme needs to be controlled for how fast it works and for how long.

"We know the principle works. Now we are refining the process to make a final product that really appeals to consumers."

Contact Robert Marshall (314) 882-7355.

This release is available via modem from the Agricultural Electronic Bulletin Board. In the Columbia dialing area, call (314) 882-8289. Outside Columbia, dial 1-800-862-4322. Voice line for assistance, (314) 882-4827.

Wisconsin Dairy Experts Assist Privatization in Ukraine

The Winrock International NIS Farmer-to-Farmer Program recently sent Wisconsin volunteers Shari Olm and Brian Riesterer to assist the development of private dairy processing enterprises in Ukraine. Winrock International works around the world to increase agricultural productivity and rural employment while protecting the environment. In the former Soviet Union, Farmer-to-Farmer volunteers help farmers, agribusinesses, and government officials adapt to a free-market agricultural system.

Shari Olm, St. Nazianz, Wisconsin, works for the Pine River Dairy in Manitowoc, Wisconsin. Olm is licensed as a buttermaker and buttergrader and works in all aspects of the business. Brian Riesterer, Kiel, Wisconsin, is a dairy technologist for the Pine River Dairy. In 1993, Riesterer completed a Farmer-to-Farmer assignment to assist cheese manufacturing in the Kyrgyz Republic.

Olm and Riesterer spent approximately 3 weeks helping to develop business plans for two new dairy processing facilities in Ukraine. They helped assess the locations, people, available resources, and potential for private enterprise. They also provided demonstrations and training for cheesemaking, equipment, sanitation, and financial planning for dairy processing facilities.

In the Transcarpathian region of Ukraine, Olm and Riesterer worked with a company called Trembita that currently has a mushroom drying facility. The company's owner would like to start a dairy processing facility that shares ownership with his female family members and several other local women. The volunteers noted that this group needs to learn about food sanitation practices and business planning in a free-market

context. However, they felt there were some positive characteristics in this location, including a hardworking, well-educated group of people and fertile land which could support additional and higher quality dairy cows.

The second location, in the Sokal district of Ukraine, is a remote village with poor roads, which could lead to transportation problems for any dairy processing facility. To avoid competing with existing dairy plants in the district, the volunteers' host would like to begin making soft-serve ice cream. The volunteers helped develop a plan for such a facility, explaining that the equipment is relatively inexpensive and easy to maintain. The soft-serve ice cream mix only requires refrigeration and can be packaged in clear plastic bags to make transportation and storage easier. The volunteers also provided a recipe and list of equipment needed to begin such a facility.

Slightly smaller than Texas in size, Ukraine was a breadbasket for the former Soviet Union, producing one-fourth of all agricultural outputs. Agriculture in Ukraine is undergoing substantial change following the breakup of the former Soviet Union and Ukraine's independence. In 1992, Ukraine had approximately 30,000 private farms in addition to the household plots cultivated by individuals and families. Agribusiness development and value-added processing of agricultural products is an important strategy to support the privatization of the agricultural sector.

The NIS Farmer-to-Farmer Program funded by the United States Agency for International Development (USAID) is a three-year project designed to increase food production, stimulate efficient farm management, improve food processing and distribution, and enhance marketing efforts in seven former Soviet states: Kazakhstan, Kyrgyzstan, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan. Winrock International's Farmer-to-Farmer Program enables U.S. volunteers, including farmers, educators, agribusiness specialists, extension workers, and other agricultural professionals to share their knowledge and expertise with people adapting to a market-driven economy.

Winrock also operates the Global Farmer-to-Farmer Program, with funding from USAID, in Burkino Faso and Senegal in Africa; and Mexico, Nicaragua, and Panama in Central America.

Winrock International is a private, nonprofit organization that works to improve the lives of rural people by increasing agricultural productivity and rural employment while protecting the environment. Winrock also helps strengthen institutions and policies, and develop human resources to bring about lasting change.

Winrock's staff of more than 200 also implements projects in the United States and over 40 countries around the world. Activities are funded by grants, contracts and contributions from public and private sources. Headquartered on Petit Jean Mountain, 70 miles northwest of Little Rock, Arkansas, Winrock also has offices in Arlington, Virginia; Abidjan, Côte d'Ivoire; Nairobi, Kenya; and Manila, the Philippines.

For more information about Winrock International's Farmer-to-Farmer Program, write to Farmer-to-Farmer Program Director, Winrock International, Route 3, Box 376, Morrilton, Arkansas 72110.

Take Control in Your Kitchen: Prevent Food Safety Problems

At least seven million Americans will suffer from foodborne illness this year. Bacteria that you can't see, smell or taste can multiply under the "right" temperature conditions and multiply to millions in just a few hours. In large numbers, they can make you sick.

But you can prevent practically all food safety problems by "taking control" in your own kitchen. Some 85 percent of food illness cases could be avoided if people handled food properly, according to the U.S. Department of Agriculture (USDA).

Here's what to do:

1. When you shop, buy cold food last and get it home fast.
2. When you store food, keep it safely refrigerated.
3. When you prepare food, keep everything clean. Thaw food in the refrigerator.
4. Cook food thoroughly.
5. When you serve food, never leave it out over two hours.
6. When you handle leftovers, use small, shallow containers for quick cooling.
7. When in doubt about whether you've kept food too long, throw it out.

Overall responsibility for food safety rests with everyone in the food system—producers, processors, distributors, retail outlets and consumers. "We need to quit blaming others," says Joellen Feirtag, food safety specialist with the University of Minnesota's Extension Service. "Raw food is not 'sterile.' It must be handled and prepared properly."

A number of Minnesota Extension Service publications have more detailed food safety information. They include:

- "A Quick Consumer Guide to Safe Food Handling," item FO-5711-NR, price $1.
- "Bacterial Foodborne Illnesses," item FO-3521-NR, price $1.
- "Food Safety for Bazaars, Buffets, and Community Suppers," FO-6455-NR, price $1.
- "Food:How Safe is Safe?" FS-5524-NR, free.

For more information on the publications, contact the MES Distribution Center by phone at (612) 625-8173, or by e-mail (orders@dc.mes.umn.edu). Orders of $5 or more can be charged to your Discover, Mastercard or VISA card.

Send a check or money order payable to the University of Minnesota to MES Distribution Center, 20 Coffey Hall, University of Minnesota, St. Paul, MN 55108-6069. Include the title and item number in your order.

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This article is available electronically from the Minnesota Newspaper Foundation's News Current system. Call (612)672-0948 for more information.

IFT Supports Third-Party Scientific Review for Food Additives

The Institute of Food Technologists (IFT) announced today that it supports the use of third-party scientific review panels to improve the Food and Drug Administration's food additive review system.

"IFT supports the use of such safety review panels to enhance the agency's review of substances as long as the panels focus primarily on assessing the adequacy of the scientific data to assure safety and are comprised of scientists with pertinent expertise," Al S. Clausi, IFT immediate past president, said in his testimony to the House Government Reform Committee's Subcommittee on Human Resources and Government Relations. Such panels should include expertise from industry, academia, and government wherever possible, Clausi added.

"As a multidisciplinary scientific society with thousands of members working in food science and technology, IFT includes esteemed toxicologists, biochemists, and other scientists in disciplines pertinent to safety evaluation," he said. Clausi said IFT could identify members with technical expertise to assist in the review process.

"IFT believes that petitions for new food additivies and GRAS substances must be reviewed more expeditiously than is currently the custom to ensure that innovation is not stifled and the introduction of new, useful, and safe ingredients is not hindered," he said. "IFT believes that it is critical that the thoroughness and integrity of the scientific review process be preserved in efforts to streamline the safety review process."

Founded in 1939, IFT is a nonprofit scientific society with 28,000 members working in food science, technology and related professions in industry, academia and government. As the authoritative voice of food science and technology, IFT brings sound science to the public discussion of food issues.

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Solartron Instruments, Inc.

Powerful 'Lab-in-a-Box' Redefines the Price/Performance Ratio for Electrochemical Investigation

Solartron Instruments, Inc., has launched an integrated electrochemistry investigation tool that is ideal for research laboratories, universities and quality departments. Building on the company's highly successful corrosion monitor, this 'lab-in-a-box' is the first to provide researchers and scientists with the complete range of electrochemistry investigation techniques. Called the SI1280A, the unit offers DC and AC impedance, harmonic analysis and – uniquely – electrochemical noise measurement, making it a highly effective tool. Solartron's Windows-based applications software portfolio provides full support for the instrument, including comprehensive experiment management and powerful data analysis and display facilities.

By close-coupling a powerful frequency response analyzer with a very stable potentiostat, Solartron has created a highly cost-effective, integrated bench-top unit that provides near laboratory-standard performance for only 50% of the cost of equivalent instruments.

Solartron's comprehensive applications software portfolio–including Omega Pro and the recently launched ZPLOT/Z60 for Windows–simplifies SI1280A control, data management and results display. ZPLOT/Z60 incorporates the latest advanced complex non-linear least-squares fitting algorithm {LEVM} to speed analysis of electrochemical impedance spectroscopy data in the investigation of material properties. Simple to use menus enable researchers to set up and save complex measurement sequences quickly and efficiently, and to select from over 30 on-line, full color display formats–including equivalent circuits and three-dimensional graphs–to enhance results presentation.

Solartron Instruments, Inc., Dublin, CA

Reader Service No. 330

General Rubber Single Arch Maxi-Joint® Expansion Joint with FDA Grade Elastomers for Food and Pharmaceuticals

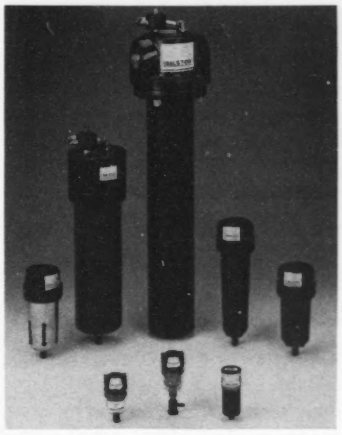
General Rubber Corporation's molded style 1015 MAXI-JOINT, single arch expansion joints are available in elastomers that meet FDA requirements for food and pharmaceutical processing applications. They are noncorrosive, and the continuous flexing of the rubber prevents the formation of scale.

Designed to absorb more movement under higher pressures, and in higher temperatures than conventional expansion joints, General Rubber MAXI-JOINTS are constructed of high strength fabric and reinforced with metal rings or wire.

General Rubber MAXI-JOINT 1015 features flanges that are integral to the body of the joint with standard ANSI B16.1 and B16.5 drilling to conform to the bolt holes of the companion metal flanges in the pipeline. The joint flanges form a tight seal against the metal pipes without the use of gaskets.

General Rubber Corporation, Hackensack, NJ

Reader Service No. 331



Whatman, Inc.

Balston® Stainless Steel Sample Filters

A new, line of Balston® stainless steel sample filters designed specifically to protect process analyzers and monitoring equipment are now available from Whatman, Inc.

The models 31S6, 31G, 41S6, 41G, and the 91S6 remove solids

and liquids from gases with 99.99% efficiency at 0.1 µm, and solid particulate removal from liquids to .2 µm. These filters protect analyzers from sample impurities which are the most frequent cause of maintenance problems for instruments in an industrial environment.

These new filters are lower in cost than the Balston conventional stainless steel filter line. They are also more compact in design resulting in a smaller internal volume and faster sampling times.

The new improved design requires no tools to change the filters. Other design features include 1/2" NPT ports, maximum temperature of up to 400°F, and maximum pressure of up to 500 psig.

To satisfy the extremely wide range of requirements for analyzer sample filters, Whatman also supplies complete lines of Balston filter housings in teflon®, monel, and other corrosion resistant materials, plus a choice of high efficiency filter elements which are inert to virtually all liquids and gases.

Whatman, Inc., Haverhill, MA

Reader Service No. 332

Salmonella Test Kit for Meat and Poultry Released

Neogen Corporation has begun marketing a new rapid diagnostic test for the detection of pathogenic salmonellas found in meat and poultry products.

The easy-to-use, one-step test has been in field studies and test marketing for several months. Neogen's test for the detection of pathogenic salmonellas uses the same format as the Company's *E. coli* O157:H7 test that is currently being used by the USDA-FSIS.

Sold under the name Micro-Screen™ for *Salmonella*, this test takes 15 minutes to run and is designed to rapidly test meat and poultry samples without tedious and expensive laboratory procedures. The one-step design combines the technology of chromatography with the sensitivity and selectivity of a sandwich type immunoassay.

Prior to using Micro-Screen for *Salmonella*, samples must be enriched using traditional media or a special resuscitation medium called Revive™, available exclusively from Neogen. When using Revive, meat and poultry samples require only a 20 hour incubation with a selective enrichment medium.

"Before the release of Micro-Screen, methods of identifying pathogenic types of *Salmonella* in meat and poultry products had taken 2 to 5 days," said James Herbert, Neogen president and CEO. "In addition to its speed, this test is the simplest on the market," he said.

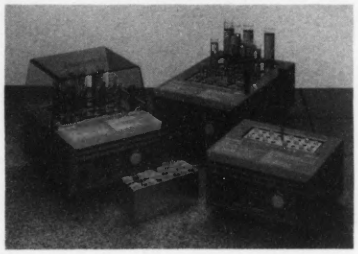
Meat and poultry processors and retailers are stepping up efforts to minimize levels of this harmful microorganism. According to the Centers for Disease Control and Prevention, meat and poultry products contaminated with *Salmonella* contribute significantly to the estimated 7 million cases of foodborne illness and 7,000 deaths each year in the United States.

Neogen Corporation, Lansing, MI

Reader Service No. 333

New ... Digital Block Heaters

Science/Electronics announces the expansion of its controlled temperature product line to include a new QBT series of digital block heaters. Various models operate within temperature range ambient +5° to 150°C and maintain stability and uniformity of ± 0.1°C. Designed for ease of use, the units can hold different size blocks simultaneously.



Science/Electronics, Inc.

The QBT Block Heaters combine precise temperature control with the convenience and accuracy of digital temperature setting and display. The blocks accommodate many different shapes and sizes of vessels, from microcentrifuge tubes to universal bottles. The unique design incorporates sensible safety features, such as a stay-cool outer case, a block removal tool and optional safety cover to prevent accidents and splashing. The block heaters are designed to be easily carried and are spill proof. They provide a stable and vibration free environment for sensitive procedures. QBT Block Heaters provide safe operation at high temperatures without the need to use oil.

Science/Electronics, Inc., Dayton, OH

Reader Service No. 334

The Dickson Company Offers Free Slide Chart of Recommended Temperatures for Food Transport and Storage

The Dickson Company, the Chicago-based leader in circular-chart recorders, has announced the availability of a first-of-its-kind, slide-chart for verifying

recommended protective temperatures and relative humidity-levels for the transportation and storage of meat, poultry, seafood, fruits and vegetables, and dairy products. While supplies last, the Dickson Food Transport & Storage Temperature Slide Chart will be distributed free of charge on a first-come-first-served basis.

"The food-processing, transportation, and retail industries are serious in their efforts to comply with the standards that protect the perishable goods they handle," commented The Dickson Company president, Mike Unger. "For more than 70 years now, Dickson has provided these industries with the recorders they need to comply, and now we're very pleased to be able to provide an additional informational tool to help make their jobs easier."

Designed to fit in a work-shirt pocket, the 3 1/2 × 9 1/4 inch, light-weight Dickson Food Transport & Storage Temperature Slide Chart is a convenient-to-carry resource tool for food-industry professionals and transporters to reference appropriate temperature and relative-humidity information by food type. Information presented on the slide chart is based on USDA and American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) temperature and relative-humidity recommendations for the safe storage and transportation of food products. As a reliable reference tool, the Dickson Food Transport & Storage Temperature Slide Chart assists its users in adhering to Hazard Analysis Critical Control Point (HACCP) principles.

To use the slide chart, one simply needs to pull the inner card towards them until the indicator aligns with the food type being stored or transported. The recommended protective temperature and relative-humidity levels will appear clearly in the windows on the front of the chart. By keeping the slide chart handy in a shirt pocket or attached to their clip board, users would never be without quick access to the essential information they need to protect the perishable goods they are storing or transporting.

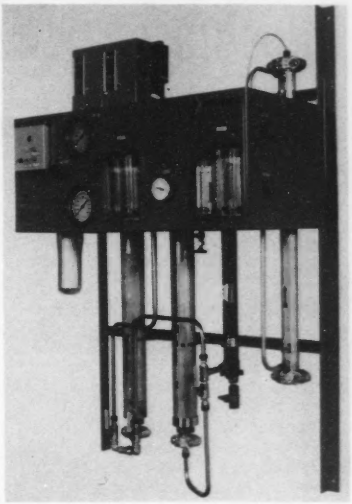
To receive the Dickson Food Transport and Storage Temperature Slide Chart, free of charge, call 1-800-323-2448 (708/543-3747 in Illinois). Slide charts will be distributed on a first-come first-served basis while supplies last, with a limit of five per order.

The Dickson Company, Addison, IL

Reader Service No. 335

Compact UF/RO Pilot Unit Provides Reliable System for Process Evaluation

Osmonic's PES/OSMO®19T-80 Process Evaluation System (PES) enables researchers and process control engineers to accurately investigate RO and UF processes. PES users can control the degree to which a solution may be concentrated and determine separation efficiencies at various concentrations and with a variety of membranes. These lab-scale pilot units have already found wide use in pollution control, food processing, electronics, pulp and paper, chemical and pharmaceutical manufacturing.



Osmonics, Inc.

The standard system includes a pre-wired motor starter, pilot light, low-pressure cut-out switch, flow meters, solenoid valve, elapsed time meter, thermometer and stainless steel panel-mounted valve. Two pressure gauges on the panel indicate pressure drop across the sepralator. Accessories supplied with the UF/RO PES include a stainless steel heat exchanger, temperature control switch and a start-up kit containing detergent, disinfectant and dispersant. Among the many optional items available for use with the system are stainless steel transfer pumps, conductivity meters, light alarms and relays and a choice of eight different sepralator membranes.

Osmonics, Inc., Minnetonka, MN

Reader Service No. 336

BusinessExchange

Services/Products

Senior Quality Assurance Inspector

Quality for Darden Restaurants, Inc. is both a hallmark and a commitment. As one of the nation's leading restaurant companies, and the name behind such successes as Red Lobster, The Olive Garden, and China Coast, we are positioned to offer you unparalleled professional growth and development as a Senior Quality Assurance Inspector at our corporate headquarters in Orlando, Florida.

You will ensure the highest standards of food safety and quality of the products used by our restaurant companies. This will involve performing analytical tests/inspections (chemical, physical, and biological) on new and current food products to ensure that specifications are met.

The ideal candidate for this position will have a BS degree in Food Science/Food Technology or related biological science degree; MS degree is preferred. The candidate will have at least 2 years' experience in a laboratory setting which involved the testing and evaluation of various types of food products. Effective oral and written communication skills as well as computer knowledge are also required.

Join us in a professional environment that encourages growth, firmly supports cultural diversity, and promotes safety through pre-employment drug screening. For immediate consideration send or fax your resume to: Darden Restaurants, Inc., Attn: S.D. Lock, Dept. QA, P.O. Box 593330, Orlando, FL 32859-3330. FAX: (407) 245-5114.

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ATTENTION MEMBERS...

Don't forget that one of your member benefits is a **free** self-advertisement in the employment section of the Business Exchange! If you are seeking employ-ment or a job change, why not take advantage? Contact Rick McAtee at (515) 276-3344 or (800) 369-6337 or mail to Editor, *Dairy, Food and Environmental Sanitation*, c/o IAMFES, 6200 Aurora Ave., Suite 200W, Des Moines, IA 50322-2863 for more information.

Advertising Index

Coming Events

OCTOBER

·2-4, Servsafe® Serving Safe Food Seminar, Boston, MA, co-sponsored by the Massachusetts Restaurant Association, held at the Harborside Hyatt. The popular seminar is based on the nationally recognized SERVSAFE® Serving Safe Food program from The Educational Foundation. For additional information, or to register, contact The Educational Foundation's customer service department at (800) 765-2122.

·4-5, Crossflow Membrane Technology Workshop, The workshop will cover the fundamentals of reverse osmosis, nanofiltration, ultrafiltration and microfiltration, total system design considerations, pilot testing of new applications, and the "zero discharge" approach to pollution control. Hands-on operation of bench-top, pilot and full-scale equipment will be included both days of the workshop. For more information, contact Ms. Bette Nelson, Travel & Seminar Coordinator, OSMONICS, 5951 Clearwater Dr., Minnetonka, MN 55343; (612) 933-2277.

·7-10, ACIL 58th Annual Meeting, "The Science of Service," The meeting is designed for owners, managers and senior executives in commercial laboratory, testing, and R & D industry. For further information, contact ACIL, 1629 K Street, NW, Washington, DC; 20006; phone (202) 887-5872 or fax (202) 887-0021.

·10-11, Food Plant Sanitation Workshop, Specific subjects will include basic principles of HACCP, sanitary design standards, updates on pesticide concerns, and successful control strategies. For further information, contact Registrar, American Institute of Baking, 1213 Bakers Way, Manhattan, KS 66502; or call (913) 537-4750 or (800) 633-5137.

·11-12, Iowa Association of Milk, Food and Environmental Sanitarians Annual Meeting, will be held at the Best Western Starlite Village (formerly the Ramada Hotel), in Waterloo, IA. Please contact Dale Cooper at (319) 927-3212 for further details.

·11-13, Symposium 1995 Québec, The Government of Canada, the Province of Québec and the City of Québec have decided to jointly organize an international Symposium. This Symposium will commemorate the 50th anniversary of the United Nations Food and Agriculture Organization (FAO) in Québec City where it was founded in 1945. For further information, contact Marie-Chantale Lortie, Communications Officer, at the Symposium Secretariat, telephone (418) 691-4719; fax (418) 691-7815.

·16-18, Servsafe® Serving Safe Food Seminar, Los Angeles, CA, held at the Hyatt Regency Los Angeles. The popular seminar is based on the nationally recognized SERVSAFE® Serving Safe Food program from The Educational Foundation. For additional information, or to register, contact The Educational Foundation's customer service department at (800) 765-2122.

·16-18, Institute of Food Technologists Practical Aspects of Food Irradiation, The Camberly Plaza Hotel, Tampa, FL. Short course and food irradiation facility tour cosponsored by the IFT Continuing Education Committee and American Association of Cereal Chemists. For more information, contact Dean Duxbury, IFT's Director of Professional Development, 221 N. LaSalle St., Suite 300, Chicago, IL 60601; telephone (312) 782-8424; fax (312) 782-8348.

·17-18, American Institute of Baking's Sanitation through Design Seminar, Manhattan, KS. Shows how to aggressively and effectively address the problems of food safety by designing pests out of operations. For additional information, or to enroll contact AIB, 1213 Bakers Way, Manhattan, KS 66502; telephone (913) 537-4750 or (800) 633-5137; fax (800) 537-1493.

·30-31, HACCP: Hazard Analysis Critical Control Points—A Basic Concept for Food Protection, at UC Davis for food industry and related personnel. HACCP provides a systematic approach for identifying and monitoring possible sources of biological, chemical and physical contamination. This two-day workshop, presented by the Food Processors Institute, educates safety professionals about the use of HACCP principles. To request a complete brochure or to enroll call toll free (800) 752-0881.

NOVEMBER

·1-3, Designing a Modern Milking Center Conference, During this conference, the audience will learn methods for planning and operating an efficient milking center, including parlor selection, milking center layout, materials and equipment selection, cow handling, labor management, financing and economics. For further information, contact Northeast Regional Agricultural Engineering Service, 152 Riley-Robb Hall, Ithaca, NY 14853-5701; telephone (607) 255-7654; fax (607) 255-4080.

·2-3, Understanding HACCP, Bedford Park, IL (Chicago area). This introductory short course covers the principles and support programs important in developing a HACCP plan. Attendees will work through examples of HACCP plans. For more information, contact David Gombas, National Center for Food Safety and Technology; telephone (708) 563-1576; fax (708) 563-1873.

·4-6, 6th Egyptian Conference of Dairy Science and Technology, Cairo, Egypt. Organized by The Egyptian Soc. of Dairy Science. For more

information, contact Dr. M. H. Abd El-Salam, National Research Center, Dokki, Cairo, Egypt; telephone (20-2-625 026) or fax (20-2-700 931).

·**4-7, MegaShow Food & Dairy EXPO and IEFP,** Chicago, IL. Other than being an incredible trade show, MegaShow will be the central activity of a tremendous educational effort. For more information contact: Tom Gilmore, DFISA's Technical Director, at (703) 761-2600; fax (703) 761-4334.

·**5-9, Anuga FoodTec International Food Technology Fair,** Anuga FoodTec will be an extensive multi-industry food technology trade fair, but will also allow individual product categories to present themselves independently. Anuga Foodtec guarantees a comprehensive overview of the food processing and packaging technology sectors. For further information, contact Cologne International Trade Fairs, Inc., 40 West 57th St., 31st Floor, New York, NY 10019; telephone (212) 974-8836.

·**5-9, American Association of Cereal Chemists 80th Annual Meeting,** The world's largest gathering of cereal industry professionals will convene their 80th Annual Meeting in San Antonio, Texas at the Henry B. Gonzales Convention Center. AACC Annual Meeting registration materials are available after July 1, 1995, from AACC Headquarters, 3340 Pilot Knob Road, St. Paul, MN 55121-2097 U.S.A.; telephone (612) 454-7250; fax (612) 454-0766.

·**8-9, Food Plant Sanitation Workshop,** Specific subjects will include basic principles of HACCP, sanitary design standards, updates on pesticide concerns, and successful control strategies. For further information, contact Registrar, American Institute of Baking, 1213 Bakers Way, Manhattan, KS 66502; or call (913) 537-4750 or (800) 633-5137.

·**9-10, Getting Started with Hazard Analysis and Critical Control Point (HACCP) System,** For more information, contact the AACC Short Course Dept., 3340 Pilot Knob Road, St. Paul, MN 55121-2097; telephone (612) 454-7250 or fax (612) 454-0766; e-mail aacc@scisoc. org.

·**15-18, AWT Water Technologies '95,** Phoenix, Arizona. In addition to the sessions, a major exhibition will feature the newest products and services offered by key suppliers to small- and medium-sized companies. For more information, contact Cathleen Connolly at the Association Headquarters: (703) 524-0905.

·**29-Dec. 1, Designing a Modern Milking Center,** Rochester, New York. Parlors, Milking Systems, Management, and Economics. Will provide the information necessary to plan, design, finance, construct, and manage an efficient, profitable milking center. For further information phone (607) 255-7654; fax (607) 255-4080; e-mail: nraes@cornell.edu.

DECEMBER

·**6-8, Institute of Food Technologists Introduction to Quality Management in the Food Industry Workshop,** Statler Hotel, Ithaca, NY. Short course co-sponsored by the IFT Continuing Education Committee, IFT Quality Assurance Division, Cornell University Institute of Food Science, and Cornell Cooperative Extension. For more information, contact Dean Duxbury, IFT's Director of Professional Development, 221 N. LaSalle St., Suite 300, Chicago, IL 60601; telephone (312) 782-8424; fax (312) 782-8348.

·**7-8, Institute of Food Technologists Small Business Management Workshop,** Benton Convention Center, Winston-Salem, NC. 1-1/2 day short course co-sponsored by IFT Continuing Education Committee and Carolina-Virginia Section IFT in conjunction with Carolina-Virginia Section IFT Suppliers Night. For more information, contact Dean Duxbury, IFT's Director of Professional Development, 221 N. LaSalle St., Suite 300, Chicago, IL 60601; telephone (312) 782-8424; fax (312) 782-8348.

·**7-8, Managing Dairy Farms Into the 21st Century,** a dairy management symposium sponsored by Penn State's College of Agricultural Sciences and Monsanto, Inc., will address topics vital to the dairy industry's future. For more information, contact Michael O'Connor at (814) 863-3913.

JANUARY 1996

·**10-12, Calves, Heifers and Dairy Profitability: Facilities, Nutrition, and Health** will be a multidisciplinary conference that covers alternatives for the planning and operation of profitable and efficient replacement programs. Programs that result in calving at 20-22 months will be highlighted. For further information, contact NRAES, 152 Riley-Robb Hall, Ithaca, NY 14853-5701; telephone (607) 255-7654; fax (607) 255-4080; e-mail: nraes@cornell.edu.

FEBRUARY 1996

·**13-15, Institute of Food Technologists Low-Calorie Food Product Development,** Grosvenor Resort, Orlando, FL. Course co-sponsored by the IFT Continuing Education Committee and American Association of Cereal Chemists. For more information, contact Dean Duxbury, IFT's Director of Professional Development, 221 N. LaSalle St., Suite 300, Chicago, IL 60601; telephone (312) 782-8424; fax (312) 782-8348.

·**18-22, 2nd International Meeting on Predictive Microbiology,** Hobart, Australia. This conference will present the world's best practice in the development and application of modelling microbial behavior in foods. For more information, please contact Tom McMeeking, Dept. of Agricultural Science, University of Tasmania, GPO Box 252C, Hobart 7001 Tasmania; telephone (+61) 02 20 2620 or fax (+61) 02 20 2642.

·**28-March 2, 4th International Machinery Equipment and Raw Material Dairy Fair,** in Guadalajara, Jalisco (Mexico), Promotion to potential buyers, positioning in the market, and image consolidation. For further information contact Grupo Gefecc, S.A. DE C.V. Av. Baja California No. 32-A, Col. Roma C.P. 06760 Mexico, D.F., telefaxes (525) 264-70-29/564-03-29/564-70-40/574-56-96.

This is Your Personal Invitation to Join

The International Association of Milk, Food and Environmental Sanitarians, founded in 1911, is a non-profit educational association of food protection professionals. The IAMFES is dedicated to the education and service of its members, specifically, as well as industry personnel in general. Through membership in the Association, IAMFES members are able to keep informed of the latest scientific, technical and practical developments in food protection. IAMFES provides its members with an information network and forum for professional improvement through its two scientific journals, educational annual meeting and interaction with other food safety professionals.

Who are IAMFES Members?

The Association is comprised of a diverse membership of over 3,500 from 75 nations. IAMFES members belong to all facets of the food protection arena. The main groups of Association members fall into three categories: Industry Personnel, Government Officials and Academia.

Why are They IAMFES Members?

The diversity of its membership indicates that IAMFES has something to offer everyone involved in food protection and public health.

Your Benefits as an IAMFES Member

Dairy, Food and Environmental Sanitation — Published monthly, this is the official journal of IAMFES. Its purpose is the disseminating of current information of interest to the general IAMFES membership. Each issue contains three to five informational applied research or general interest articles, industry news and events, association news, columns on food safety and environmental hazards to health, a food and dairy industry related products section, and a calendar of upcoming meetings, seminars and workshops. All regular IAMFES members receive this publication as part of their membership.

Journal of Food Protection — A refereed monthly publication of scientific research and authoritative review articles. Each issue contains 15 to 20 technical research manuscripts and one to five articles reporting a wide variety of microbiological research pertaining to food safety and quality. The *Journal of Food Protection* is internationally recognized as the leading publication in the food and dairy microbiology field. This journal is available to all individuals who request it with their membership.

The IAMFES Annual Meeting — Held in a different city each year, the IAMFES Annual Meeting is a unique educational event. Three days of technical sessions, scientific symposia and commercial exhibits provide members and other industry personnel with over 200 presentations on the most current topics in food protection. It offers the opportunity to discuss new technologies and innovations with leading authorities in various fields concerned with food safety. IAMFES members receive a substantially reduced registration fee.

To Find Out More...

To learn more about IAMFES and the many other benefits and opportunities available to you as a member, please call (515) 276-3344 or (800) 369-6337.

"The mission of IAMFES is to provide food safety professionals worldwide with a forum to exchange information on protecting the food supply"

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	Procedures to Investigate Arthropod-borne and Rodent-borne Illness	6.00	9.00	
	Procedures to Implement the Hazard Analysis Critical Control Point System	6.00	9.00	
	Pocket Guide to Dairy Sanitation (minimum order of 10)	.50	.75	
	Multiple copies available at reduced prices. Phone our order desk for pricing information on quantities of 25 or more.		Shipping/Handling (See Below)	
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☐ Check here if you are interested in information on joining your state/province chapter of IAMFES

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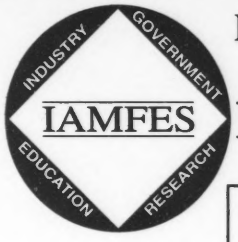

Reader Service Card

DFES September '95

Expires: November 30, 1995 (International expiration: February 29, 1996)

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For information on membership with IAMFES, Circle #100 on this card. ▶

100	115	130	145	161	175	190	205	220	235	250	265	280	295	310	325	340	355	370	385
101	116	131	146	162	176	191	206	221	236	251	266	281	296	311	326	341	356	371	386
102	117	132	147	163	177	192	207	222	237	252	267	282	297	312	327	342	357	372	387
103	118	133	148	164	178	193	208	223	238	253	268	283	298	313	328	343	358	373	388
104	119	134	149	165	179	194	209	224	239	254	269	284	299	314	329	344	359	374	389
105	120	135	150	166	180	195	210	225	240	255	270	285	300	315	330	345	360	375	390
106	121	136	151	167	181	196	211	226	241	256	271	286	301	316	331	346	361	376	391
107	122	137	152	168	182	197	212	227	242	257	272	287	302	317	332	347	362	377	392
108	123	138	153	169	183	198	213	228	243	258	273	288	303	318	333	348	363	378	393
109	124	139	154	170	184	199	214	229	244	259	274	289	304	319	334	349	364	379	394
110	125	140	155	171	185	200	215	230	245	260	275	290	305	320	335	350	365	380	395
111	126	141	156	172	186	201	216	231	246	261	276	291	306	321	336	351	366	381	396
112	127	142	157	172	187	202	217	232	247	262	277	292	307	322	337	352	367	382	397
113	128	143	158	173	188	203	218	233	248	263	278	293	308	323	338	353	368	383	398
114	129	144	160	174	189	204	219	234	249	264	279	294	309	324	339	354	369	384	399

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