

ISSN: 1043-3546

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300 NORTH ZEEB ROAD
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January • 1992

Vol • 12 • No. 1 • Pages 1-56

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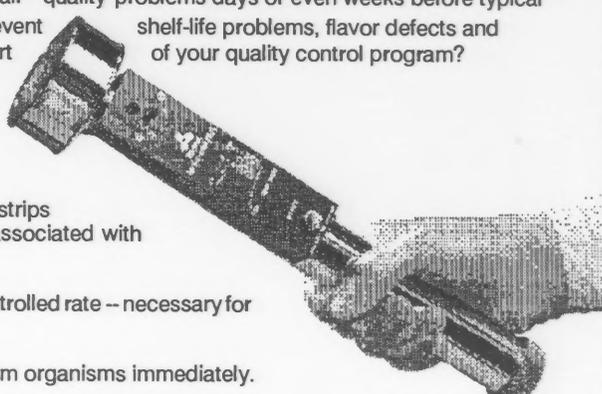
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On My Mind . . .



By
Steven K. Halstead
IAMFES
Executive Manager

. . . the New Year

January is the traditional time for people either to reflect on the year past - perhaps recap the events or to wax philosophically about the upcoming year. I'll probably do both.

My first problem is "What New Year?" January is, of course, the calendar's New Year. But there are so many others. Our fiscal "New Year" is July 1. Our officer's "New Year" begins at the awards banquet on the last night of our annual meeting.

In many respects, our annual meeting represents a "New Year" - either the end or the beginning, I'm not sure which. We seldom celebrate it - we're simply too tired.

Although it is a very informal "New Year," September marks the beginning of many of our activities - especially where our affiliates are concerned. About half of the affiliates meet in the fall - the other half meet in the spring. So, I guess there's another "New Year."

Then there is our membership "New Year." About 70% of our members renew at the end of December. For them, the membership year is January 1 to December 31.

Everybody else has a different membership "new year" depending on when we receive their dues. Thus, while January 1 is the "biggie," every month is a new year for somebody in the association.

Many of our members are government employees, so they get wrapped up in the federal fiscal year of October 1 to September 30. (Isn't it amazing how the flow of money can direct our lives?) If you don't believe it, talk to someone involved in federally funded programs of any kind. Even suppliers get caught up in that celebration.

We haven't mentioned the Jewish, Christian, Ancient Egyptian, Celtic, Aztec, Inca or Chinese new years. Many CPA's consider April 16 as "New Year's Day."

Clearly, a person could spend a great deal of time celebrating the New Year. The snack food and beverage industries would love that!

Assuming the traditional "New Year," 1991 was a very good year for your Association. There are a couple of accomplishments that I would like to bring to your attention.

We engaged a new accounting firm to do our annual audits. We selected Deloitte and Touche - a "Big Six" firm with offices in all the major cities of the world, including

Des Moines. They conducted the most thorough audit this association has ever seen. Yes, it was more expensive than previous audits, but it was worth it. We now have a better understanding of our financial strengths - and weaknesses - than we have perhaps ever had. We also have benchmarks by which to measure our progress in the future.

This year, we computerized our bookkeeping in the office. Right now we are getting monthly financial statements in a more timely fashion. We are also able to track our expenditures "on line" which means that at any point in time, I can find out how much of a given budget line item has been spent or how we are doing on advertising income. As we get more comfortable with the system we will do our payroll, accounts receivable (ie, generate bills for advertising) and accounts payable (pay our bills). All this will not only increase our efficiency, it will also give us more control and much needed information.

1991 saw the publication of "Procedures to Implement the Hazard Analysis Critical Control Point System." This manual joins a growing number of IAMFES publications that are receiving world-wide distribution and acclaim. Frank Bryan and the "Communicable Diseases Affecting Man" Committee are to be congratulated for an outstanding job.

For the first time, we offered a "pre-annual meeting" workshop. Some 40 participants received a day and a half of intense instruction on how to investigate foodborne illnesses. The workshop was taught by Frank Bryan, who did his usual outstanding job. The success of the workshop has encouraged us to do it again. In fact, we will offer two pre-meeting workshops in Toronto - one on HACCP and one on Food/Milk Processing Plant Sanitation.

We offered a video theater for the first time this year which featured videos from our Lending Library as well as submitted videos. Again, the success of the offering has encouraged us to offer an expanded theater in Toronto.

The other successful innovation at the Annual Meeting was a poster session. Submitted papers and committee reports were offered and widely accepted with praise. This is yet another area where July 26-29 will bring an expansion.

There were a host of other successes in 1991 - some for IAMFES, some with IAMFES and some personal.

Here's hoping your 1991 was as good as ours and that 1992 will be even better!

Thoughts From the President . . .

By
Damien A. Gabis
IAMFES President



Plans for the 1992 Annual Meeting are being finalized by the Program Advisory Committee (PAC) under the leadership of President-Elect Michael Doyle and PAC Chairperson Mark Banner. And, now's a good time for you to make your own plans to attend the 79th Annual Meeting at the Sheraton Centre in Toronto, Ontario, Canada on July 26-29, 1992. The general theme of the meeting is Food Safety Issues in International Commerce.

The technical program is shaping up with eleven very interesting symposia. All invited speakers are recognized as experts in their respective fields.

- The media is the message: consumer advocates will discuss issues of food, water, and environmental safety; packaging, and recycling.
- International food standards/free trade: global perspectives.
- Seafood safety: New FDA regulations, HACCP, worldwide issues of seafood safety, parasites and residues in seafood.
- Food irradiation: current status of food irradiation processes, regulations, global economic impact.
- Update on foodborne pathogens: cholera, *Salmonella enteritidis*, *Campylobacter jejuni*, international epidemiological and regulatory perspectives.
- Automation in dairy process control.
- Predictive food microbiology: computer modeling.
- Dairy symposium I: Update on milkborne pathogens, novel biocides/sanitizers, methods for sanitation, milk production, consumer health issues, *Bifidobacter*.
- Dairy symposium II: Animal health, mastitis, mycotoxins, new farm technologies.
- Food service: concepts for training food service workers.
- Sanitation and disaster control.

At last year's meeting, the workshop on investigation of foodborne illness was a success. Two workshops have been scheduled for this year's meeting: HACCP for food service personnel, and Environmental sanitation: techniques and approaches to monitoring sanitation in food/dairy plants.

Each year at the IAMFES Awards Banquet we honor our colleagues who have been selected for their outstanding contributions to the profession. Please, take the time to nominate a person who you know to be deserving of IAMFES' recognition. The award categories and eligibility requirements can be found on page nine of the 1991-92 Membership Directory or call IAMFES at 1-800-369-6337.

Michael Brodsky (Ontario Ministry of Health) is the local arrangements chairperson and he reports that an army of volunteers from our hosts, the Ontario Food Protection Association, is preparing a great social program for our enjoyment. Our visit to Toronto promises to be exciting and memorable!

The February issue of *Dairy, Food and Environmental Sanitation* will give more details of the Toronto meeting. Mark down the dates on your calendar — July 26-29, 1992!

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Dairy, Food and Environmental Sanitation (ISSN-1043-3546) is published monthly by the International Association of Milk, Food and Environmental Sanitarians, Inc., executive offices at 502 E. Lincoln Way, Ames, IA 50010. Printed by Heuss Printing, Inc., 911 N. Second St., Ames, IA 50010. Second-class postage paid at Ames, IA. POSTMASTER: Send address changes to Dairy, Food and Environmental Sanitation C/O IAMFES, 502 E. Lincoln Way, Ames, IA 50010-6666.

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Surface Disinfection of Raw Produce*

Larry R. Beuchat

Food Safety and Quality Enhancement Laboratory, Department of Food Science and Technology,
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Introduction

Estimates of losses in the fresh produce industry that are attributable to microbial spoilage are difficult to make. Figures as high as 30% and more have been used to assess the amount of produce lost to microbial activity between the time of harvest and consumption. Losses occur at every step of handling, including transient time from the field to the processor, holding at the point of processing, distribution and holding after processing, and in the consumer's home. The presence of numerous genera of spoilage bacteria, molds and yeasts, and occasional pathogens such as salmonellae, *Staphylococcus aureus* and clostridia on fresh produce has been recognized for many years. Public health hazards associated with microorganisms on produce stored at refrigeration temperatures have, until recently, received minimal attention. However, the realization that *Listeria monocytogenes*, *Yersinia enterocolitica* and *Aeromonas* species, all capable of growing at 4°C and of causing human gastroenteritis, are not uncommon contaminants on fresh produce, has generated new interest in the efficacy and practicality of procedures available for disinfection. The following is a review of the usefulness and limitations of some traditional methods as well as some new, promising methods which might have application in raw fruit and vegetable sanitation and disinfection programs.

Postharvest Fungicides

Growth of the vast majority of microorganisms on fruits and vegetables can be suppressed by storage at refrigeration temperatures. Crops such as apples, grapes and carrots will tolerate temperatures near freezing. Other crops, for example cucumbers, peppers, summer squash, sweet potatoes and mature green tomatoes, will undergo chill injury if stored below about 12°C for more than a few days.

Storage of sound fruits and vegetables under an optimum set of temperature, relative humidity and atmospheric gas composition conditions will result in maximum preservation of sensory qualities. However, such conditions do not always result in maximum control of growth of microorganisms naturally present on produce. Treatment with anti-

microbial agents, particularly fungicides, can be administered to fruits and vegetables to extend storage life. Antifungal agents are most effective when the commodity possesses intrinsic resistance to infection and the environmental conditions of storage are least favorable for fungal growth (12). Treatment should not be a substitute for satisfactory storage and processing environments.

Several dozen fungicides are commercially available. Selection is based on the type of produce to be treated, the major mycoflora likely to be present on the produce, the desired shelf life and the anticipated time lapse between application and processing or consumption. Application can be achieved in the form of dips, sprays and foams or, in the case of sulfur dioxide, by fumigation.

Washing with Water

Flume and spray washing of raw fruits and vegetables can be successfully used to reduce surface populations of microorganisms. Not all types of produce are amenable to the physical stresses associated with such washing treatments, however, and must therefore be disinfected by subjecting to other treatments. Sterilization by repeated washing, even with sterile water, cannot be achieved because viable microorganisms within tissues of produce remain in place.

Treatment with Chlorine

Chlorine, in an aqueous solution, exhibits rapid microbicidal action. When elemental chlorine or hypochlorites are added to water, they undergo the following reactions:



The term "free available chlorine" refers to elemental chlorine (Cl_2), hypochlorous acid (HOCl) and hypochlorite ion (OCl^-). The dissociation of HOCl depends on pH, and the equilibrium between HOCl and OCl^- is maintained even when HOCl is constantly consumed through its microbicidal activity (1).

*Adapted from a paper presented at a symposium on Minimally Processed Fruits and Vegetables held at the American Chemical Society Fourth Chemical Congress held in New York City, NY, August 25-30, 1991.

The mode of action through which HOCl exerts its lethal effect on microorganisms has not been clearly defined, although researchers have advanced numerous theories. Lethality has been attributed to chlorine combining with cell membrane proteins to form N-chloro compounds which in turn interfere with cell metabolism. Inhibition of enzymes sensitive to oxidation by chlorine also appears to be involved in the inactivation of microorganisms.

Chlorine dips and sprays can be used to reduce populations of microorganisms on the surface of raw fruits and vegetables. Somers (27) reported that about 5 ppm of residual chlorine reduced populations on several vegetables. The use of 60-80 ppm hypochlorite in wash water has been recommended for inactivation of enteric pathogens which might be present on fruits and vegetables (17). A minimum of 30 sec exposure to water containing hypochlorite was suggested. While chlorine (200-250 ppm) has a substantial lethal effect on natural microflora present on lettuce (5) and tomatoes (6), the reduction in microbial population had no influence on growth of *L. monocytogenes* which was subsequently inoculated onto these vegetables.

Chlorine dips should not be relied upon to kill *L. monocytogenes* on produce. Brackett (9), working with Brussels sprouts contaminated with this pathogen, reported that chlorine concentrations less than about 50 ppm in dips resulted in no lethal effect. Lodging of *L. monocytogenes* and other microorganisms in tissue crevices, thus protecting cells from direct contact with chlorine, in addition to a rapid decrease in active chlorine resulting from contact with high amounts of organic material in water in which produce is suspended tend to rapidly reduce the effectiveness of chlorine as a disinfectant.

Failure to maintain adequate chlorine in wash water can actually lead to increased microbial populations on produce. In a study designed to determine microbiological changes in fresh market tomatoes during packing operations, Senter et al. (25) observed that total plate counts and populations of *Enterobacteriaceae* increased on tomatoes washed in water containing an average of 114 ppm (range 90-140) chlorine; decreases were noted in water containing 226 ppm chlorine (range 120-280). Recontamination of tomatoes occurred in the waxing operation as evidenced by increased total plate counts and mold populations.

Natural Antimicrobial Systems

The rate of microbial deterioration of produce is influenced not only by the type and number of microorganisms present but also by the chemical composition and physical structure of the commodity. Antimicrobial compounds either naturally present in fruits and vegetables or formed in response to physical or chemical stresses can contribute to extending shelf life. Banks et al. (2) and Beuchat and Golden (7) have recently reviewed natural antimicrobial systems and their potential for application in food preservation.

A large number of naturally occurring compounds are commonly found in fruits and vegetables. Organic acids, whether naturally present in raw fruits and vegetables or accumulated as a result of fermentation have been relied upon for years to control microbial spoilage. Some organic

acids behave primarily as fungicides or fungistats, while other are more effective at inhibiting bacterial growth. Acetic, citric, succinic, malic, tartaric, benzoic and sorbic acids are the major organic acids naturally occurring in many fruits and vegetables. The mode of action of these acids is attributed to direct pH reduction, depression of internal pH of microbial cells by ionization of the undissociated acid molecule, or disruption of substrate transport by alteration of cell membrane permeability. In addition to inhibiting substrate transport, organic acids may also inhibit NADH oxidation, thus eliminating supplies of reducing agents to electron transport systems (13).

The use of washes and sprays containing organic acids, particularly lactic acid, has been successful in decontaminating beef, lamb, pork and poultry carcasses. Application of organic acid washes to the surface of fruits and vegetables for the purpose of reducing populations of viable microorganisms also has potential. Since the undissociated portion of the acid molecule is primarily responsible for antimicrobial activity, effectiveness depends largely upon the dissociation constant(s) (pK_a) of the acid. Because the pK_a of most organic acids is between pH 3 and 5, surface application would be most effective on fruits. However, treatment of vegetables with an organic acid wash followed by washing with potable water to achieve removal of the acid may also be a means of partial disinfection. The feasibility of using organic acid washes as sanitizing treatments for fruits and vegetables has not been fully evaluated.

In addition to organic acids, medium-chain fatty acids, i.e., those containing 12-18 carbon atoms, also exhibit antimicrobial activity. Generally, fatty acids are most effective against Gram-positive bacteria and yeasts, although some are inhibitory to molds as well. Modes of action have been attributed to outer membrane disfunction, reduction of oxygen uptake, alterations in cell membrane permeability or uncoupling of the electron transport chain of specific proteins responsible for ATP regeneration and nutrient transport into the cell.

Fatty acid esters of sucrose and other polyhydric alcohols are industrially synthesized for use as emulsifiers in food formulations. However, these compounds are also produced naturally in plants and have been demonstrated to have broad-spectrum antimicrobial activity at ppm concentrations.

The effectiveness of medium-chain fatty acids and fatty acid esters of polyhydric alcohols as sanitizers for raw fruits and vegetables may be limited by their solubility in water. Nevertheless, the application of these acids and esters for the purpose of extending storage and shelf life of minimally processed produce deserves further investigation.

The antimicrobial activity of extracts of several types of plant parts used as flavoring agents in foods has been recognized for centuries. The compounds responsible for this activity are often found in the essential oil fraction. Unfortunately, although the inhibitory concentration of some of these plant constituents is in the ppb range, their distinct aroma and flavor limit their use for disinfecting fruits and vegetables.

A more promising group of plant antimicrobial chemicals is the phytoalexins. These low-molecular-weight com-

pounds are synthesized by tissues in response to microbial infection or stress conditions such as injury or physiological stimuli. Phytoalexins are thought to alter the properties of plasma membranes (28) and inhibit electron transport in mitochondria (8). They are produced by many different plants and plant tissues, including roots, tubers, stems, leaves, flowers and fruits. Legumes are capable of producing several different phytoalexins having broad-spectrum antimicrobial activity. We have recently observed that carrot tissue fluid is lethal to *L. monocytogenes* (5). The active compound may be 6-methoxymellein, although confirmation has not been made. Others have reported that 6-methoxymellein inhibits growth of both fungi and bacteria (21). It seems reasonable to think that treatment of produce with carrot or other vegetable juices containing antimicrobial phytoalexins might be effective as a disinfecting procedure. Certainly, the potential for success exists.

Biological Control

Treatment of fruits with certain strains of yeasts has been shown to be effective for control of postharvest decay of apples and citrus (29). Originally identified as *Debaryomyces hansenii* or *Candida* species (24), these yeasts have more recently been identified as *Candida guilliermondii* using comparisons of cell wall mannans and by determining percentages of homology of genomic DNAs by DNA-DNA hybridization (23). Numerous molds have been demonstrated to exhibit antagonistic behavior against major pathogens of grapes, strawberries, pineapple, stone fruits, pome fruits and citrus fruits. Bacteria also have potential as biological control agents. Application of certain strains of *Pseudomonas cepacia*, *Enterobacter aerogenes* and *Bacillus subtilis* to fruits, for example, also has been shown to retard the rate of fungal decay during storage.

The mode of action of these microorganisms has not been clearly defined. In some instances, antagonists inhibit fungal spore or conidia germination. Suppression of vegetative cell development appears to result from application to some types of spoilage microorganisms. Understanding the mode of action is important because it will enable the development of more reliable procedures for effective application and provide a rationale for selecting more effective antagonists (29). Furthermore, isolation and characterization of the metabolite(s) responsible for controlling growth of microorganisms naturally present on fruits and vegetables would pave the way for developing procedures for direct application of the metabolite, rather than the viable cells that produce it. If an acceptable standard of microbiological quality can be achieved by applying these metabolites to produce, the end result would be extended storage and shelf life.

There is, in fact, extensive research activity currently underway to characterize bacteriocins, produced mostly by lactic acid bacteria, which might have application for controlling growth of spoilage bacteria on various foods, including minimally processed fruits and vegetables (16). Under the umbrella of biotechnology, genetic manipulation of these and other bacteria will very likely result in super strains capable of controlling both prokaryotic and eukaryotic mi-

croorganisms normally present on produce. Application of these strains or their antimicrobial metabolites for the purpose of disinfection and controlling spoilage microflora is not an unreasonable goal. However, successful application can be achieved only after extensive research is done to assure that treated products pose minimal or no public health risk.

Ozone

Ozone (O_3) has been investigated as an agent for decontaminating bio-clean rooms in hospitals and other facilities used to treat patients with diseases with a great risk of infection (22). Although not as effective as formaldehyde, ozone is convenient to use and can be rapidly removed from the air after treatment. For these reasons, ozone has some potential for use as a disinfectant for air and surfaces in contained areas in which produce may be stored or processed.

The use of ozone to decontaminate various types of foods has been investigated. Preservation of fish (15), reduction of aflatoxin in peanuts and cottonseed meals (11) and reduction of microbial populations on poultry (26), bacon, beef, butter, cheese, eggs, mushrooms, potatoes and fruits (14,20) using gaseous ozone have been studied. Ozone, at ppm concentrations, is lethal to a wide variety of microorganisms, including viruses, bacteria, fungi and amoebae. High relative humidity generally favors microbicidal activity (19).

The lethal effect of ozone is a consequence of its strong oxidizing power. Unfortunately, physiological injury of produce can result from exposure to concentrations as low as 1.5 ppm, for example in bananas (18). Extension of shelf life of oranges, strawberries, raspberries, grapes, apples and pears can be achieved by treatment with ozone. In addition to the antimicrobial effects of the chemical, oxidation of ethylene also occurs, thus retarding metabolic processes associated with ripening.

Consistent reductions in populations of aerobic microorganisms, coliforms, fecal coliforms and *Salmonella* in ozonated chilling water used in a poultry processing plant have been reported (26). Application of ozone to decontaminate wash water and waste water in produce processing operations may also have potential.

Irradiation

The use of gamma irradiation to kill microorganisms on a wide range of food types has been studied extensively. Treatment can be quite effective. We have observed that fresh sweet corn subjected to 1.0 kGy (Co^{60}) irradiation had over a 3-log reduction in aerobic mesophilic microorganisms and over a 1 log reduction in yeasts (10). Growth of survivors on irradiated corn resumed only after 10-12 days and proceeded at a somewhat slower pace compared to microflora on nonirradiated corn.

The lethal effects of irradiation on molds normally associated with spoilage of fruits have been clearly demonstrated. Use of irradiation to preserve strawberries, grapes and other berries has, perhaps, been most successful.

Modified Atmosphere

It is well known that sensory quality of produce can be preserved by storage under atmosphere with modified carbon dioxide, oxygen and nitrogen content. The optimum percentage of these gases differs depending upon the fruit or vegetable, the temperature of storage and the desired end use of the product.

Microbial growth can also be controlled, within limits, by modifying the composition of gas in contact with fruits and vegetables. One should be aware, however, that an extension of sensory shelf life may simultaneously increase the probability that high populations of pathogens will be present on produce at the point of consumption. For example, we have observed that shelf life of asparagus, broccoli and cauliflower stored under modified atmosphere can be extended substantially (3,4). During the extended storage period, populations of *L. monocytogenes* and *Aeromonas aerogenes* continued to increase, thereby increasing the public health hazard associated with consumption of these vegetables. The decision to use modified atmosphere to preserve sensory qualities of produce must include consideration of the consequences in terms of growth of naturally occurring pathogenic bacteria.

Summary

Populations and types of microorganisms on fruits and vegetables as they enter the processing plant are dependent in part upon handling and storage conditions to which these commodities were previously exposed. Chlorine washes can be used to reduce but not eliminate viable microorganisms. The use of natural antimicrobial compounds and bacteriocins to control the growth of spoilage microflora has promise. Treatment of fruits and vegetables with ozone and gamma irradiation are effective in killing microorganisms but also may adversely affect sensory qualities. Modified atmosphere storage and packaging of produce can be used to retard growth of some microorganisms while simultaneously preserving sensory quality. The choice of treatment used for disinfecting fruits and vegetables will depend on the type of commodity, processing conditions and the desired shelf life.

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Protecting and Insuring A Dairy Processing Facility Against Catastrophic Loss

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The dairy processing industry has changed radically during the past 50 years to keep pace with consumer demand. New products, containers, technology and expanding use of dairy items in our diets, have all contributed to increased production of dairy and related items. Furthermore, new product variations, the opening of trade markets overseas, continued advancement in technology and aggressive marketing will all work toward expansion and increased profitability for this industry.

In the United States and Canada and the rest of the world for that matter, dairy companies are recognized for safe, high-quality products. They are also renowned as successful merchandisers of a wide variety of versatile, dairy-based commodities.

Dairy companies continually monitor the changing tastes of the consumer and develop their products accordingly. With consumers drinking less whole milk, dairy processors are increasing their production of low-fat and skim milk where consumption has risen. Other products that are in demand include cream cheese, because of its use as a spread on bagels, and mozzarella cheese, as a topping on pizza.

As the industry enters the 1990s, food safety issues and labeling rules are major challenges that must be addressed. Standards in these areas will become increasingly international. Maintaining trade competitiveness on a global level in the face of new regulation is a critical issue.

First and most important in the dairy industry is to produce and distribute safe, quality products for the consumer. This is a complex and highly organized process since there are so many factors in the safety equation: quality ingredients, refrigeration, sanitary procedures, government regulations, quality control, transportation, storage, packaging and handling and additives are a handful of the key components of the wholesaling operation. Additionally, variations in the volume of supply and day-to-day demands must be considered.

Changes and advances in technology are continually affecting the dairy industry. Dairy processors are currently experimenting with new methods to remove the cholesterol from milk and other dairy products. Some work well, others may require enhanced quality control procedures. And with the increasing use of plastics containers, many bottlers are buying plastic resins and making their own product containers. Clearly, bringing quality dairy products to market is becoming a more and more complex undertaking.

Many of these changes have brought about the potential for catastrophic accidents which in turn has necessitated that food processors manage the exposures and secure adequate financial protection to cover consequential costs.

Prior to 1962, there were no jury verdicts of a million dollars awarded in any industry. Since the first million dollar award 29 years ago, the number has now grown to more than 4,000. Of those, more than 840 verdicts were rendered in product liability cases, an important fact for those in the food processing industry.

Understandably, in the mass processing of dairy products, catastrophic losses can arise from many sources including premises and automobile accidents, and bodily injury suits resulting from products contamination and spoilage. In such events, the dairy processor will be faced not only with the cost of compensating the injured parties, but also with the potential damage to the company's image.

When considering insurance, a dairy processor must look to a financially solid carrier which understands their business and the legal climate affecting their industry. Coverage considerations should go beyond basic primary liability insurance to excess and umbrella coverages that offer increased protection from unexpected, unknown and unintended accidents or events.

Preventing Accidents

Ideally, a dairy processing facility's safety team should work together with the insurance carrier's loss control consultants. These consultants can assist in anticipating and identifying potential hazards. They will examine and evaluate the entire facility and comment on specific concerns that should be addressed. They will also suggest ways for the dairy processor to reduce the likelihood of a liability loss from occurring, thus saving time and money.

With the intent of preventing liability accidents, the evaluation of an operation often begins with the incoming raw materials. Why? Timely deliveries coupled with inspection and testing, help ensure that only quality materials enter the production processes. Proper equipment maintenance and temperature controls in the storage facilities and contingency planning are also important in reducing the likelihood of spoilage or contamination that can result in many consumers becoming ill after eating the product.

For example, with ammonia used as a refrigerant, a leak in the ammonia system can result in widespread product contamination and possibly close the facility if proper

controls are not in place. In California, an ice cream company's refrigerated warehouse experienced a leak in an ammonia suction line that spewed ammonia throughout the warehouse. The butterfat in the ice cream quickly absorbed the ammonia, contaminating the entire stock. Such an occurrence could easily lead to major product liability suits which in turn can prevent the dairy processor/wholesaler from meeting its business goals or worse, surviving in the competitive marketplace of this industry.

Contamination can also occur during processing either by accident or vandalism. Good housekeeping practices, quality control and equipment maintenance help minimize these risks. A situation of this type developed when glass particles found in a vat of ice cream caused a recall of the entire batch—fortunately before any major injuries occurred.

Equipment cleaning is another major concern for the dairy processor. Cleansers and disinfectants used in the cleaning process must be properly rinsed from the system or products may be contaminated. A catastrophic incident occurred at a milk processing facility where large quantities of milk became contaminated with *salmonella* resulting in injuries, many deaths and consequential liability losses for the dairy processor. Events such as this can be devastating to both large and small processors alike.

Even if these types of accidents do not result in a multi-million dollar loss, they can still erode a processor's primary liability coverage. If a processor experiences a series of smaller claims that collectively use up the primary coverage, the processors excess/umbrella coverages will take over and protect against future claims.

Generally speaking, what separates an in-plant incident from a catastrophic loss is quality control. If an error is identified before the product leaves the facility, the general public will not be affected. Quality control measures should be conscientiously implemented throughout the facility and prior to shipment.

The dairy processor must also be concerned with the shipping of the product. An additional exposure to the public exists if the dairy processor maintains a fleet of refrigerated delivery vehicles. The carrier's loss control consultants can help develop control programs including vehicle maintenance schedules for truck fleets, defensive driving instruction and driver safety programs.

But even with proper controls in place, accidents can still happen. With every claim, the indirect cost to the company can be more devastating than the monetary losses. These may include losing market share and customer loyalty. They may require the company to allocate advertising and promotional funds to regain public confidence.

To help avoid these hidden yet real costs of an accident, the loss control consultants can assist the dairy processor in developing or refining an emergency plan to mitigate an accident that occurs. The value of loss control expertise cannot be overstated. Preventing an accident is easier and

less costly than having one.

Accidents however still occur in the best facilities. With products intended for human consumption, the consequence of an accident can be devastating. This is why additional insurance coverage is necessary.

Excess/Umbrella Coverages

When a dairy product is contaminated or spoiled, it usually happens to large quantities of the product. The ramifications of these incidents can translate into multiple claims filed against a dairy processor. While the dairy processor does everything in his power to ensure a safe product, accidents of this type may necessitate more coverage than his primary liability insurance policy provides. This is why excess/umbrella coverages offering higher limits of liability protection and broader coverage are necessary.

These coverages offer the dairy processor protection from accidents or events that go beyond primary bodily injury or property damage limits to become catastrophic liability exposures.

Excess/umbrella coverages can also replace underlying primary liability limits that have been eroded by numerous smaller claims. Even if a dairy processor does not suffer a catastrophic loss of millions of dollars, he may suffer several lesser losses that together may exhaust his primary liability coverage. If this happens, excess/umbrella coverage will protect the dairy processor from additional claims which may arise.

These coverages can also provide protection for personal injury offenses and for contractually assumed liabilities and claims arising from international exposures as well as other areas of concern to the dairy processor.

Additionally, the policies provide protection against legal expenses resulting from a covered loss that could seriously affect the dairy processor's financial assets or restrict his ability to take advantage of future business opportunities. Through this coverage, the insurer can provide legal representation that would otherwise be expensive and time consuming for the dairy processor.

In our current litigious society jury verdicts will most likely continue their upward spiral. Dairy processors must protect themselves from possible liability exposures that could ruin their businesses. By working with underwriters, loss control consultants and a conscientious insurance agent, an excess/umbrella program can be designed to provide the additional coverage needed for a dairy processor to survive either a severe loss or numerous smaller ones.

Dairy processors realize that the consumer places an inherent trust in the products which they consume—trust that these products will be safe and of superior quality. However, if an accident does occur, the dairy processor will be better prepared to handle potentially catastrophic costs if a foresighted catastrophic liability program has been worked out with an insurance carrier that understands and is responsive to their needs.

Cholera, John Snow and the Pump Handle

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Cholera Today - Western Hemisphere

An outbreak of diarrheal illness that began on January 23, 1991 in Peru proved to be cholera. This was the first time that cholera was reported to have occurred in South America in this century (CDC, 1991c).

In an advisory statement issued by the Centers for Disease Control, Atlanta, Georgia concerning the spread in Peru, the following was stated:

Epidemiologic investigations in Peru have indicated that the principal means of transmission are through municipal water supplies, ice made from that water, foods and beverages bought from street vendors, and vegetables irrigated with fresh sewage. Previous experience in other cholera epidemics and anecdotes from this epidemic also suggest that raw and undercooked seafood are important in the transmission (CDC, 1991a).

As of August 7, 1991 it had been reported to have occurred in eight other Western Hemisphere countries including: Brazil, Canada, Chile, Columbia, Ecuador, Guatemala, Mexico and the United States accounting for 274,768 cases, 119,644 hospitalizations and 2,972 deaths. Of these 14 cases have occurred in the United States with seven hospitalizations and no deaths while one case has been reported in Canada which was associated with travel in a non-Western Hemisphere country having cholera (CDC, 1991d).

The Disease

The etiologic agent of cholera is *Vibrio cholerae*. The specific agent of this epidemic is toxigenic *V. cholerae* 01, biotype El Tor, serotype Inaba (CDC, 1991b).

The incubation period can vary from a few hours to five days, usually being two to three days (Benenson, 1990 p. 91). Disease onset is usually sudden with profuse watery stools and occasional vomiting which results in rapid dehydration (Benenson, 1990 p. 89). Fluid loss is severe and in grave cases can be as much as 15-29 liters in one day. Death results from dehydration and electrolyte imbalance (Jensen and Wright, 1985).

In severe untreated cases, the death rate can exceed 50%, however, with proper treatment it can be reduced to less than 1% (Benenson, 1990 p. 89). Treatment includes

prompt initiation of fluid therapy consisting of the administration of balanced multielectrolyte solution. In addition, antibiotic therapy can reduce the duration of both diarrhea and vibrio excretion (Benenson, 1990 p. 93).

A killed whole cell vaccine is available but is not of any value in epidemic control since it has been shown to be only about 50% effective and provides protection for only about three to six months (Benenson, 1990 p. 91).

The disease is not easily spread through person to person contact. This mode of spread does not result in explosive outbreaks (Gangarosa and Mosley, 1974). Seafood consumed raw or undercooked which had been harvested from waters contaminated with fecal matter from cases or carriers has resulted in outbreaks in Guam, Portugal, Italy, Kiribati and the United States (Benenson, 1990 p. 91).

Prior to its recent appearance in South America outbreaks of cholera occurred in the United States in the 1970's and 1980's some of which were traced to the consumption of raw or undercooked seafood which was harvested from the Gulf of Mexico (Benenson, 1990 p. 90). The 14 cases reported in the United States linked to the South American outbreak were all associated with seafood that was either consumed by tourists while in South America or by the ingestion of seafood brought back by travelers from South America and then eaten in this country (CDC, 1991 b).

The principal mode of transmission in epidemic situations is through the ingestion of water that has become contaminated with the agent (Benenson, 1990 p. 90). Fecal matter from cases or carriers is the source of this contamination. Even though waters may be heavily contaminated with this agent it disappears soon after the source of contamination is removed. An exception to this is water of high salt content in which the microorganism can remain viable from weeks to months (Gangarosa and Mosley, 1974). Therefore, though water is important in the transmission, man is considered to be the reservoir of the agent.

John Snow, M.D.

The importance of contaminated water in the dissemination of cholera was firmly established by the work of John Snow (1813-1858). He described his observations on cholera in two works the first of which was entitled, "On the Mode of Communication of Cholera", published in 1849 as a pamphlet and then elaborated on in an expanded edition

published in 1855. The second entitled, "On Continuous Molecular Changes, More Particularly In Their Relation to Epidemic Diseases", was published in 1853. Both of these works were republished in 1936 by the Commonwealth Fund in a book entitled, "Snow on Cholera." In addition to Snow's two cholera works it contains a biographical memoir, originally written in 1887 by B. W. Richardson, M.D., and an introduction by Wade Hampton Frost, M.D.

It is important to keep in mind that Snow did this work before Robert Koch discovered *V. cholerae* in 1883, and also before the latter announced his postulates the following year which firmly established the "Germ Theory of Disease Causation" (Prescott, Hasley and Klein, 1990).

John Snow was born in York on June 15, 1813. At the age of 14 he became an apprentice to Mr. William Hardcastle, surgeon, Newcastle-on-Tyne. In 1831-1832, Newcastle experienced an outbreak of cholera. Snow helped care for the ill and learned a great deal about this disease (Stephen and Lee, 1938).

He went to London in 1836 where he attended the Hunterian School of Medicine. In 1837 he became a member of the Royal College of Surgeons of England after successfully completing the necessary examinations. He remained in London, set up a medical practice and became a member of the Westminster Medical Society (now called the Medical Society of London) where he often presented papers, some of which were published in the London Medical Gazette. Continuing his medical studies he was awarded M.B. and M.D. degrees from the University of London in 1843 and 1844 respectively (Richardson, 1887 p. xxvi, xxvii).

In 1846 he became interested in the use of ether in surgery and two years later on the use of chloroform. His reputation in anesthesiology grew and on April 7, 1853 he administered chloroform to Queen Victoria at the birth of Prince Leopold and again on April 14, 1857 at the birth of Princess Beatrice (Richardson, 1887 p. xlii).

In 1848 he turned his attention to the cause and propagation of cholera. Frost described the most popularly held theory on cholera causation at that time as being one which held that some sort of organic matter which constituted the "cholera essence", when combined with organic matter that emanated from living bodies, and perhaps even when non-living matter as well, resulted in the "cholera poison." In addition he stated:

To this was added the conception of "localizing influences" promoting the propagation of the poison, and "predisposing causes," increasing susceptibility to its effects. There were many differences of opinion as to whether the "cholera poison" might be spontaneously generated in different countries, or must be introduced from pre-existing foci; whether it was spread solely by diffusion through atmosphere or attached itself to solid bodies; whether or not it was communicated by an effluvium (contagion) given off by the sick (Frost, 1936 p. xiii).

However, Snow felt that cholera was caused by a specific living substance which was capable of replication in the intestinal tract of man and exited by way of feces to infect others, principally by contaminating water (Snow, 1855 p. 15, 16).

To what extent these ideas were original with Snow is addressed by Frost as follows:

How far Snow's ideas were original is difficult to determine. He read widely and drew upon the ideas as well as the facts of his day, and it is certain that the general conception of epidemic disease which he expressed was not altogether unfamiliar at the time. Henle, approaching the subject from a different angle, had already expressed broadly similar views as to the nature of infectious diseases and, though no direct allusion to his work has been found in Snow's writings, he must have known of it, at second hand if not the original. Budd certainly shared Snow's views, but notwithstanding that he himself had arrived at similar conclusions concerning cholera as early as 1849, he generously accords Snow full credit for independent and more complete development of the theory. The belief that cholera was communicable from person to person through a specific poison was not unusual. Some part of Snow's conception that cholera was due to a specific microorganism, an obligate parasite, propagating only in the human intestinal tract and disseminated by ingestion of excreta, was expressed by a number of contemporary writers; but seldom if ever was the whole idea expressed, and no one else followed it through to such full development. That Snow's contemporaries considered his theory of cholera to be original is evidenced by the fact that they referred to it as "Dr. Snow's theory" and, in their discussions, differentiated it from all the other theories which it was customary to mention (Frost, 1936 pp. xvi-xvii).

Cholera - Broad Street London, 1849

Snow had an opportunity to test his hypothesis on the role that water played in the spread of cholera in 1849 when an outbreak occurred in London on Broad Street. He described the outbreak as follows:

The most terrible outbreak of cholera which ever occurred in this kingdom is probably that which took place in Broad Street, Golden Square, and the adjoining streets, a few weeks ago. Within two hundred and fifty yards of the spot where Cambridge Street joins Broad Street, there were upwards of five hundred fatal attacks of cholera in ten days. The mortality in this limited area probably equals any that was ever in this country, even by the plague; and it was much more sudden, as the greater number of cases terminated in a few hours. Persons in furnished lodgings left first, then other lodgers went away, leaving their furniture to be sent for when they could meet with a place to put it in. Many houses were closed altogether, owing to the death of the proprietors; and in a great number of instances the tradesman who remained had sent away their families so that in less than six days from the commencement of the outbreak, the most afflicted streets were deserted by more than three quarters of their inhabitants (Snow, 1855 p. 38).

Snow suspected that the water from the Broad Street pump was involved. He examined the water for organic matter on September 3, 1849 but found very little. He also obtained a list of those that died from cholera during the week ending September 2, 1849 from the Registrar General's Office. The list indicated that 83 deaths had occurred in the area of the pump during the last three days of that week (Snow, 1855 p. 39).

Upon further investigation he learned that a brewery which employed about 70 people was located near the pump. The brewery had its own deep well and in addition the workers were allowed to drink an allocation of malt liquor during the work day. None of the brewery workers were known to have consumed water from the Broad Street pump and none were reported to have contracted cholera (Snow, 1855 p. 42).

In contrast at a nearby percussion cap factory on Broad Street, two tubs of Broad Street pump water were kept for use by approximately 200 employees. Of these, 10 died of cholera (Snow, 1855 p. 43).

He also related an incident of a man who went to visit his brother who had contracted cholera on September 1, 1849 and died in 12 hours. He arrived after his brother had died, he did not see the body, stayed only 20 minutes, during which time he was served lunch and a drink of Brandy and water — the water was from the Broad Street pump. He returned home, became ill on September 2, 1849 and died of cholera the following day (Snow, 1855 p. 44).

On the evening of September 7, 1849, John Snow explained his findings and suspicion that the Broad Street pump was involved to the Board of Guardians of St. James' Parish. As a consequence of what he told them, the handle of the pump was removed the following day (Snow, 1955 p. 40).

He continued to collect morbidly and mortality data and plotted fatalities on a map of the area. Information was gathered from August 19, through September 30, 1849 during which time 616 cholera fatalities were reported.

His data showed that the epidemic condition began on the evening of August 30, 1849. Two fatalities occurred on August 30, followed by three on August 31. On the following day 70 fatalities and on September 2, 127 which represented the greatest number of deaths on any one day of the outbreak. From this point in time the number of deaths tapered off until on September 8, the day the handle was removed, there were 30 deaths. To this point in time 508 (81.2%) of the total 616 deaths had occurred. The last fatal case was reported on September 29, 1849 (Snow, 1855 p. 49).

Since the outbreak had peaked and was on the decline when the pump handle was removed the effect of its removal on quelling the epidemic was difficult to assess.

Concerning the removal of the pump handle, he stated: There is not doubt that the mortality was much diminished, as I said before, by the flight of the population, which commenced soon after the outbreak; but the attacks had so far diminished before the use of the water was stopped, that it is impossible to decide whether the well still contained the cholera poison in the active state, or whether for

some cause, the water had become free of it (Snow, 1855 p. 51, 52).

Concerning a possible source of pollution of the well which was 28-30 feet deep, he found that a sewer, which was 22 feet deep, passed within yards of the well. In addition, there were several cesspools nearby. Also, since there had been some cholera deaths in the neighborhood not too far from the pump shortly before the explosive epidemic, he concluded that evacuations from those cases could have contaminated the well through drainage, cesspools or the sewer (Snow, 1855 p. 53).

Cholera - London, 1853

Cholera did not reappear in London until August of 1853. This afforded Snow another opportunity to test his hypothesis. In studying this outbreak he compared deaths from cholera to the source of water in the houses where the deaths occurred. He learned that one district of London was supplied by two different water companies, namely the Lambeth Company and the Southwark and Vauxhall Company. Pipes from both companies ran down every street in the district. The water was supplied to each household in no predetermined manner except by the choice of the property owner. A total of 66,153 houses were supplied by both companies (Snow, 1855 p. 68).

He summarized his findings as follows when he stated: The following is the proportion of deaths to 10,000 houses, during the first seven weeks of the epidemic in the population supplied by the Southwark and Vauxhall Company, in that supplied by the Lambeth Company and the rest of London.

Table IX

	Number of houses	Deaths from cholera	Deaths in each 10,000 houses
Southwark and Vauxhall Co.	40,046	1,263	315
Lambeth Company	26,107	98	37
Rest of London	256,423	1,422	59

(Snow, 1855, p. 86)

His analysis indicated that the cholera rate was 8.5 times higher in houses supplied by the Southwark and Vauxhall Company as opposed to the Lambeth Company. He found that this was not the case in an outbreak in 1849 in London where the houses supplied by the Lambeth Company suffered as much as those of the Southwark and Vauxhall Company. He explained the lower cholera rate on the fact that the Lambeth Company moved their water works after the 1849 outbreak to an area on the Thames River where they obtained water from the river that was free from the sewage of London. The Southwark and Vauxhall Company continued to draw their water from the Thames River in the same place they did during the 1849 outbreak which was still being polluted with London sewage (Snow, 1855 p. 68).

He discussed some of the problems he faced in trying to establish which one of the water companies supplied a particular house. This was especially true when the occupant was a renter as opposed to the owner. He found a simple chemical test to be of great assistance in telling them apart. He tested for chloride in the water by adding a solution of

silver nitrate to the sample. In the Lambeth water which he described as being, "beyond the reach of the sewage of London", he found in the order of 0.9 grains of sodium chloride per gallon while in the Southwark and Vauxhall water 37.9 grains per gallon. In addition he reported that he could also distinguish between the two simply by the appearance of the samples (Snow, 1855 p. 77, 78).

His studies of this outbreak demonstrated that contaminated water was involved in the transmission of cholera more conclusively than his work on the Broad Street pump outbreak in 1849. The studies he used to determine fecal contamination were based on indirect evidence, however, it must be kept in mind that this work was done before Koch's work on bacteriologic methodology, the establishment of the Germ Theory of Disease Causation and the isolation of *V. cholerae*.

He concluded, "On the Mode of Communication of Cholera", by discussing 12 measures which he recommended be adapted during an outbreak of cholera in a community to control its spread (Snow, 1855 p. 133-136). These recommendations, though made at a time when the cause of cholera had not been established, have withstood the test of time and are quite applicable today, some 136 years after they were made.

Death at the age of 45

John Snow died at the age of 45 on June 17, 1858, 26 years before Koch's supportive work was announced. On June 9, 1858 while writing a manuscript on chloroform he suffered a paralyzing stroke and died eight days later. The last word that he penned to paper on this, the last of his writings, was "EXIT" (Richardson, 1887 xlvi).

Today, the John Snow Pub stands at the site of the Broad Street pump. Graduates of the Center for Disease Control's two year Epidemiologic Intelligence Program are given a pin shaped like a barrel of Whatney's ale which is served at the pub named after this great English epidemiologist (Ohmans, 1986).

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Monitoring of Recreational Water Quality Along the Coast of East Beirut

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Introduction

The routine monitoring of recreational waters is conducted for the purpose of detecting the presence of fecal wastes which may contain certain pathogenic bacteria like *Salmonella*, enteric viruses and other microorganisms. The presence of *Escherichia coli*, fecal streptococci and other enteric organisms in water indicates fecal contamination. Generally, a high degree of fecal contamination correlates with a high count of normal flora of enteric organisms which is undesirable and implies a greater chance for the development of human illness as a result of direct contact with the polluted water.

Epidemiological investigations of recreational water quality demonstrated a positive correlation between public health risk and levels of fecal bacterial indicators such as *E. coli* and enterococci (4,6). Recently, Matossian discussed the infective hazards of bathing in Lebanese beaches (9), and Kouyoumjian studied the recreational water quality in Jounieh Bay East of Beirut.

The present study was conducted to assess the relative safety of bathing and swimming in five maritime recreational beaches along the coast of East Beirut. For this purpose, fecal coliforms and fecal streptococci were monitored over a period of 6 months, July-December 1989, since these two groups of bacteria are used routinely to check fecal pollution of recreational waters (1,2).

Materials and Methods

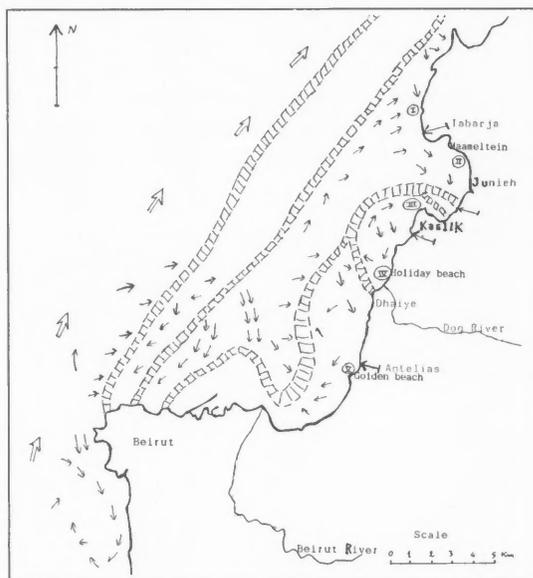
Study Sites

The present investigation was conducted at five beaches in East Beirut which are frequently visited by swimmers and bathers during the summer months and by fishermen throughout the year. Figure 1 shows the locale of the five beaches (Tabarja, Maameltein, Kaslik, Holiday and Golden Beaches) and the major sewage outfalls. Some other minor sewers, not shown in this figure, pour their sewage on the sea-shore adjacent to these beaches.

Sampling of Water

Sea water samples were collected from each beach, hereafter referred to as sampling station, in 500 ml sterile

Figure 1. Location of the five study beaches in East Beirut.



- I - V Sampling stations
- ⇨ Major currents
- Eddy currents
- ⌊ Concentrated garbage
- ↳ Major sewer outfalls

polyethylene bottles at a depth of about 10 cm below the surface of the water, which was about 1 m deep. An ordinary corrected Corning thermometer was then dipped into one of the bottles for measuring the temperature of the water at each collection station. About 100 ml of the water was then discarded from each bottle to allow some air in, in order to permit shaking of the bottles prior to water analysis. The sample bottles were then placed in coolers with ice packs at $6^{\circ}\text{C} \pm 2$ and transported to the bacteriology laboratory for processing. The water samples were subjected for bacteriological examination and for salinity determination. Each study site was sampled in triplicate on 16 separate occasions.

Fecal Coliforms and Fecal Streptococci Counts

Fecal coliforms and fecal streptococci counts were determined by membrane filtration using 47mm diameter 0.45µm pore size Gelman membranes (Gelman, Gelman Sciences Inc., Ann Arbor, Mich., U.S.A.) which were incubated on m-FC and m-entero agar respectively (Difco, Detroit, Mich., U.S.A.). The colonies were counted visually using a Gallenkamp colony counter and were reported as colony forming units (CFU) per 100 ml.

Salinity

The salt concentration in the sea water samples was determined using a Beckman RS7-C induction salinometer. One hundred milliliters of standard sea water (provided with the salinometer) was used to standardize the salinometer prior to the measurement of the conductivity of each of the samples. Salinity was then determined from a universal conductivity-salinity conversion table.

Results and Discussion

Preliminary observations were noted during sampling of the sea water. Floating garbage of both organic and inorganic nature was noticed at each sampling station and was concentrated and driven to the sea shore by eddies, as shown in figure 1. The floating organic material provides a suitable environment for microbial growth which results in the production of smells and odors which render our beaches aesthetically unattractive for tourists, bathers and swimmers. Polyethylene sheeting was uniformly present at each of the five sampling stations during the whole sampling period. The color of the sea water was somewhat dark at these stations. The dark color is attributed to the proximity of the stations to the sewage outfalls. The state of the sea all along the sampling period was generally calm with waves ranging from 10-100 cm in height. Waves exceeding 1m in height were occasionally noticed, particularly during November and December. The number of swimmers, bathers and fishermen at the five beaches was estimated to be around 50 persons per 100 m of coastal distance.

The choice of the five sampling stations was in order to provide sufficient data for the evaluation of public health hazards facing bathers, swimmers and fishermen in a major sea water recreational coastal area. The reason for collecting water samples at 10 cm below the water surface was to avoid the bactericidal effect of sunlight which is known to penetrate to few centimeters below the water surface. Bacterial cells present at a depth of about 10 cm are supposed to be uninjured by solar radiation (5,8). The depth of the sampling site was chosen to be about 1m, because it was observed that most swimmers and bathers remain at this water depth and any bacterial contamination of such locations reflects direct hazards to persons enjoying sea water recreational activities. The sea water temperature at the sampling sites ranged between 10°C and 32°C. The average salinities for stations I-V corresponded with values reported for the Eastern Mediterranean (3). The salinity values fluctuated between a minimum of 37.415 parts per thousand parts (ppt) and a maximum of 39.223 ppt. They were 38.957, 38.957, 38.644, 39.004 and 38.939 ppt for stations I, II, III, IV and V

respectively. There was no linear correlation between salinity and the number of fecal coliforms or fecal streptococci.

The number of fecal coliforms CFU/100 ml of sea water over the whole sampling period for stations I-V were 196,49,187,189 and 239 respectively (table 1). The average number of fecal streptococci CFU, on the other hand, were 120,63,127,191 and 142 per 100 ml respectively (table 2). The high correlation between fecal coliforms frequency and fecal streptococci frequency indicates that the source of bacterial pollution of sea water is predominantly of human origin. The accelerated coastal urbanization, discharges of untreated sewage and industrial and agricultural wastes pose a major public health threat by increasing the magnitude of the microbial pollution of coastal waters and the environment. If this pollution problem is allowed to continue to increase at the present pace, many ecological problems will be compounded beyond recovery. Generally, gross pollution of sea water results in: (i) poor water quality. (ii) detrimental effect on marine life. (iii) public health hazards to swimmers, bathers and fishermen.

Table 1: Summary assessment of the number of fecal coliforms in the recreational waters of the five study beaches.

Station number	satisfactory samples with FC(1)<100		low risk samples with 100<FC<500		high risk samples with FC>500		undetermined(2)/total average				
	No.(3)	% (4)	No.	%	No.	%	No.	%	No.	%	
I	20	41.67	18	37.50	7	14.58	3	6.25	48	100	196
II	38	79.16	7	14.59	0	0.00	3	6.25	48	100	196
III	36	75.00	6	12.50	3	6.25	3	6.25	48	100	196
IV	33	68.75	6	12.50	6	12.50	3	6.25	48	100	196
V	23	47.92	18	37.50	4	8.33	3	6.25	48	100	196

1- Fecal coliforms CFU/100 ml sea water.

2- The number of fecal coliform CFU could not be determined due to the growth of yeast colonies.

3- number.

4- percentage.

Table 2: Summary assessment of the number of fecal streptococci in the recreational waters of the five study beaches.

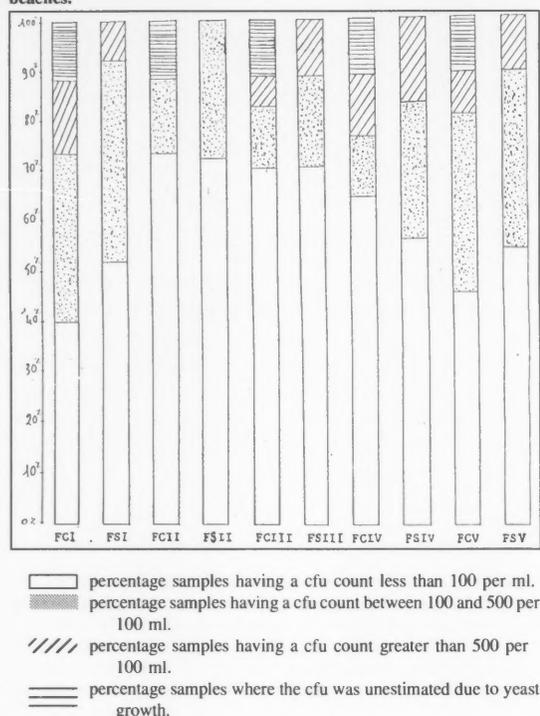
Station number	satisfactory samples with FC(1)<100		low risk samples with 100<FC<500		high risk samples with FC>500		total average		
	No.(2)	% (3)	No.	%	No.	%	No.	%	No.
I	27	56.25	20	41.67	1	2.08	48	100	48
II	37	77.08	11	22.92	0	0.00	48	100	63
III	36	75.00	9	18.75	3	6.50	48	100	127
IV	29	60.42	13	27.08	6	12.50	48	100	191
V	28	58.33	17	35.42	3	6.25	48	100	142

1- Fecal streptococci CFU/100 ml sea water.

2- number.

3- percentage.

Figure 2: Summary assessment of the number of fecal coliforms (FC) and fecal streptococci (FS) in recreational waters at the five study beaches.



The results of this study show that the average values of fecal coliforms for the five sampling stations, except for station II, exceed 100 CFU/100 ml and less than 10% of the samples at any one station exceed 1000 fecal coliforms/100 ml (table 1, figure 2). These values exceed the limits recommended by the WHO/UNEP expert consultation committee on safety of swimming in recreational sea water (13). We notice that more than 50% of the samples are satisfactory and comply with the interim microbiological criteria for quality of sea water. We can conclude that although the Lebanese beaches still meet the interim microbiological

criteria for quality of sea water (100 *E. coli*/100 ml and no more than 10% should exceed 1000 *E. coli*/100 ml), these beaches have reached the borderline for safety.

The political situation in Lebanon is rapidly stabilizing. Normality of all aspects of life is being established. Proper management, disposal and treatment of domestic sewage, industrial and agricultural wastes and other pollutants are of primary importance in order to reduce the risk of disease transmission from marine origin, and to regain the touristic attraction of Lebanon. Continuous monitoring and adherence to the WHO/UNEP recommended sampling technique and analysis of recreational waters should be observed. The ultimate aim is to have a more beautified country in the near future than at present.

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1992 Food Structure Meeting

The 1992 Food Structure meeting will be held at the McCormick Center Hotel in Chicago, IL from May 9 to 14, 1992. General tutorials on Sunday, May 10 will be followed by a general session on Monday morning, May 11. Food Structure sessions will be held from Monday afternoon, May 11 through Thursday morning, May 14. Those sessions will cover: Dairy Products, Emulsifiers, Encapsulation, Food Processing, Image Analysis, Meat Foods, Plant Rheology, and a General Food Structure session will also be organized.

Contributions are solicited for any of these programs or for the general Food Structure sessions.

The meeting will be held in conjunction with the annual Scanning Microscopy International meeting; 1992 will be the 25th Scanning Microscopy meeting, and some special programs and speakers will commemorate the anniversary.

For more information contact Dr. Om Johari, Scanning Microscopy International, P. O. Box 66507, Chicago (AMF O'Hare), IL 60666-0507, phone: (708)529-6677 or FAX (708)980-6698.

NFFA to Produce "The Cold Hard Facts" Handling Video

Temperature abuse is one of the leading problems in the frozen food industry. That's why the National Frozen Food Association has committed to producing "The Cold, Hard Facts," a handling program which will include a fifteen-minute training video. Directed to retail store employees, his comprehensive training program will educate them on the many facts of maintaining quality in frozen food once it is received, and establish an understanding of how quality is produced and maintained throughout the manufacturing, shipping and retail process.

"Temperature abuse is a critical topic which the industry needs to deal with from an informational, educational and training point of view," said Nevin Montgomery, president, NFFA. "In a recent survey on the quality and freshness of frozen vegetables, 72 percent of consumers reported having product problems in the past six months. Of that 72 percent, 51 percent blamed the retail store for these problems and 4 percent went to a different store." This is an example of the costly effects of temperature abuse and poor handling of frozen food in the retail segment, not to mention the effect these problems have on the rest of the industry.

The video package includes the 15-minute training video tape, a laminated information card which summarizes the handling information from the tape and can be

posted right in your freezer, and a copy of the "Code of Practices" training booklet. The complete package will be available for \$15.00 for orders of 50 or less and \$10.00 for orders of more than 50.

The following industry manufacturers have agreed to sponsor this training program: Campbell Sales Company, Coca-Cola Foods, Gorton's of Gloucester, Kraft General Foods, Pillsbury, Quaker Oats, Stouffer's, Welch's. Sponsors' logos will be prominently displayed throughout the video, as well as on all supplemental materials. If your company would like to pledge its support as a sponsor, or if you would like further information about the training program, please contact Skip Shaw at the NFFA, (717)657-8601.

Courses for Food Science Professionals at University Extension, UC Davis

University Extension at the University of California, Davis, offers a variety of courses for food science professionals who want to update their skills and knowledge or advance in their field.

The following courses will be offered this spring at the UC Davis campus:

Statistical Process/Quality Control, Monday-Friday, April 6-10, 7:45-8:30 p.m. Monday; 8 a.m.-8:30 p.m. Tuesday; 8 a.m. - 5:30 p.m. Wednesday; 8 a.m. - 5 p.m. Thursday; and 8 a.m. - 1:30 p.m. Friday. Course fee is \$650, which includes five lunches, one dinner and course materials.

This unique five-day course is designed to help processors apply statistical quality control tools to the food processing industry. Intended for managers, superintendents, food technologists and quality assurance personnel, the program introduces the theory behind statistical sampling, and presents simple tests which can be used to interpret and control the production process and build quality into the product. Coordinator is Merton Hubbard.

Introduction to Statistical Methods for Sensory Evaluation of Foods, April 16-18, 9 a.m. - 5 p.m. Thursday and Friday, and 9 a.m. - 1 p.m. Saturday. Fee is \$550, which includes one dinner, two lunches and course materials. This course introduces statistical analysis to the beginning sensory scientists possessing little or no statistical background, as well as the experienced professional. The program demonstrates how to perform the tests and provides a solid basis of understanding for those who wish to progress to more complex techniques.

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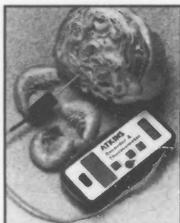
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Sensory Evaluation Overview and Update, Monday-Wednesday, April 20-22, 9 a.m. - 5 p.m. Monday and Tuesday, and 9 a.m. - 1 p.m. Wednesday. Fee is \$550 (includes one dinner, two lunches and course materials). Students who enroll in this course and the above course simultaneously receive a discount fee of \$1,000 for both courses. This update course includes a critical examination of the latest test methods and in-depth consideration of most recent theory, including how measurement procedures are set up, and how to initiate new techniques so measurement protocols can be custom built for the food or product being considered. Instructor for the above two courses is Michael O'Mahony, professor in the Department of Food Science and Technology at UC Davis, and author of *Sensory Evaluation of Food: Statistical Methods and Procedures*, and other texts and articles. He has been a consultant to the food industry in the U.S., Canada, Europe and Japan.

For more information or to enroll, call (916)757-8777.

Food Science Department Announces Formation of New Laboratory

The University of Georgia has formed a Food Safety and Quality Enhancement Laboratory within the Division of Food Science and Technology. The laboratory is located at the Georgia Experiment Station in Griffin, GA.

The laboratory was established to reflect a specific focus within the department on microbial food safety and quality enhancement of food products. The laboratory conducts extensive research on food-borne bacterial pathogens, including *Campylobacter jejuni*, enterohemorrhagic *E. coli*, *Salmonella*, *Listeria monocytogenes*, and *Clostridium botulinum*. This research includes studies of extended shelf-life technologies and of mycotoxigenic molds.

Quality enhancement studies focus on understanding consumer attitudes about quality and the physiochemical basis for attributes consumers find important. Projects include consumer perception of irradiated foods, modified-atmosphere packaging and edible films, and the physiological basis of lipid oxidation in both animal and plant products.

The laboratory has eleven full-time faculty with 100% research appointments. Department Head Dr. Michael Doyle and Professor Larry Beuchat are recipients of the IFT Prescott Award. A four-member faculty team received the 1991 IFT International Award.

For further information, contact Ted Smith at (404)229-3219.

Book Reviews

Food Environment and Health by World Health Organization, 1990

This book is designed as a guide for teachers in primary schools of developing countries where health problems are frequently the result of malnutrition, lack of sanitation, and poor standards of personal hygiene.

Chapters of the book deal with practical aspects of storing and handling food safely, making water fit to drink, disposing of wastes, and maintaining a healthy home environment. There is a guide on why the body needs water, types of food needed by the body, and the means by which infection and disease can be spread through a community.

A very useful guide for teachers, peace corp volunteers, and grass roots health workers. The book offers numerous suggestions for involving the children, parents and community leaders in practical activities that will reinforce what they learn and spread the messages about food, the environment, and health.

Oswaldo A. Cuevas, MS
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APO SF, CA 96218

Statistical Quality Control for the Food Industry by Merton R. Hubbard

This book is a complete, state-of-the-art reference on the development and application of statistical methods for the food industry quality control.

Specific "how-to" information is provided for sampling, test methods, product specifications, process capability, the design of experiments, and vendor quality assurance.

Featured in this book are: simplified instructions for preparing food process control charts for both training line personnel and reporting to management; clear guidelines for sensory testing; techniques for net content control calculations to provide legal and economic target weights.

It also contains guidelines for an overall quality control system, including suggestions for implementing a quality control program.

Statistical Quality Control for the Food Industry can be an invaluable reference and training tool for personnel in the industry as well as an excellent textbook for students of food science.

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Rapid Methods for Analysis of Food and Food Raw Material, Edited by Werner Baltes

This book is a compilation on rapid methods in food chemistry that was initially published in Germany. The book edited in 1990 in English language intends to propagate rapid methods among a wider international populace.

Rapid methods for food analysis are required not only for industrial process control but also for obtaining a fast overall view of the state of a food. The efficiency of the official food control is dependent on the possibility to proceed rapid tests for special ingredients, contaminants or additives. On the other hand, it must be stated that rapid methods are sometimes less specific or less accurate, therefore they are applicable for very specific problems only.

Twenty chapters written by that many professors and scientists provide a range of topics such as: definition of rapid methods, rapid tests for food and water, equipment for rapid methods, metallic contaminants in food, thin-layer and liquid chromatography, rapid sample preparation, infra-red spectroscopic methods, rapid methods for drugs and fattening substances in animals, immunochemical methods, application of isotachopheresis in food analysis, sensory analysis of food, physical methods for rheology, particle size measurements, and finally microbiological rapid methods.

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Chlorophenols other than Pentachlorophenols Environmental Health Criteria 93 by World Health Organization 1989

A WHO Task Group met at the Monitoring and Assessment Research Centre, London, on March, 1988 to review and revise the draft criteria document and made an evaluation to the risks for human health and the environment from exposure to chlorophenols other than pentachlorophenol.

This book contains 168 pages of relevant information ranging from identity, physical and chemical properties and analytical methods; sources of human and environmental exposure; environmental transport, distribution and transformation; environmental levels and human exposure; effects on organisms in the environment; effects on experimental animal; effects on man; evaluation of human health risks and effects on the environment; and finally recommendations for disposal, occupational exposure and future research.

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Federal Register

Food Labeling: Definitions of Nutrient Content Claims for the Fat, Fatty Acid, and Cholesterol Content of Food

Agency: Food and Drug Administration, HHS.

Action: Proposed rule.

Summary: The Food and Drug Administration (FDA) is proposing to amend the food labeling regulations to define, and to provide for the proper use of, the terms "fat free," "low fat," "reduced fat," "low in saturated fat," "reduced saturated fat," "cholesterol free," "low cholesterol," and "reduced cholesterol" in the labeling of foods and to provide for the use of other truthful and nonmisleading statements about a food's fat, fatty acid, and cholesterol content in food labeling. This proposed rule is intended to permit meaningful declarations about fat, fatty acid, and cholesterol content, while preventing misleading claims about these food components. In this document, FDA is responding to comments received in response to the tentative final rule on cholesterol claims (55 FR 29456, July 19, 1990) and to the provisions of the Nutrition Labeling and Education Act of 1990 regarding fat, fatty acid, and cholesterol content claims. In addition, this document sets forth related agency policies.

Dates: Written comments by February 25, 1992. The agency is proposing that any final rule that may be issued based upon this proposal become effective 6 months following its publication in accordance with the provisions of the Nutrition Labeling and Education Act of 1990.

Addresses: Written comments to the Dockets Management Branch (HFA-305), Food and Drug Administration, Room 1-23, 12420 Parklawn Drive, Rockville, MD 20857.

For further information contact: Virginia L. Wilkening, Center for Food Safety and Applied Nutrition (HFF-204), Food and Drug Administration, 200 C Street, SW, Washington, DC 20204, (202)245-1561.

Nutrition Labeling of Meat and Poultry Products

Agency: Food Safety and Inspection Service, USDA.

Action: Proposed rule.

Summary: The Food Safety and Inspection Service (FSIS) is proposing to amend the Federal meat and poultry products inspection regulations by permitting voluntary nutrition labeling on single-ingredient, raw meat and poultry products, and by establishing mandatory nutrition labeling for all other meat and poultry products, with the exception of products used for further processing. Under the mandatory nutrition labeling program, processors of products in small packages and products packaged in other than consumer-size packages shall have the option of providing nutrition labeling information either on the package or by alternate means. Food and Drug Administration (FDA) is undertaking various regulatory proceedings to comply with the Nutrition Labeling and Education Act of 1990, which requires mandatory nutrition labeling of most foods under FDA's jurisdiction. FSIS is committed to providing consumers with the most informative labeling system possible. FSIS is proposing nutrition labeling regulations for meat

and poultry products which will parallel, to the extent possible, as authorized by the FMIA and the PPIA, FDA's nutrition labeling initiatives. However, FSIS is also seeking comments on alternatives to mandatory nutrition labeling and the extent to which FSIS requirements must duplicate or complement new FDA requirements to maximize informative labeling in a cost effective manner.

Dates: Comments must be received on or before February 25, 1992.

Addresses: Written comments to: Policy Office, ATTN: Linda Carey, FSIS Hearing Clerk, Room 3171, South Building, Food Safety and Inspection Service, U.S. Department of Agriculture, Washington, DC 20250. Oral comments as provided by the Poultry Products Inspection Act should be directed to Mr. Charles Edwards at (202)205-0080.

Food Labeling: Nutrient Content Claims, General Principles, Petitions, Definition of Terms

Agency: Food and Drug Administration, HHS.

Action: Proposed rule.

Summary: The Food and Drug Administration (FDA) is proposing: (1) To amend its food labeling regulations to define nutrient content claims and to provide for their use on food labels; (2) to provide definitions for specific nutrient content claims that include the terms "low," "free," "reduced," "light" or "lite," "source," and "high;" (3) to provide for comparative claims using the terms "less," "fewer," and "more;" (4) to set forth specific requirements for sodium and calorie claims; (5) to establish procedures for the submission and review of petitions regarding nutrient content claims; (6) to revise 21 CFR 105.66, which covers special dietary foods with usefulness in reducing or maintaining caloric intake or body weight; (7) to establish criteria for the appropriate use of the term "fresh;" and (8) to address the use of the term "natural". FDA is addressing claims for cholesterol, fat and fatty acid content in a separate proposal published elsewhere in this issue of the **Federal Register**. This action is part of the food labeling initiative of the Secretary of the Department of Health and Human Services (the Secretary) and in response to the Nutrition Labeling and Education Act of 1990.

Dates: Written comments by February 25, 1992. The agency is proposing that any final rule that may be issued based on this proposal become effective 6 months following its publication in accordance with the provisions of the Nutrition Labeling and Education Act of 1990.

Addresses: Written comments to the Dockets Management Branch (HFA-305), Food and Drug Administration, rm. 1-23, 12420 Parklawn Drive, Rockville, MD 20857.

For further information contact: Elizabeth J. Campbell, Center for Food Safety and Applied Nutrition (HFF-312), Food and Drug Administration, 200 C Street, SW, Washington, DC 20204, (202)485-0229.

Federal Register/Vol. 56, No. 229/Wednesday, November 27, 1991/Proposed Rules



National Mastitis Council's 31st Annual Meeting Date Set

The National Mastitis Council 31st Annual Meeting will be held February 10-12, 1992 at the Hyatt Regency Crystal City in Arlington, Virginia. The conference will highlight the latest technical and applied information relating to udder health, milking management, milk quality, and milk safety. The program is directed toward veterinarians, producers, researchers, extension agents, suppliers, regulatory officials, field representatives, and quality control personnel.

The conference begins with committee meetings on Monday, February 10. Short courses on cleaning and sanitizing milking equipment, somatic cell count decision making, and mastitis microbiology will be offered that evening. The General Session begins Tuesday, February 11, at 11:00 a.m. and concludes the next day at 12:30 p.m. The NMC Technology Transfer Session, featuring educational exhibits on mastitis and milk quality, will be held Tuesday.

The General Session kicks off with the topic "Coping in Today's Economy Through Mastitis Control." Presentations will cover mastitis control strategies, heifer mastitis, dealing with difficult mastitis cases, clinical mastitis losses, and mycoplasma mastitis. That afternoon, the topic is "Milk Quality: Meeting the Challenge." Topics include new somatic cell count regulations, the impact of lowering SCC limits on milk quality and safety, milk quality incentives for employees, and practical milking tips.

The opening session on Wednesday examines genetic aspects of mastitis resistance. Presentations include genetic improvement of SCC, what SCC genetic evaluations will look like, selecting for SCC, and future approaches to mastitis resistance. Next, in a session on maintaining a safe milk supply, drug residue avoidance and residue testing will be covered. The wrap-up session will cover recent mastitis research results.

For additional information, contact the National Mastitis Council, 1840 Wilson Blvd., Suite 400, Arlington, VA 22201; phone: 703-243-8268; fax: 703-841-9328.

HITM Expands HACCP Training and Certification

Dr. O. Peter Snyder, President of the Hospitality Institute of Technology and Management, has recently expanded his company's industry HACCP-based Total Quality Management (TQM) programs. HITM's manager course, **Food Safety**

through **Quality Assurance Management (Fdsv 1901)** is a rigorous two-day HACCP-based course which trains managers to do hazard analyses of their retail operations and to write HACCP plans, to be approved by their health departments or Dr. Snyder, which are then put into a dynamic quality improvement-based self-control programs. This course was reviewed by Mr. Ray Beaulieu, FDA Retail Food Protection branch, in 1991 and has been accepted as meeting FDA HACCP criteria. Since there is no need to separate foodservice from retail food market and vending in terms of foodborne illness, this course integrates the hazards associated with these three areas into one set of hazard control process standards, just as the Unicode proposes to do. The Huntsville, Alabama and Rochester, Minnesota health departments have used the course for more than five years for manager certification.

HITM's advanced five-day course, **HACCP-Based Safety and Quality-Assured Pasteurized-Chilled Food Systems**, is for industry Directors of Quality Assurance and Chilled Food Process Authorities, who must develop and approve not only cook-and-serve processes, but also food processes for extended chilled storage, such as *sous vide*. This course incorporates both FDA standards and USDA chilled food process standards, and deals in depth with food pasteurization. More than 600 people have attended HITM's advanced course, taught by Dr. Snyder. Actually, companies do not have to tell the government that they have hazard control programs if they do not want to deal with government bureaucracy. However, in terms of liability and cost of quality control, companies must have HACCP-based TQM programs if they want to avoid the high risk of making the one catastrophic mistake that causes death to a customer and could bankrupt them tomorrow. This course provides the foundation for companies to have zero-defect QA programs based on food safety and TQM.

Note, the purpose of these courses is not merely to teach that there are hazards, and to do flow charts to specify control points, as government courses do. HITM's courses take into consideration all forms of liability, specify control procedures, and determine what must happen for a company to have an effective zero-defect control and improvement program. These courses integrate most of the principles behind the Malcolm Baldrige award and the ISO 9000 QA certification program into one company TQM program.

The 1901 course is held at the HITM office frequently throughout the year, the next one being February 3-4. The next 2902 course will be held at the HITM office February 24-28. It will also be held in San Francisco California in March; London and Manchester, England in July, Washington, DC area in August; and at the HITM office in October. HITM also helps companies with HACCP; TW Services and Arby's are now developing national HACCP programs for FDA approval.

Regardless of whether or not the government requires HACCP, some companies are now saving thousands of dollars in liability costs because they have hazard control programs. When there is a complaint against them, these companies can show that the problem was not caused by them, because of their HACCP programs. The goal of zero foodborne illness in the U.S. and throughout the world is technically possible when HACCP is applied correctly as part of a TQM customer satisfaction program.

Food and Environmental Hazards to Health

Outbreak of Relapsing Fever - Grand Canyon National Park, Arizona, 1990

On June 21, 1990, 11 days after returning from the Grand Canyon North Rim (GCNR), a 61-year-old California resident developed an acute illness lasting 2 days, characterized by fever, shaking chills, headache, myalgias, and drenching sweats. During the next 2 weeks, he had three febrile relapses and was hospitalized. Physical examination and laboratory studies were nondiagnostic. However, during a fourth recurrence of fever and prostration, examination of a peripheral blood smear revealed spirochetes, consistent with the diagnosis of relapsing fever. The patient was treated with tetracycline and recovered.

One additional confirmed case with onset July 5 and one suspected case with onset July 12 were reported in Arizona residents. All three patients had stayed overnight in cabins at the GCNR.

Beginning July 6, 1990, visitors to the GCNR were notified of the risk for exposure to tickborne relapsing fever (TBRF). A survey of 244 employees at the GCNR identified two persons who had had recurrent febrile symptoms compatible with TBRF. One had been hospitalized with meningismus and cerebrospinal fluid pleocytosis. A retrospective mail and telephone survey of 6993 visitor groups, representing more than 10,000 persons who stayed in park cabins during the 1990 season, identified 14 cases of laboratory-confirmed (four cases) or clinically defined (10 cases) relapsing fever in park visitors from nine states, Canada, and Germany. Seven of the 14 patients had been hospitalized.

An environmental investigation revealed rodent nests likely to harbor vector ticks above the ceilings and below the floors of many of the cabins at the GCNR. During August, all cabins were sprayed with acaricides. National Park officials plan to inspect all buildings, remove rodent nests, and make structural changes to prevent rodent access and nesting in attics and crawl spaces before the park opens for the 1991 season.

Editorial Note: This outbreak is the first recognized occurrence of TBRF at GCNR since 1973, when an interstate outbreak of 62 confirmed or suspected cases occurred in employees or visitors who had stayed in cabins at GCNR. TBRF is endemic throughout much of the western United States; sporadic cases occur each summer and fall. The disease is caused by infection with the spirochetes *Borrelia hermsii* or *B. turicatae*; *B. hermsii* was identified in 1973 at the GCNR. The soft ticks of the genus *Ornithodoros*, which transmit the illness, usually feed on rodents and frequently infest rodent nesting material. The ticks are reclusive, usually feeding at night for only 5-20 minutes. Their bites are painless and frequently go unnoticed. Most infections with *B. hermsii* are acquired by persons vacationing in mountain cabins where rodents have nested.

Because onset of illness occurs 4-18 days after infection, patients infected with TBRF in tourist areas where the disease is endemic often develop symptoms after they have returned to areas where TBRF is not suspected. TBRF that is undiagnosed and untreated may cause recurrent febrile illness for weeks to months before the illness resolves. Neurologic sequelae, such as aseptic meningitis and cranial nerve palsy, occur in a small proportion of patients. Serologic testing by enzyme-linked immunosorbent assay is available at CDC's Division of Vector-Borne Infectious Diseases, Center for Infectious Diseases, through state health departments and may aid with a diagnosis when symptoms are suggestive of TBRF but laboratory results are equivocal. Following infection, paired serum specimens often demonstrate diagnostic levels of antibody to *B. hermsii* or *B. turicatae*.

The 1973 outbreak was associated with epizootic plague, which caused a marked decrease in rodent populations that serve as the usual hosts for the vector tick and resulted in increased feeding of ticks on humans. Recent observations suggest that a decline in rodent populations occurred in 1990, which may similarly have increased the risk for human exposure.

Prevention strategies for TBRF focus on avoiding tick bites and preventing rodents from nesting in human shelters in areas where TBRF is endemic. "Rodent proofing"-structural changes that prevent rodent access to the foundations or attics of homes and vacation cabins - reduces human contact with ticks that transmit the disease.

MMWR 5/10/91

NIOSH Current Intelligence Bulletin 54: Environmental Tobacco Smoke in the Workplace; Lung Cancer and Other Health Effects

CDC's National Institute for Occupational Safety and Health (NIOSH) has released *NIOSH Current Intelligence Bulletin 54: Environmental Tobacco Smoke in the Workplace; Lung Cancer and Other Health Effects*.^{*} Current Intelligence Bulletins (CIBs) provide new data or update existing information about chemical substances, physical agents, or safety hazards found in the workplace.

CIB 54 presents information about the potential risk for cancer to workers exposed to environmental tobacco smoke (ETS). Since 1964, when the Surgeon General issued the first report on smoking and health, research on the toxicity and carcinogenicity of tobacco smoke has demonstrated that the health risk from inhaling tobacco smoke is not limited to smokers, but also includes nonsmokers who inhale ETS. ETS contains many of the toxic agents and carcinogens that are present in mainstream smoke, but in diluted form. Recent epidemiologic studies support and reinforce earlier published reviews by the Surgeon General and the National

Research Council that demonstrate that exposure to ETS can cause lung cancer. These reviews estimated the relative risk of lung cancer to be approximately 1.3 for a nonsmoker living with a smoker compared with a nonsmoker living with a nonsmoker. In addition, recent evidence also suggests a possible association between exposure to ETS and an increased risk for heart disease in nonsmokers.

Although these data were not gathered in an occupational setting, ETS meets the criteria of the Occupational Safety and Health Administration (OSHA) for classification

as a potential occupational carcinogen. NIOSH therefore considers ETS to be a potential occupational carcinogen and recommends that exposures be reduced to the lowest feasible concentration. The risk for developing cancer should be decreased by minimizing exposure to ETS. Employers should minimize occupational exposure to ETS by using all available preventive measures.

*Single copies are available without charge from the Publications Dissemination Section, Division of Standards Development and Technology Transfer, NIOSH, CDC, 4676 Columbia Parkway, Cincinnati, OH 45226; telephone (513)533-8287.

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HACCP - An Industry Food Safety Self-Control Program - Part I

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This column begins a series exploring the application of HACCP (Hazard Analysis and Critical Control Points) as an industry self-control safety assurance program. (Note, a program is a plan put into action.)

The Origin and History of HACCP

HACCP originated in the chemical processing industry, particularly in Great Britain, over forty years ago. Then, in the 1950s, 1960s, and 1970s, the Atomic Energy Commission made extensive use of HACCP principles to design nuclear power plants. The commission developed extensive analytical methods to use mean-time-to-failure data for the components of a nuclear facility in order to predict mean time to failure for a facility and in turn, design nuclear systems that would fail safe only about once in 200 years.

Space mission designers adopted the logic for hazard **failure analysis** to design early manned space equipment. In the late 1960s, NASA suggested that in order to minimize the change of foodborne illness of space crews, HACCP should be used by the U.S. Army Natick Laboratories, which was providing the space rations. The Pillsbury Company, the contractor for space food production, insightfully saw the application of HACCP to **minimize liability** in the manufacturing of food, and adopted and expanded the concept for an in-house liability control program in 1971. Pillsbury's publication, **Food Safety through the Hazard Analysis and Critical Control Point System** (1973) is "must reading" for people applying HACCP. An interesting note about space flight today is that there is much less concern about astronauts getting ill from food. NASA has found that sickness in space has many causes. Hence, sanitation systems to handle sickness problems have been built into space vehicles. A wide variety of food is now carried into space.

Recently, the U.S. chemical industry "rediscovered" the high cost of mistakes. Most large chemical companies now develop detailed hazard control programs for every new process. The American Institute of Chemical Engineers (1985) has written a very good text, **Guidelines for Hazard Evaluation Procedures**, which summarizes the analytical methods for hazard analysis. This book is also a "must read" for any student of HACCP.

The National Safety Council and the Occupational Safety and Health Administration now use HACCP extensively to reduce accidents. One of the interesting concepts that OSHA has introduced to HACCP is the critical requirement for top management leadership, which entails involvement in funding hazard control, and prevention and absolute enforcement of rules and policies, even if a long-term employee must be fired.

New OSHA-related publications by the states of California and Minnesota identify the following elements of **A Workplace Accident and Injury Reduction Program** (California Senate Bill #198) (Minnesota Occupational Safety and Health Division, 1991). These are:

1. Written program.
2. Management, supervisory, and employee responsibility.
3. Hazard analysis and control.
4. Communications and training.
5. Accident investigation and corrective action.
6. Program enforcement.

Note the integration of hazard control into a management program. **Hazard control, like quality control, fails unless top management enforces the process standards and makes it part of a Total Quality Management program.**

The FDA and USDA Implementation of HACCP

While OSHA, which has used HACCP for years, has recognized that it is up to individual employees to be accountable for safety, the FDA, USDA, and local regulatory officials continue to operate under the incorrect premise that one to four inspections a year for the FDA, or a continual process inspection by the USDA, ensures food safety. On the contrary, the technology of Statistical Process Control (SPC) indicates that **one does not control by sampling the output of a process**. There must be 100 percent control during production in order to begin to approach the desired goal of zero defects in quality and safety. This is accomplished by designating the employee on the line, who performs process/production tasks, as the process/product controller. **Employees have the actual control of the process and can thereby ensure zero performance errors.** This is the basic premise of SPC that has been used in manufacturing for years (AT&T, 1984).

There will be much government resistance to reversing this basic responsibility and accountability for control from government food agencies to management and line employees in food operations because this would eliminate the need for government inspectors as they currently function. Government would only be needed to do research to define minimum safety standards. This means the elimination of many local and national government jobs. It also means that government employees who wish to become HACCP Process Authorities (i.e., those who certify processes as being safe) will need to seek out higher education in the form of at least a Master's Degree in food science and technology. This would be a difficult, time-consuming process, and represent another reason for resistance.

Another problem is that food processors and operations must begin to have Quality Assurance programs whereby no employee is assigned a task until that employee is trained and performance-certified to perform the task safely, as tested and proven by a Director of Quality Assurance. Most operators have little or no training for line operators, supposedly because of cost of turnover. They also do not see a need for having Directors of Quality Assurance, even though the QA director can continually analyze processes for opportunities to improve safety, quality, or productivity, and then direct programs for process improvements.

However, the only strategy for competitive excellence (i.e., meeting customer needs for safety, quality, and employee performance more effectively than competitors) is for an organization to have 1) **quality control** by trained and motivated line employees, 2) **quality assurance** by mid-management, which makes it possible for line employees to perform with zero defects, and 3) **quality improvement**, which is led by the owner/operator in order to produce continually safer, improved products by increasingly cost-effective means. These three points of strategy are simply the components of Total Quality Management (TQM). **HACCP must be a part of any TQM program in order for it to be successful.**

USDA Hazard Control

In the early 1980s, the USDA had a voluntary Total Quality Control (TQC) program that integrated management and hazard control (USDA, 1984). However, companies did not respond to this program because it entailed too much record keeping and only led to government entrapment. Government did not realize then (nor does it now) that when audits are performed, auditors should not be concerned with the past. They must evaluate, in order to certify an operation as being safe, the stability of a company's processes, and the likelihood that the company will continue to have stable and controlled processes until the next audit. Regardless, there were many good ideas put forth in the USDA's TQC program, and it gave a very specific outline as to how to establish a TQC program. Interestingly, it contained a complete list of hazards found in a typical meat and poultry processing plant, and then identified critical control points. Unfortunately, many food processors believed then, as they do today, that it is less costly to have government inspectors rather than self-control. As a result, this volunteer program never had many volunteers, and, I believe, is no longer offered.

In 1989, the USDA tried again to get manufacturers to deal with the microbiological, chemical, and hard foreign object contamination of food by the formal introduction of the current voluntary HACCP program for meat and poultry (USDA, 1989). Originally, it was believed that the program would be mandatory, however, political opinion overruled, and the program, as with TQC, is now voluntary. This new program is now facing another hurdle because its two main proponents, the former head of USDA-FSIS, Dr. Lester Crawford, and his assistant, Dr. Kathryn Adams, have left USDA. It is questionable whether or not USDA will promote HACCP in the future. Even though this USDA HACCP program does not include management as a key component, which TQM did, it does list seven principles that must be applied (USDA, 1989). Actually, these principles have been known for years.

1. Assess hazards associated with growing, harvesting, raw materials and ingredients, processing manufacturing, distribution, marketing, preparation and consumption of the food.
2. Determine CCP (Critical Control Point) required to control the identified hazards.
3. Establish the critical limits which must be met at each identified CCP.
4. Establish procedures to monitor CCP.
5. Establish corrective action to be taken when there is a deviation identified by monitoring of a CCP.
6. Establish effective record-keeping systems that document the HACCP plan.
7. Establish procedures for verification that the HACCP system is working correctly.

In a later column, I will point out why these principles are not complete and will not lead to an effective program.

FDA Hazard Control

In the late 1970s, the FDA wanted to get better control over the canning of food, and implemented what some call a hazard control program for food. While the term "HACCP" is not really used in connection with this program, the program has worked to reduce the risk of underprocessed canned food, as though HACCP had been consciously applied. The simplicity of the program and its emphasis on process control is a major strength.

The FDA met with the Food Processors Institute, which for years has been the source for correct canning information, and the Food Processors Institute wrote a book describing correct canning

procedures. These procedures were also written into 21CFR Part 113 (1991) so that both government and industry could agree precisely on critical control points and critical control procedures. The FDA involves some of the major food science nutrition departments of universities throughout the U.S. to periodically teach a school, "Better Process Control" to train retort operators. This hazard control program is the only one in the food industry that works, and the reasons are:

1. The processors understand their liability if one person dies because of an underprocessed can of food. Most likely, their business would fold.
2. The government involved the industry in writing the hazard control procedures because the industry was more knowledgeable in this area than government personnel.
3. The government uses established, highly qualified university educators in addition to government personnel to do the training.
4. Training is uniform because there is one text (Food Processors Institute, 1989), and it links directly to the CFR.

Summary

HACCP is not new. It is much better established in chemical processing than in food processing. (Note, that food processing is chemical processing.) HACCP works to reduce a processor's liability when hazards are correctly identified; tested, proven controls are applied; and top management enforces the program. Top management must be able to see a benefit from applying HACCP, or else HACCP will not be used. HACCP will be used only when it becomes a part of a company's Total Quality Management program, which strives for zero defects in customer satisfaction.

In this column, I will continue to show how to make hazard control a part of quality control, quality assurance, and quality improvement (i.e., a TQM program), and thereby give a company a significant competitive edge, reduce costs, and minimize government intervention with operations.

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Sanitary Design

A Mind Set (Part VII)

Donald J. Graham
Senior Food Technologist
Sverdrup Corporation
St. Louis, MO

Whenever I walk into a food processing facility and see fiberglass batts being used as insulation, I am confident that I will find signs of rodent activity. Rodents love fiberglass for nesting. They also like the resin in the fiberglass insulation and there have been reports that they will eat the fiberglass. The writer has been involved in a circumstance where we found large Norway Rat families nesting and raising their young in fiberglass insulation in a -10 degree F freezer. It is mainly for this reason that fiberglass batts are *not* recommended in food processing facilities or warehouses. Preformed panels containing sealed in fiberglass batts, which prevent access to the fiberglass by rodents or insects can be used. Care must be taken to prevent damage to these walls by forklifts or other means which would allow infestation. Any penetrations for conduit or piping should be sealed immediately. It does not take long for pests to find openings into a prime nesting area. Once they are inside the panels, they are almost impossible to dislodge.

Insulation

Insulation plays a major role in building or remodeling a food processing plant. Not only is it in the ceilings, walls and floors but around pipelines, sheet metal ducts, steam lines, freezers and cold rooms. There are many types of insulation on the market. For a food plant, the insulation used should meet the criteria of being:

Non toxic	unattractive to pests
Odorless	non contaminating

Asbestos, of course, should not be considered for any use in a food processing plant due to the apparent asbestos fiber/cancer relationship.

Other types of insulation that have proven to work well in a food processing facility are Styrofoam, foam glass, urethane, Rubatex, Armaflex and calcium silicate, among others. The insulation selected should be matched to the use for which it was intended. For example, Styrofoam is often used in sealed preformed insulated panels in temperature controlled rooms, and calcium silicate is used around steam pipes. Foam glass is also used around pipelines and is usually wrapped or encased in either aluminum or a poly covering to prevent it from crumbling. Insulations unable to withstand high temperatures should not be used around steam pipes. Urethane is often used in wall cavities. Keep in mind that if they can gain entrance, insects can be found living in any of these insulations. Rodents like fiberglass but are apparently not attracted to other insulation types.

Freezers and Coolers

Modular type freezers and coolers also present a sanitary design challenge. They are usually installed inside an existing building. They are often erected so close to an existing wall that there isn't any space between the building wall and the unit wall for practicing insect and rodent control. This area then becomes a nesting and breeding place for pests and a collection place for debris and dirt. Many sanitation auditors will grade a plant down for these conditions. These units should be placed at least 18 inches away from any wall or permanent structure so there is an access area for inspection and treatment. The base of these modular units should be sealed to the floor to eliminate the area under them from becoming a haven for insects and bacteria. These "boxes" usually have flat tops which become a "dead storage" area for items not currently useful but that no one wants to dispose of. The top area of these units should be included in routine sanitation inspections. They should also be included in the pest control program.

Permanent freezers and coolers can be constructed using the sanitary design techniques covered in previous articles coupled with principles of sound refrigeration engineering. Items to be considered are:

Insulation: As described in the preceding paragraphs.

Refrigerants: A matter of choice and availability. The fluoro and chloro methanes and ethanes are food safe refrigerants but are becoming strictly regulated, if not outlawed, due to environmental concerns. Considerable work is being done to find a direct substitute for these products that is usable in existing refrigeration equipment and is environmentally safe.

Ammonia is a very efficient refrigerant but a potential hazard to both employees and product. Leaking ammonia can be absorbed by the moisture in and around food products resulting in off flavors. Frozen products are especially vulnerable since ammonia is quickly absorbed by any cavity ice and ice crystals within the product. Ammonia is also toxic to personnel but is readily detectable at very low levels.

Other refrigerants are good for specific applications but are not in general use for a number of technical reasons.

Structure: Because these rooms or structures are refrigerated does not mean they can be ignored from a sanitary design standpoint or exempted from routine sanitation. Coolers especially need to be cleaned out, washed down and sanitized on a programmed basis. There are numerous microorganisms that cause food borne illness that can and

do live and reproduce at refrigeration (32 degrees F and up) temperatures.

Cooling Coil Design: Cooling coils are considered the most contaminant-prone components of an air handling unit. When operating, they are usually wet and relatively warm. Under most circumstances, coils collect more than enough air borne contaminants and contain enough "nutritious dirt" to support pathogen growth in their warm, moist environment.

To minimize potential contamination points, coils should be designed with inspection and cleanability as a major criteria. Fin count per inch is critical. Coils should be designed with no more than eight fins per inch. More than eight fins makes cleaning extremely difficult, and in some cases, impossible.

Fin configuration is also important. The most common designs are the spiral, ripple and flat fin types. Since airborne particulates tend to collect on the leading edge of any component within an airstream, spiral fins, with multiple leading edges, collect vast amounts of contaminants and "nutritious dirt." Ripple fins, due to their constantly changing air flow direction, have the same contaminant collection problem. These designs tend to collect particulates and contaminates along with being extremely difficult to clean and apply sanitization. These requirements place the spiral and ripple fin designs in the "not recommended" category for food processing operations or applications. Considering the fin arrangements currently available, the ideal configuration is a flat-fin, continuous-plate design. It has only one leading edge and accumulates minimum levels of particulates. The straight-through design of the flat fin makes it simple to clean and sanitize. Included in the design criteria is accessibility. The depth of most coil sections necessitates inspection and cleaning be done from both sides. The design must include doors to both sides of the coil units. The other contaminant-prone area of the cooling coil unit is found in the drain pan under the coils. It has been shown that the collected condensate makes an ideal growth medium for *Listeria*. Once the organism gets a foothold in the drain pan, the fans will spread it throughout the cooler. These pans should be designed with a well placed drain and should receive a daily flush with water or preferably with a sanitizing solution to minimize microbial growth.

Putting cooler, either modular or constructed, sanitation concerns in terms of Hazard Analysis Critical Control Point (HACCP) analysis can be summarized as follows:

- Chemical ————— Leaking refrigerant.
- Physical ————— Trash, rodent infestation, peeling paint, dirt.
- Microbiological ——— Microbial growth in condensate formations on walls, ceilings, incorrectly designed cooling coils and in drain pans that are not drained or flushed and sanitized on a routine basis.

Freezers, by definition, do not have the same biological contamination problems that coolers experience. Fin design, spacing, and accessibility are, however, equally important in freezer coil units as they are in cooler units. Air flow patterns are equally important to eliminate warm spots which allow product to warm up or take too long to finish freezing after the initial freezing treatment. Freezer rooms tend to become cluttered with trash since the cold discourages workers from routine cleaning. Refrigerant leaks are also potential contaminants depending on the type used. The walls and ceilings must be kept sealed since rodents can live in the ceiling and wall insulation if it is the type that will attract and support rodent infestation. Any opening allows them to enter the freezer after production activity has stopped for the day and contaminate and dispoil food products stored in the freezer. Rack storage in coolers and freezers keeps product off the floors, allowing the areas to be cleaned as product is removed for shipping or processing. A summary of the sanitation concerns in terms of HACCP is:

- Chemical ————— Leaking refrigerant.
- Physical ————— Trash and debris buildup, rodents, inadequate defrosting leading to product warm-up and potential microbial growth.
- Microbiological ——— A low priority problem in a freezer as long as it is remembered that freezing does not readily kill microorganisms but merely suspends their growth until the product warms up. Incorrectly designed fins and coolers can catch and spread contaminated particulates over the stored product.

In summary, coolers and freezers, because they are designed to prolong the shelf life of food products through temperature reduction which slows chemical and microbiological reactions, are often neglected in sanitary design considerations and for routine sanitation programs. This attitude is a major sanitation error. Since the industry has now identified and isolated organisms that cause food-borne illness by breaching our first (or last) line of defense by being able to grow at refrigeration temperatures, sanitation in the design and operation of cold rooms and freezers becomes a top priority.

We have added a section on sanitary design of coolers and freezers, cooling coil units and air handling in the Sverdrup Sanitary Design and Construction Course that is presented to Sverdrup personnel and to other interested companies and groups. It should be part of the mind-set whenever engineers, technologists, food scientists, production people, designers and corporate executives discussion building, installing and operating refrigerated spaces.

Industry Products

Disinfectant Mat™ Sanitizing Foot Bath

Preventing contamination from reaching sanitary processing areas is the primary purpose of the Disinfectant Mat™. One step beyond the ordinary sanitizing food bath, it both cleans and sanitizes. As the user wipes his feet, hundreds of flexible rubber fingers clean dirt particles from the shoe. Simultaneously the sole of the shoe is lowered into sanitizing solution. This unique double-action helps keep contamination from reaching dairy and food processing areas.

Disinfectant Mats™ are recommended at all entrances to sanitary processing areas. Other important locations include doorways to starter rooms, packaging areas, laboratories, employee locker rooms, break rooms, refuse areas, and areas used for receiving.

The exclusive high-wall design contains over one gallon of sanitizing solution without splashing or spilling. Standard rubber shoe mats, with their low walls, cannot do this.

The flexible rubber fingers not only serve to scrub the shoe sole, they also hold it above any accumulated sediment in the mat, as well as provide a slip-resistant surface.

Sanitizers available commercially may be used in the Disinfectant Mat™ in their recommended concentrations. As with any food bath, the maker advises testing the solution's strength and cleanliness frequently to maintain effective levels. Test strips are available for this purpose.

Disinfectant Mats™ measure 24" x 32", are black in color, and are packaged four per case. Nelson-Jameson, Inc. - Marshfield, WI

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VICAM Introduces Rapid Quantitative Listeria Test

VICAM, L.P., a Massachusetts-based biotechnology firm, has developed an innovative new test for the food poisoning bacteria, *Listeria*. The bacteria cause a serious illness, listeriosis,

which is fatal in 25% to 40% of the cases. *Listeria* are difficult to eradicate from food processing environments, and current test technology is both time consuming and inadequate for detection of the bacteria in many cases. VICAM's new test, *listertest*™, can be completed within 24 hours of sampling which cuts days off of the current testing methods. *listertest* is also the first test that will quantitate the *Listeria* present and indicate whether they are capable of causing human illness.

"*listertest* gives data that the food processing and dairy industries have been needing but have been unable to obtain from other test methods," said Dr. Barb Jackson, VICAM's Director of Pathogen Research. "And the test is very sensitive. With *listertest*, we can detect as few as one live *Listeria* in 29 ml (a little less than an ounce) of whole milk. Because the test is quantitative, food processors can tell if they are disinfecting their plants properly by monitoring the drop in *Listeria* numbers during cleaning," Dr. Jackson explained.

listertest is actually two tests: *listertest Lift* and *listertest MAC*. *listertest Lift* detects all *Listeria monocytogenes* which cause almost all cases of human listeriosis. *listertest Lift* also detects *Listeria* that do not cause illness but instead serve as sentinels. The presence of sentinel bacteria in a sample means that growth of the dangerous *Listeria monocytogenes* may occur soon and thus signals the need for more rigorous decontamination. *listertest Mac* detects only pathogenic *Listeria*, those that are capable of causing illness in humans and other mammals. *listertest Mac* is the only *Listeria* test available that detects pathogenic bacteria based on their pathogenic behavior, rather than by measuring characteristics unrelated to pathogenicity. Since both *listertest Lift* and *listertest Mac* have common steps, a single sample can be analyzed simultaneously by both methods.

A significant advantage of *listertest* is the elimination of an enrichment step, a hazardous procedure in which any *Listeria* in a sample are allowed to multiply so that they can be detected by insensitive tests. Unfortunately, the toxic agents used in enrichment sometimes kill *Listeria* so that none are detected even though they are present in the sample.

"*listertest* is straightforward to perform and doesn't require enrichment, so that users can test more samples more frequently, which should increase consumer safety," Dr. Jackson observed.

Other bacterial tests will be introduced soon, according to Jack Radlo, President and CEO of VICAM.

VICAM also markets *afllatest*™, the first rapid quantitative test for aflatoxin, a naturally occurring carcinogen found in corn, peanuts and other grains. VICAM's *afllatest* is the official aflatoxin testing system used by the U.S. Department of Agriculture.

VICAM - Somerville, MA

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New Platinum Thermometer Gives Unparalleled Accuracy by Calibrating Probe With Instrument

Atkins Technical's new Platinum RTD Thermometer and Probe system eliminates a source of error found in instruments with detachable probes. The Platinum Probe is permanently attached to the thermometer, allowing the instrument and probe to be calibrated as one unit and providing a more accurate instrument and probe combined reading.

The Platinum RTD Thermometer and Probe system's combined calibration and attractive features make it an ideal instrument for use in food research, energy management, the scientific community, or for anyone needing 0.5 degree accuracy. For quality assurance and quality control in the health and food industries, the Platinum system provides the high accuracy needed to control foodborne illness and protect product quality.

The Platinum Probe provides long-term stability at high temperatures and offers the widest ambient range of any instrument in the price range. The system is priced well below similar units that require purchase of a probe separate from the instrument.

Atkins designed the system to be quick, accurate and durable. The digital thermometer with reduced-diameter tip needle probe provides fast response time for penetration, immersion, or insertion temperature measurements. The food processing and food service industry can use this system in ovens or freezers. The probe handle is constructed of an FDA approved high temperature thermoplastic compound rated for continuous use at 400 degrees F. The Platinum system measures -76° F to 500 °F (-60° C to 260° C).

Other features include an O-ring sealed water resistant housing, and a silicone jacketed probe cable reinforced with Kevlar, the same material used in bullet proof vests, and the cable is rated at 50 pounds breaking strength.

Atkins Technical Inc. - Gainesville, FL

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Integrated BioSolutions Simplifies Sample Dilutions

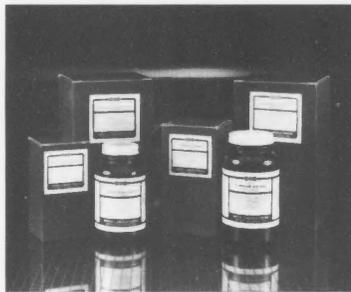
Martin Tricarico, Director of Marketing and Sales for Integrated BioSolutions, Inc. in Monmouth Junction, New Jersey, announces the availability of The Gravimetric Diluter. The Gravimetric Diluter is a desk top unit capable of dramatically reducing the time required to make dilutions of solid or semi-solid samples.

The system consists of a control unit, top loading balance, recirculating reservoir with UV, pumps and valves. Any sample size added to a container on the balance is measured. The necessary amount of diluent (based upon the desired dilution factor) is calculated and automatically delivered via a pump and valve system through a sterilizing filter.

Routine use of the diluter eliminates the need to weigh precise amounts of the sample based upon the dilution factor, autoclave or store diluent, measure or pour sterile diluent, or use volumetric glassware. Benefits include a dramatic reduction in the time required to make product dilutions (50-70% savings), increased accuracy, and reduced contamination risk.

**Integrated BioSolutions, Inc. -
Monmouth Junction, NJ**

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New Culture Media Meet New National Drinking Water Regulations

Earlier in 1991 the Environmental Protection Agency announced new regulations for drinking water. These new analytical methods utilize culture media containing 4-Methylumbelliferyl-beta-D-glucuronide (MUG). Satisfy these new requirements for *E. coli* detection by using Bacto EC Medium with MUG or Bacto Nutrient Agar with MUG now available from Difco Laboratories.

EC Medium with MUG is approved for most probably number analysis according to the revised total coliform rule. *E. coli* detection using a membrane filtration procedure is simplified with the use of Nutrient Agar with MUG. Results are available within four hours after transferring the membrane from the total coliform medium to the Nutrient Agar with MUG.

Both media demonstrate the presence of *E. coli* by exhibiting a bright blue fluorescence when exposed to long wave UV light. The enzyme, glucuronidase, produced by *E. coli* hydrolyzes MUG to form the compound which produces the bright fluorescence.

Bacto EC Medium with MUG and Bacto Nutrient Agar with MUG are available for immediate shipment. Convenient 100 g and 500 g packages are offered at economical prices. Order these new dehydrated culture media plus other water test media such as Presence Absence Broth, Lauryl Tryptose Broth, and M-Endo Agar LES from your authorized Difco distributor.

Difco Laboratories - Detroit, MI

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New, Low Cost UV Water Disinfection Packages Unaffected by Temperature

New, low-cost, ultraviolet (UV) water disinfection systems from Aquionics are designed for applications in the dairy industry treating up to 450gpm.

Using UV light to deactivate bacteria, molds and fungal spores, the UV850 and UV950 do not require chemicals, heat exchange or filters. UV disinfection has no effect on water taste, odor, pH or chemical composition.

Applications include disinfection of incoming water, product make-up, cheese washing water, carbon filtered water and flavoring/additive dilution water. Incorporating a single high intensity UV lamp, efficiency of the units is unaffected by water temperature.

Designed for trouble-free installation and operation, the only maintenance required is replacement of the UV lamp approximately every six months.

Palintest Aquionics Inc. - Erlanger, KY

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Everything You Ever Wanted to Know About Insulated Rooftop Refrigeration Systems Now in One Brochure

King Company of Owatonna, MN has just released a new publication on the applications and advantages of insulated rooftop refrigeration systems for food plant work and storage areas.

Over 40 years ago, King introduced insulated rooftop refrigeration as an alternative to ceiling hung evaporators for dairy plants. Since then, this engineering approach has expanded into King's SpaceMax, IRF equipment which serves all facets of the food industry.

Originally King's rooftop concept was built around the notion that refrigerated space was too expensive to waste housing the refrigeration equipment itself -- especially when roof space was "free." However today, worker safety and product protection are equally important motivators for most operators who use the rooftop concept.

This new literature discusses how external refrigeration lines virtually eliminate the risk of product damage or worker injury from refrigeration leaks. It also outlines the advantages of walking across a flat roof to perform maintenance as opposed to scrambling 20 or 40 feet up to do the same from a catwalk, ladder or forklift platform.

Fourteen pages of specification data which covers both ammonia and halocarbon refrigerant applications, as well as dimension and roof loading information, also are included.

King Company is one of the industry's leading HVAC manufacturers. In addition SpaceMax IRF equipment, the company also offers a complete line of process air conditioning systems, custom coils, air curtains, and space heating equipment. For a free copy of this new rooftop refrigeration specification guide -- or for literature on any other King Company product:

King Company - Owatonna, MN

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MikroClave™ Media Sterilization System

CEM Corporation has released a full-color, six-page brochure on the new MikroClave™ Sterilization System. Text and photos illustrate how this microwave-technology system sterilizes enough media for 100 petri plates in 10 minutes or 10 plates in 45 seconds. Microwave versus conventional media sterilizations of a variety of media types including Violet Red Bile Agar are illustrated. Operational features include programmability and microprocessor control to rapidly sterilize both autoclavable and non-autoclavable media. A five-step operation section describes how the microwave media sterilization system accomplishes in minutes what takes hours in conventional systems.

CEM Corporation - Matthews, NC

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New Aflatoxin Screening Kit Now Available

Spechtrochrom, Ltd., a chemical testing and research laboratory, introduces a new aflatoxin screening kit for grain dealers, milk producers, and veterinarians. Cost-effectiveness, ease of use without special training, rapid turnaround time, and ability to do on-site testing are benefits that accompany the use of this kit.

Combined in this kit for the first time are the efficiency of an immunological test with the reliability of a chemically-based test. This dual-method kit uses an immunoassay (IA) test which provides quick, qualitative results. If positive results are obtained from the IA test, a thin layer chromatography test, recognized as one of the most reliable methods for detecting and quantifying mycotoxins, is used to double check results.

This kit allows quick and easy on-site aflatoxin screening. The ultimate benefit to the customer is savings of time and money as the need for extensive laboratory analysis is eliminated.

Spectrochrom, Ltd. - Ames, IA

**Please circle No. 249
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New Buffer Inhibits Yeast, Mold and Bacterial Growth

A new buffer increases shelf-life of certain foods by preventing growth of yeast, mold and bacteria, according to recent tests.

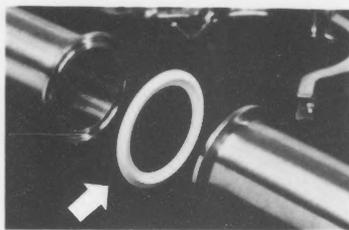
Mayonat® VM™ allows processors to boost acidity while neutralizing the overpowering vinegar flavor in salads, dressings and sauces.

Independent laboratory tests clearly demonstrated that foods prepared with Mayonat VM maintained microbiological stability more than two weeks longer than the same foods made without the buffer system.

Mayonat VM is a pre-measured powder containing salt of diacetate and flavors, all USDA-approved. Ingredients are precisely formulated to trigger a natural chemical reaction and allow the processor to achieve optimum pH, while maintaining the more mellow taste of a low acid product. The use of Mayonat VM controls common spoilage microorganisms found in commercial salads.

**Feinkost Ingredient Company -
Lodi, OH**

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Sanitary Gaskets for Food, Laboratory and High Purity Applications

An improved line of gaskets has been developed for clamp-style tubing and piping in food processing, laboratory and other high purity installations. Manufactured from FDA approved compounds, the gaskets are suitable for all sanitary applications.

The gaskets are odorless, taste-free and non-toxic. In addition, they provide tight, long-lasting joints and seals.

Two types of clamp style gaskets are available:

- 1) Haynes gaskets, made from Buna, are non-porous, abrasion resistant and have excellent compression set. They are made in sizes 1" thru 4" and are suitable for temperatures ranging from -60 to +250°F.
- 2) Haynes teflon gaskets are impervious to fats, oils, and nearly all acids and alkalis. These gaskets are made in sizes 1 1/2" thru 3" and have a temperature range of -40° to +500°F.

The gaskets are packaged in bags of 25, all sizes. Sample gaskets are provided for trial inspection on letterhead request.

**Haynes® Manufacturing Company -
Cleveland, OH**

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Burnguard Protective Apparel

Aprons, mitts, sleeves, and hot pads, all made of fabric that is machine washable, flame and heat resistant impervious to hot liquids, grease and steam, non-toxic, and extremely durable.

Because of the garments' washability, sanitary conditions are easily maintained. Reduce burn injuries, muscle strain, accidents, claims, and worker's compensation insurance rates. Tested to withstand 36 commercial washings and still retain all of their protective properties. Custom products available.

Tucker Industries - Gardena, CA

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1st Quarterly Update to the 1990 ATCC/NIH Repository Catalogue of Human and Mouse DNA Probes and Libraries

Since publication of the 1990 Catalogue, over 200 new human and mouse DNA probes have been added to the American Type Culture Collection's (ATCC) Human and Mouse DNA Probes and Libraries repository. Information on these materials is now available in an update to the 1990 catalogue.

Approximately 400 new probes and 5-10 new libraries will be added to this repository each year. New materials will be published in catalogue updates on a quarterly basis. Information on items in the repository is also available through the ATCC's ONLINE database service.

**American Type Culture Collection -
Rockville, MD**

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IAMFES Audio Visuals Library

A Free IAMFES Members' Benefit

DAIRY

- **The BST Debate: Biotechnology and the Dairy Case** - (13 minute videotape). Provides retail grocers with an overview of bovine somatotropin or BST...a biotechnology product now being used to enhance the efficiency of milk production in cows. This video report focuses on how BST fits into the overall biotechnology picture, what possibilities it is likely to present at the retail level, and offers some specific tactics retailers can use in addressing questions shoppers may have on BST. (Monsanto Agricultural Company)
- **Babcock Method for Determination of Butterfat in Raw Milk** - A videotape report that describes the purposes, procedures and refinements of The Babcock Method for determining fat content in raw milk. Revised test procedures are presented which will result in greater accuracy and reproducibility. Viewing is recommended by anyone in public health or the dairy industry who uses the Babcock test. (Ozark Film & Video Production, Inc.)
- **The Bulk Milk Hauler: Protocol & Procedures** - (8 minute videotape). Teaches bulk milk haulers how they contribute to quality milk production. Special emphasis is given to the hauler's role in proper milk sampling, sample care procedures, and understanding test results. (Iowa State University Extension)
- **Causes of Milkfat Test Variations and Depressions** - (140 slides-tape-script-30 minutes). This set illustrates the many factors involved in causing milkfat test variations or depressions in your herd, including feeding, management, stage of lactation, age of samples, handling of samples, and testing procedures. The script was reviewed by field staff, nutritionists, laboratory personnel and county extension staff. It is directed to farmers, youth and allied industry. (Penn State-1982)
- **Controlling Volumes and Fat Losses** - (110 slides-tape-script-30 minutes). Keeping milk volume and product loss from farm to supermarket of fluid dairy products is discussed. This set was done with the cooperation of the dairy industry who reviewed the script and provided opportunities to take pictures. It is designed to be used by milk plants for their processing personnel, regulatory representatives, field staff and milk haulers. (Penn State-1982)
- **Ether Extraction Method for Determination of Raw Milk** - (26 minute video). Describes the ether extraction procedure to measure milkfat in dairy products. Included is an explanation of the chemical reagents used in each step of the process. (CA-1990)
- **The Farm Bulk Milk Hauler** - (135 slides-tape-script-30 minutes). This set covers the complete procedure for sampling and collecting milk from farms. Each step is shown as it starts with the hauler entering the farm lane and ends when he leaves the milk house. Emphasis is on universal sampling and automated testing. Funds to develop this set were provided by The Federal Order #36 Milk Market Administrator. (Penn State-1982)
- **Frozen Dairy Products** - (27 minute videotape). Developed by the California Department of Food and Agriculture. Although it mentions the importance of frozen desserts, safety and checking ingredients; emphasis is on what to look for in a plant inspection. Everything from receiving, through processing and cleaning and sanitizing is outlined, concluded with a quality control program. Directed to plant workers and supervisors, it shows you what should be done. (CA-1987)
- **The Gerber Butterfat Test** - (7 minute video). Describes the Gerber milkfat test procedure for dairy products and compares it to the Babcock test procedure. (CA-1990)
- **High-Temperature, Short-Time Pasteurizer** - (59 minute videotape). Provided by the Dairy Division of Borden, Inc. It was developed to train pasteurizer operators and is well done. There are seven sections with the first covering the twelve components of a pasteurizer and the purpose and operation of each. The tape provides the opportunity for discussion after each section or continuous running of the videotape. Flow diagrams, processing and cleaning are covered. (Borden, Inc., 59-min.-1986)
- **The How and Why of Dairy Farm Inspections** - (110 slides-tape-script-15 minutes). This was developed at the request of seven northeast dairy cooperatives and with their financial support. Emphasis is on clean cows, facilities and equipment and following proper procedures. Regulatory agencies cooperated in reviewing the script and taking pictures. This was developed for farmers, youth and allied industry. (Penn State-1984)
- **Milk Plant Sanitation: Chemical Solution** - (13 minute video). This explains the proper procedure required of laboratory or plant personnel when performing chemical titration in a dairy plant. Five major titration are reviewed ... alkaline wash, presence of chlorine and iodophor, and caustic wash and an acid wash in a HTST system. Emphasis is also placed on record keeping and employee safety.
- **Milk Processing Plant Inspection Procedures** - (15 minute videotape). Developed by the California Department of Food and Agriculture. It covers pre and post inspection meeting with management, but emphasis is on inspection of all manual and cleaned in place equipment in the receiving, processing and filling rooms. CIP systems are checked along with recording charts and employee locker and restrooms. Recommended for showing to plant workers and supervisors. (CA-1986)
- **Pasteurizer: Design and Regulation** - (15 1/2 minute videotape). This tape provides a summary of the public health reasons for pasteurization and a nonlegal definition of pasteurization. The components of an HTST pasteurizer, elements of design, flow-through diagram and legal controls are discussed.
- **Pasteurizer Operation** - (10 1/2 minute videotape). This tape provides a summary of the operation of an HTST pasteurizer from start-up with hot water sanitization to product pasteurization and shut-down. There is an emphasis on the legal documentation required.
- **Processing Fluid Milk** - (140 slides-script-tape-30 minutes). It was developed to train processing plant personnel on preventing food poisoning and spoilage bacteria in fluid dairy products. Emphasis is on processing procedures to meet federal regulations and standards. Processing procedures, pasteurization times and temperatures, purposes of equipment, composition standards, and cleaning and sanitizing are covered. Primary emphasis is on facilities such as drains and floors, and filling equipment to prevent post-pasteurization contamination with spoilage or food poisoning bacteria. It was reviewed by many industry plant operators and regulatory agents and is directed to plant workers and management. (Penn State-1987)
- **Producing Milk of Good Quality and Flavor** - (114 slides-tape-script-25 minutes). The steps and corrective measures necessary to produce quality milk with good flavor are outlined. It is directed at dairy farmers, field staff, milk haulers and youth. (Penn State-1982)

□ **Safe Milk Hauling - You're the Key** - (34 minute videotape). Recommended for anyone who samples, measures and collects milk from dairy farms. The purpose of this tape is to acquaint milk handlers with the proper procedures for sampling and picking up milk at the farm and delivering it safely to the handling plant. This tape provides an excellent review for experienced milk haulers and shows step-by-step procedures for novice milk haulers. (Cornell University)

□ **Tests for Milk Quality and Composition** - (140 slides-tape-script-25 minutes). This set shows and describes in simple terms the various quality tests performed on milk samples. These include bacteria, antibiotics, freezing point, pesticides, somatic cells, flavor and others. The purpose, desirable results, and ways to improve poor results are outlined. It was developed for farmers, youth, field staff and allied industry. (Penn State, 1983)

FOOD

□ **BISSC - A Sign of Our Times** - (50 slides-script-tape). The presentation was prepared by the Baking Industry Sanitary Standards Committee. The purpose of BISSC, formed in 1949 by six of the national organizations serving the baking industry, is to develop and publish voluntary standards for the design and construction of bakery equipment. Those Standards are now recognized as the definitive sanitation standards for equipment used in the baking industry.

□ **Close Encounters of the Bird Kind** - (18 minute videotape). A humorous but in-depth look at Salmonella bacteria, their sources, and their role in foodborne disease. A modern poultry processing plant is visited, and the primary processing steps and equipment are examined. Potential sources of Salmonella contamination are identified at the different stages of production along with the control techniques that are employed to insure safe poultry products. (Topek Products, Inc.)

□ **The Danger Zone** - (30 minute videotape). Teaches deli department employees about food safety and sanitation and how they help build deli customer traffic. Recommended for retail employees who sell products in the deli department, as well as brokers, distributors and manufacturers who sell their products in the deli department. The tape is accompanied by printed material that serves as excellent training supplements. (The International Dairy-Deli Association)

□ **Food Irradiation** - (30 minutes). Introduces viewers to food irradiation as a new preservation technique. Illustrates how food irradiation can be used to prevent spoilage by microorganisms, destruction by insects, overripening, and to reduce the need for chemical food additives. The food irradiation process is explained and benefits of the process are highlighted. (Turnelle Productions, Inc.)

□ **Food Quality, Food Safety, and You!** - (80 slides, script, and cassette tape). This is an educational program designed for consumers. The presentation deals with the role of the consumer in maintaining the freshness, quality and safety of food in the home. It is intended for use by home economists, dietitians, cooperative extension agents and others interested in food quality and safety. (Cornell University)

□ **Food Safe - Series I** - (4-10 minute videos). (1) "Receiving & Storing Food Safely", details for food service workers the procedures for performing sight inspections for the general conditions of food, including a discussion of food labeling and government approval stamps. (2) "Foodservice Facilities and Equipment", outlines the requirements for the proper cleaning and sanitizing of equipment used in food preparation areas. Describes the type of materials, design, and proper maintenance of this equipment. (3) "Microbiology for Foodservice Workers", provides a basic understanding of the microorganisms which cause food spoilage and foodborne illness. This program describes bacteria, viruses, protozoa, and parasites and the conditions which support their growth. (4) "Foodservice Housekeeping and Pest Control", emphasizes cleanliness as the basis for all pest control. Viewers learn the habits and life cycles of flies, cockroaches, rats, and mice. (Perennial Education)

□ **Food Safe - Series II** - (4-10 minute videos). Presents case histories of foodborne disease involving (1) *Staphylococcus aureus*, (sauces) (2) *Salmonella*, (eggs) (3) *Campylobacter*, and (4) *Clostridium botulinum*. Each tape demonstrates errors in preparation, holding, or serving food; describes the consequences of those actions; reviews the procedures to reveal the cause of the illness; and illustrates the correct practices in a step-by-step demonstration. These are excellent tapes to use in conjunction with hazard analysis critical control point training programs. (Perennial Education)

□ **Food Safe - Series III** - (4-10 minute videos). More case histories of foodborne disease. This set includes (1) Hepatitis "A", (2) *Staphylococcus Aureus* (meats), (3) *Bacillus Cereus*, and (4) *Salmonella* (meat). Viewers will learn typical errors in the preparation, holding and serving of food. Also included are examples of correct procedures which will reduce the risk of food contamination. (Perennial Education)

□ **Food Safety Is No Mystery** - (34 minute videotape). This is an excellent training visual for food service workers. It shows the proper ways to prepare, handle, serve and store food in actual restaurant, school and hospital situations. A policeman sick from food poisoning, a health department sanitarian, and a food service worker with all the bad habits are featured. The latest recommendations on personal hygiene, temperatures, cross contamination, and storage of foods are included. (USDA-1987)

□ **Food Safety: For Goodness Sake, Keep Food Safe** - (15 minute videotape). Teaches food handlers the fundamentals of safe food handling. The tape features the key elements of cleanliness and sanitation, including: good personal hygiene, maintaining proper food product temperature, preventing time abuse, and potential sources of food contamination. (Iowa State University Extension)

□ **HACCP: Safe Food Handling Techniques** - (22 minute videotape). The video highlights the primary causes of food poisoning and emphasizes the importance of self-inspection. An explanation of a potentially hazardous foods, cross contamination, and temperature control is provided. The main focus is a detailed description of how to implement a Hazard Analysis Critical Control Point (HACCP) program in a foodservice operation. A leader's guide is provided as an adjunct to the tape. (The Canadian Restaurant & Foodservices Association)

□ **Is What You Order What You Get? Seafood Integrity** - (18 minute videotape). Teaches seafood department employees about seafood safety and how they can help insure the integrity of seafood sold by retail food markets. Key points of interest are cross-contamination control, methods and criteria for receiving seafood and determining product quality, and knowing how to identify fish and seafood when unapproved substitutions have been made. (The Food Marketing Institute)

□ **Northern Delight - From Canada to the World** - A promotional video that explores the wide variety of foods and beverages produced by the Canadian food industry. General in nature, this tape presents an overview of Canada's food industry and its contribution to the world's food supply. (Ternelle Production, Ltd.)

- **Purely Coincidental** - (20 minute video). A parody that shows how foodborne illness can adversely affect the lives of families that are involved. The movie compares improper handling of dog food in a manufacturing plant that causes the death of a family pet with improper handling of human food in a manufacturing plant that causes a child to become ill. Both cases illustrate how handling errors in food production can produce devastating outcomes. (The Quaker Oats Company)
- **On the Front Line** - (18 minute video). A training video pertaining to sanitation fundamentals for vending service personnel. Standard cleaning and serving procedures for cold food, hot beverage and cup drink vending machines are presented. The video emphasizes specific cleaning and serving practices which are important to food and beverage vending operations. (National Automatic Merchandising Association)
- **On the Line** - (30 minute VHS videocassette). This was developed by the Food Processors Institute for training food processing plant employees. It creates an awareness of quality control and regulations. Emphasis is on personal hygiene, equipment cleanliness and good housekeeping in a food plant. It is recommended for showing to both new and experienced workers.
- **100 Degrees of Doom ... The Time and Temperature Caper** - (14 minute videotape). Video portraying a private eye tracking down the cause of a salmonella poisoning. Temperature control is emphasized as a key factor in preventing foodborne illness. (Educational Communications, Inc.)
- **Pest Control in Seafood Processing Plants** - (26 minute videotape). Videotape which covers procedures to control flies, roaches, mice, rats and other common pests associated with food processing operations. The tape will familiarize plant personnel with the basic characteristics of these pests and the potential hazards associated with their presence in food operations.
- **Product Safety and Shelf Life** - (40 minute videotape). Developed by Borden Inc., this videotape was done in three sections with opportunity for review. Emphasis is on providing consumers with good products. One section covers off-flavors, another product problems caused by plant conditions, and a third the need to keep products cold and fresh. Procedures to assure this are outlined, as shown in a plant. Well done and directed to plant workers and supervisors. (Borden-1987)
- **Safe Food: You Can Make a Difference** - (25 minute videotape). A training video for foodservice workers which covers the fundamentals of food safety. An explanation of proper food temperature, food storage, cross contamination control, cleaning and sanitizing, and handwashing as methods of foodborne illness control is provided. The video provides an orientation to food safety for professional food handlers. (Tacoma-Pierce County Health Department)
- **Safe Handwashing** - (15 minute videotape). Twenty-five percent of all foodborne illnesses are traced to improper handwashing. The problem is not just that handwashing is not done, the problem is that it's not done properly. This training video demonstrates the "double wash" technique developed by Dr. O. Peter Snyder of the Hospitality Institute for Technology and Management. Dr. Snyder demonstrates the procedure while reinforcing the microbiological reasons for keeping hands clean. (Hospitality Institute for Technology and Management)
- **Sanitation for Seafood Processing Personnel** - A training video suited for professional food handlers working in any type of food manufacturing plant. The film highlights Good Manufacturing Practices and their role in assuring food safety. The professional food handler is introduced to a variety of sanitation topics including: 1) food handlers as a source of food contamination, 2) personal hygiene as a means of preventing food contamination, 3) approved food storage techniques including safe storage temperatures, 4) sources of cross contamination, 5) contamination of food by insects and rodents, 6) garbage handling and pest control, and 7) design and location of equipment and physical facilities to facilitate cleaning.
- **Sanitizing for Safety** - (17 minute video). Provides an introduction to basic food safety for professional food handlers. A training pamphlet and quiz accompany the tape. Although produced by a chemical supplier, the tape contains minimal commercialism and may be a valuable tool for training new employees in the food industry. (Indiana -1990)
- **Seafood Q & A** - (20 minute VHS). Anyone who handles seafood, from processor to distributor to retail and foodservice, must be prepared to answer questions posed by customers. This tape features a renowned nutritionist and experts from the Food & Drug Administration, the National Marine Fisheries Service, and the National Fisheries Institute who answer a full range of questions about seafood safety. Excellent to educate and train employees about seafood safety & nutrition. (National Fisheries Institute)
- **SERVSAFE® Serving Safe Food** - (Four videotapes). This video series illustrates and reinforces important food safety practices in an informative and entertaining manner. The material is presented in an easy to understand format, making it simpler for employees to learn and remember this essential information. Each video includes a leader's guide that provides all the information managers need to direct a productive training session.
- **Wide World of Food Service Brushes** - An 18 minute video tape that discusses the importance of cleaning and sanitizing as a means to prevent and control foodborne illness. Special emphasis is given to proper cleaning and sanitizing procedures and the importance of having properly designed and constructed equipment (brushes) for food preparation and equipment cleaning operations.
- **Your Health in Our Hands - Our Health in Yours** - (8 minute videotape). For professional food handlers, the tape covers the do's and don'ts of food handling as they relate to personal hygiene, temperature control, safe storage and proper sanitation. (Jupiter Video Production)

ENVIRONMENTAL

- **The ABC's of Clean - A Handwashing & Cleanliness Program for Early Childhood Programs** - For early childhood program employees. This tape illustrates how proper handwashing and clean hands can contribute to the infection control program in daycare centers and other early childhood programs. (The Soap & Detergent Ass'n.)
- **Acceptable Risks?** - (16 minute VHS). Accidents, deliberate misinformation, and the rapid proliferation of nuclear power plants have created increased fears of improper nuclear waste disposal, accidents during the transportation of waste, and the release of radioactive effluents from plants. The program shows the occurrence of statistically anomalous leukemia clusters; governmental testing of marine organisms and how they absorb radiation; charts the kinds and amounts of natural and man-made radiation to which man is subject; and suggests there is no easy solution to balancing our fears to nuclear power and our need for it. (Films for the Humanities & Sciences, Inc.)

☐ **Air Pollution: Indoor** - (26 minute VHS). Indoor air pollution is in many ways a self-induced problem ... which makes it no easier to solve. Painting and other home improvements have introduced pollutants, thermal insulation and other energy-saving and water-proofing devices have trapped the pollutants inside. The result is that air pollution inside a modern home can be worse than inside a chemical plant. (Films for the Humanities & Sciences, Inc.)

☐ **Asbestos Awareness** - (20 minute videotape). This videotape discusses the major types of asbestos and their current and past uses. Emphasis is given to the health risks associated with asbestos exposure and approved asbestos removal abatement techniques (Industrial Training, Inc.)

☐ **Down in the Dumps** - (26 minute VHS). Garbage is no laughing matter. The fact is that we are running out of space to dump the vast amounts of waste we create each day. Since many of the former methods of disposal are environmentally unacceptable, what are we to do? The program examines the technological approaches to the garbage dilemma, including composting, resource recovery, and high-tech incinerators, and public reaction to the creation of new waste treatment facilities. (Films for the Humanities & Sciences, Inc.)

☐ **EPA Test Methods for Freshwater Effluent Toxicity Tests (using Ceriodaphnia)** - (22 minute tape). Demonstrates the Ceriodaphnia 7-Day Survival and Reproduction Toxicity Test and how it is used to monitor and evaluate effluents for their toxicity to biota and their impact on receiving waters and the establishment of NPDES permit limitations for toxicity. The tape covers the general procedures for the test including how it is set up, started, monitored, renewed and terminated.

☐ **EPA Test Methods for Freshwater Effluent Toxicity Tests (using Fathead Minnow Larva)** - (15 minute tape). A training tape that teaches environmental professionals about the Fathead Minnow Larval Survival and Growth Toxicity Test. The method described is found in an EPA document entitled, "Short Term Methods for Estimating the Chronic Toxicity of Effluents & Receiving Waters to Freshwater Organisms." The tape demonstrates how fathead minnow toxicity tests can be used to monitor and evaluate effluents for their toxicity to biota and their impact on receiving waters and the establishment of NPDES permit limitations for toxicity.

☐ **Fit to Drink** - (20 minute VHS). This program traces the water cycle, beginning with the collection of rain water in rivers and lakes, in great detail through a water treatment plant, to some of the places where water is used, and finally back into the atmosphere. Treatment of the water begins with the use of chlorine to destroy organisms; the water is then filtered through various sedimentation tanks to remove solid matter. Other treatments employ ozone, which oxidizes contaminants and makes them easier to remove; hydrated lime, which reduces the acidity of the water; sulfur dioxide, which removes any excess chlorine; and flocculation, a process in which aluminum sulfate causes small particles to clump together and precipitate out. Throughout various stages of purification, the water is continuously tested for smell, taste, titration, and by fish. The treatment plant also monitors less common contaminants with the use of up-to-date techniques like flame spectrometers and gas liquefaction. (Films for the Humanities & Sciences, Inc.)

☐ **Foodservice Disposables: Should I Feel Guilty?** - (11 1/2 minute videotape). The video, produced by the Foodservice & Packaging Institute, Inc., national trade association of manufacturers and suppliers of single service articles for foodservice and packaging, examines such issues as litter, solid waste, recycling, composting and protection of the earth's ozone layer, makes for an excellent discussion opener on the theme of conservation of natural resources (trees, fresh water and energy) and the environmental trade-offs (convenience, sanitation and family health) that source reduction necessarily entails. (Foodservice & Packaging Institute, Inc.)

☐ **Garbage: The Movie** - (24 1/2 minute videotape). A fascinating look at the solid waste problem and its impact on the environment. Viewers are introduced to landfills, incinerators, recycling plants and composting operations as solid waste management solutions. Problems associated with modern landfills are identified and low-impact alternatives such as recycling, reuse, and source reduction are examined. (Churchill Films)

☐ **Global Warming: Hot Times Ahead?** - (23 minute videotape). An informative video tape program that explores the global warming phenomenon and some of the devastating changes it may cause. This program identifies greenhouse gases and how they are produced by human activities. Considered are: energy use in transportation, industry and home; effects of deforestation, planting of trees and recycling as means of slowing the build-up of greenhouse gases. (Churchill Films)

☐ **Kentucky Public Swimming Pool and Bathing Facilities** - (38 minute videotape). It was developed by the Lincoln Trail District Health Department in Kentucky and includes all of their state regulations which may be different from other states, provinces and countries. It was very well done and could be used to train those responsible for operating pools and waterfront bath facilities. All aspects are included of which we are aware, including checking water conditions and filtration methods. (1987)

☐ **Putting Aside Pesticides** - (26 minute VHS). This program probes the long-term effects of pesticides and explores alternative pest-control efforts; biological pesticides, genetically-engineered microbes that kill objectionable insects, the use of natural insect predators, and the cross-breeding and genetic engineering of new plant strains that produce their own anti-pest toxins. (Films for the Humanities & Sciences, Inc.)

☐ **Radon** - (26 minute VHS). This program looks at the possible health implications of radon pollution, methods homeowners can use to detect radon gas in their homes, and what can be done to minimize hazards once they are found.

☐ **RCRA - Hazardous Waste** - (19 minute video). This videotape explains the dangers associated with hazardous chemical handling and discusses the major hazardous waste handling requirements presented in the Resource Conservation and Recovery Act. (Industrial Training, Inc.)

The New Superfund: What It Is & How It Works - A six-hour national video conference sponsored by the EPA. Target audiences include the general public, private industry, emergency responders and public interest groups. The series features six videotapes that review and highlight the following issues:

☐ **Tape 1 - Changes in the Remedial Process: Clean-up Standards and State Involvement Requirements** - (62 minute videotape). A general overview of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and the challenge of its implementation. The remedy process -- long-term and permanent clean-up -- is illustrated step-by-step, with emphasis on the new mandatory clean-up schedules, preliminary site assessment, petition procedures and the hazard ranking system/National Priority List revisions. The major role of state and local government involvement and responsibility is stressed.

☐ **Tape 2 - Changes in the Removal Process: Removal and Additional Program Requirements** - (48 minute videotape). The removal process is a short term action and usually an immediate response to accidents, fires and illegally dumped hazardous substances. This program explains the changes that expand removal authority and require procedures consistent with the goals of remedial action.

☐ **Tape 3 - Enforcement and Federal Facilities** (52 minute videotape). Who is responsible for SARA clean-up costs? Principles of responsible party liability; the difference between strict, joint and several liability; and the issue of the innocent landowner are discussed. Superfund enforcement tools- mixed funding, De Minimis settlements and the new nonbinding preliminary allocations of responsibility (NBARs) are explained.

Tape 4 - Emergency Preparedness and Community Right-To-Know - (48 minutes). A major part of SARA is a free-standing act known as Title III: The Emergency Planning and Community Right-To-Know Act of 1986, requiring federal, state, and local governments and industry to work together in developing local emergency preparedness/response plans. This program discusses local emergency planning committee requirements, emergency notification procedures, and specifications on community right-to-know reporting requirements, such as using OSHA Material Safety Data Sheets, the emergency & hazardous chemical inventory and the toxic chemical release inventory.

Tape 5 - Underground Storage Tank Trust Fund and Response Program - (21 minutes). Another addition to SARA is the Leaking Underground Storage Tank (LUST) Trust Fund. One half of the U.S. population depends on ground water for drinking -- and EPA estimates that as many as 200,000 underground storage tanks are corroding and leaking into our ground water. This program discusses how the LUST Trust Fund will be used by EPA and the states in responding quickly to contain and clean-up LUST releases. Also covered is state enforcement and action requirements, and owner/operator responsibility.

Tape 6 - Research and Development/Closing Remarks - (33 minutes). An important new mandate of the new Superfund is the technical provisions for research and development to create more permanent methods in handling and disposing of hazardous wastes and managing hazardous substances. This segment discusses the SITE (Superfund Innovative Technology Evaluation) program, the University Hazardous Substance Research Centers, hazardous substance health research and the DOD research, development and demonstration management of DOD wastes.

Sink A Germ - (10 minute videotape). A presentation on the rationale and techniques for effective handwashing in health care institutions. Uses strong imagery to educate hospital personnel that handwashing is the single most important means of preventing the spread of infection. (The Brevis Corp.)

Waste Not: Reducing Hazardous Waste - (35 minute VHS). This tape looks at the progress and promise of efforts to reduce the generation of hazardous waste at the source. In a series of company profiles, it shows activities and programs within industry to minimize hazardous waste in the production process. Waste Not also looks at the obstacles to waste reduction, both within and outside of industry, and considers how society might further encourage the adoption of pollution prevention, rather than pollution control, as the primary approach to the problems posed by hazardous waste. (Umbrella films)

OTHER

Diet, Nutrition and Cancer - (20 minute video). Investigates the relationship between a person's diet and the risk of developing cancer. The film describes the cancer development process and identifies various types of food believed to promote and/or inhibit cancer. The film also provides recommended dietary guidelines to prevent or greatly reduce the risk of certain types of cancer.

Eating Defensively: Food Safety Advice for Persons with Aids - (14 1/2 minute videotape). While HIV infection and AIDS are not acquired by eating foods or drinking liquids, persons infected with the AIDS virus need to be concerned about what they eat. Foods can transmit bacteria and viruses capable of causing life-threatening illness to persons infected with AIDS. This video provides information for persons with AIDS on what foods to avoid and how to better handle and prepare foods. (FDA/CDC)

Legal Aspects of the Tampering Case - (about a 25-minute, 1/2" videocassette). This was presented by Mr. James T. O'Reilly, University of Cincinnati School of Law at the fall 1986 Central States Association of Food and Drug Officials Conference. He emphasizes three factors from his police and legal experience - know your case, nail your case on the perpetrator, and spread the word. He outlines specifics under each factor. This should be of the greatest interest to regulatory sanitarians, in federal, state and local agencies. (1987)

Psychiatric Aspects of Product Tampering - (about a 25 minute, 1/2" videocassette). This was presented by Emanuel Tanay, M.D. from Detroit, at the fall 1986 conference of CSAFDA. He reviewed a few cases and then indicated that abnormal behavior is like a contagious disease. Media stories lead to up to 1,000 similar alleged cases, nearly all of which are false. Tamper proof packaging and recalls are essential. Tampering and poisoning are characterized by variable motivation, fraud and greed. Law enforcement agencies have the final responsibilities. Tamper proof containers are not the ultimate answer. (1987)

Tampering: The Issue Examined - (37 minute videotape). Developed by Culbro Machine Systems, this videotape is well done. It is directed to food processors and not regulatory sanitarians or consumers. A number of industry and regulatory agency management explain why food and drug containers should be made tamper evident. (Culbro-1987)

75th IAMFES Annual Meeting Presentations. 30 cassette tapes covering the complete conference. 5 videotapes covering various symposia and sessions (For more specific information, contact Chris Baack.)

If you are interested in checking out any of our audio-visuals, please fill out this form with the box or boxes checked as to which presentations you wish to view. Mail to: IAMFES, Lending Library, 502 E. Lincoln Way, Ames, IA 50010-6666. (You'll be notified by telephone when your tape or slide set is being mailed. Material from the Lending Library can be checked out for one week only so that others can benefit from its use.)

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1992 IAMFES AWARDS NOMINATIONS

The International Association of Milk, Food and Environmental Sanitarians is proud of its members and their contributions.

As a member, you are entitled to nominate deserving colleagues for the IAMFES Awards.

Nomination forms need to be completed and back to the Ames office by April 3, 1992.

1. Previous award winners are not eligible for the same award. Check pages 40 and 41 in this issue for a complete listing of past award winners.
2. Present Executive Board members are not eligible for nomination.
3. Candidates must be current IAMFES members in order to be nominated.

Presentation of these awards will be during the IAMFES Annual Meeting July 26-29, 1992 at the Sheraton Centre, Toronto, Ontario, during the Annual Awards Banquet Wednesday evening.

NOMINATION FORMS WILL BE MAILED OUT TO THE MEMBERSHIP THE END OF JANUARY. SEND COMPLETED MATERIALS TO:

Steven K. Halstead
IAMFES, Awards
502 E. Lincoln Way
Ames, IA 50010-6666

Questions? Call 800-369-6337 (includes Iowa) 800-284-6336 (Canada), 8-4:30 weekdays, or FAX 515-232-4736.

The following lists the awards that you may nominate a person for.

Nominate a deserving colleague for these prestigious IAMFES Awards:

- **SANITARIANS AWARD** - in recognition of outstanding service to the profession of the Sanitarian.
\$1000 award and plaque
- **EDUCATOR AWARD** - presented to an educator in recognition of outstanding service in academic contributions to the profession of the Sanitarian.
\$1000 award and plaque
- **CITATION AWARD** - for many years of devotion to the ideals and objectives of the association.
plaque
- **HAROLD BARNUM INDUSTRY AWARD** - in recognition of outstanding service to the public, IAMFES and the profession of the Sanitarian.
\$500 award and plaque
- **HONORARY LIFE MEMBERSHIP** - for devotion to the high ideals and principles of IAMFES.
plaque and lifetime membership with IAMFES

Past IAMFES Award Winners

EDUCATOR-INDUSTRY AWARD

1973-Walter A. Krienke
1974-Richard P. March
1975-K. G. Weckel
1976-Burdet H. Heinemann
1977-Elmer H. Marth
1978-James B. Smathers
1979-Joseph Edmondson
1980-James R. Welch
1981-Francis F. Busta

In 1982 this award was split into the Educator Award and the Harold Barnum Award (for industry).

EDUCATOR AWARD

1982-Floyd Bodyfelt
1983-John Bruhn
1984-R. Burt Maxcy
1985-Lloyd B. Bullerman
1986-Robert T. Marshall
1987-David K. Bandler
1988-Edmund A. Zottola
1989-Vernal Packard
1990-Michael Stiles
1991-William E. Sandine

HAROLD BARNUM AWARD

1982-Howard Ferreira
1983-C. Dee Clingman
1984-Omer Majerus
1985-William L. Arledge
1986-Hugh C. Munns
1987-J. H. Silliker
1988-Kenneth Kirby
1989-Lowell Allen
1990-Roy Ginn
1991-Thomas C. Everson

CITATION AWARD

1951-J. H. Shrader and
William B. Palmer
(posthumously)

1952-C. A. Abele
1953-Clarence Weber
1954-C. K. Johns
1955-R. G. Ross
1956-K. G. Weckel
1957-Fred C. Baselt
1958-Milton R. Fisher
1959-John D. Faulkner
1960-Luther A. Black
1961-Harold S. Adams
1962-Franklin W. Barber
1963-Merle P. Baker
1964-W. K. Moseley
1965-H. L. Thomasson
1966-J. C. Olson, Jr.
1967-William V. Hickey
1968-A. Kelley Saunders
1969-Karl K. Jones
1970-Ivan E. Parkin
1971-L. Wayne Brown
1972-Ben Luce
1973-Samuel O. Noles
1974-John C. Schilling
1975-A. R. Brazis
1976-James Meany
1977-None Given
1978-Raymond A. Belknap
1979-Harold E. Thompson, Jr.
1980-Don Raffel
1981-Henry V. Atherton
1982-None Given
1983-William B. Hasting
1984-Elmer H. Marth
1985-Ralston B. Read, Jr.
1986-Cecil E. White
1987-None Given
1988-Carl Vanderzant
1989-Clem Honer
1990-None Given
1991-Frank Bryan

SANITARIANS AWARD

1952-Paul Corash
1953-E. F. Meyers
1954-Kelley G. Vester
1955-B. G. Tennent
1956-John H. Fritz
1957-Harold J. Barnum
1958-None Given
1959-William Kempa
1960-James C. Barringer
1961-Martin C. Donovan

1962-Larry Gordon
1963-R. L. Cooper
1964-None Given
1965-Harold R. Irvin
1966-Paris B. Boles
1967-Roger L. Stephens
1968-Roy T. Olson
1969-W. R. McLean
1970-None Given
1971-Shelby Johnson
1972-Ambrose P. Bell
1973-None Given
1974-Clarence K. Luchterhand
1975-Samuel C. Rich
1976-M. W. Jefferson
1977-Harold Bengsch
1978-Orlowe Osten
1979-Bailus Walker, Jr.
1980-John A. Baghott
1981-Paul Pace
1982-Edwin L. Ruppert
1983-None Given
1984-Harold Wainess
1985-Harry Haverland
1986-Jay Boosinger
1987-Erwin P. Gadd
1988-Kirmon Smith
1989-Robert Gales
1990-Leon Townsend
1991-James I. Kennedy

HONORARY LIFE MEMBERSHIP AWARD

1957-J. H. Shrader
1958-H. Clifford Goslee
1959-William H. Price
1960-None Given
1961-Sarah Vance Dugan
1962-None Given
1963-C. K. Johns and Harold Macy
1964-C. B. and A. L. Shogren
1965-Fred Basselt and Ivan Parkin
1966-M. R. Fisher
1967-C. A. Abele and L. A. Black
1968-M. P. Baker and W. C. Frazier
1969-John Faulkner
1970-Harold J. Barnum
1971-William V. Hickey
1972-C. W. Dromgold and
E. Wallenfeldt
1973-Fred E. Uetz
1974-H. L. Thomasson and
K. G. Weckel

and Past Presidents

1975-A. E. Parker
1976-A. Bender Luce
1977-Harold Heiskell
1978-Karl K. Jones
1979-Joseph C. Olson, Jr.
1980-Alvin E. Tesdal
1981-Robert M. Parker
1982-None Given
1983-Orlowe Osten
1984-Paul Elliker
1985-Patrick J. Dolan,
Franklin W. Barber and
Clarence K. Luchterhand
1986-John G. Collier
1987-Elmer Marth and
James Jezeski
1988-Kenneth Whaley and
Paul J. Pace
1989-Earl Wright
Vernon Cupps
1990-Joseph E. Edmondson
1991-Leon Townsend
Dick B. Whitehead

SHOGREN AWARD

1972-Iowa Affiliate
1973-Kentucky Affiliate
1974-Washington Affiliate
1975-Illinois Affiliate
1976-Wisconsin Affiliate
1977-Minnesota Affiliate
1978-None Given
1979-New York Affiliate
1980-Pennsylvania Affiliate
1981-Missouri Affiliate
1982-South Dakota Affiliate
1983-Washington Affiliate
1984-None Given
1985-Pennsylvania Affiliate
1986-None Given
1987-New York Affiliate
1988-Wisconsin Affiliate
1989-Georgia Affiliate
1990-Texas Affiliate
1991-Georgia Affiliate

MEMBERSHIP ACHIEVEMENT AWARD

1986-Iowa Affiliate
1987-Florida Affiliate
1988-Florida Affiliate
1989-California Affiliate
1990-California Affiliate
1991-Illinois Affiliate

PAST PRESIDENTS

1912-C. J. Steffen
1913-C. J. Steffen
1914-C. J. Steffen
1915-A. N. Henderson
1916-Claude F. Bessio
1917-Wm. H. Price
1918-Alfred W. Lombard
1919-James O. Kelly
1920-Ernest Kelly
1921-C. L. Roadhouse
1922-H. E. Bowman
1923-Geo. E. Bolling
1924-J. B. Hollingsworth
1925-T. J. Strauch
1926-G. C. Supplee
1927-W. A. Shoults
1928-Ira V. Hiscook
1929-H. R. Estes
1930-R. E. Irwin
1931-A. R. B. Richmond
1932-W. B. Palmer
1933-H. N. Parker
1934-P. F. Krueger
1935-C. K. Johns
1936-G. W. Grim
1937-J. C. Hardenbergh
1938-A. R. Tolland
1939-V. M. Ehlers
1940-P. D. Brooks
1941-L. C. Frank
1942-F. W. Fabian
1943-C. A. Abele

1944-C. A. Abele
1945-R. R. Palmer
1946-R. R. Palmer
1947-R. G. Ross
1948-W. D. Tiedeman
1949-A. W. Fuchs
1950-M. R. Fisher
1951-K. G. Weckel
1952-H. L. Thomasson
1953-H. J. Barnum
1954-John D. Faulkner
1955-I. E. Parkin
1956-Harold S. Adams
1957-Paul Corash
1958-Harold Robinson
1959-Franklin Barber
1960-W. V. Hickey
1961-John Sheuring
1962-Charles E. Walton
1963-Ray Belknap
1964-John H. Fritz
1965-W. C. Lawton
1966-Fred E. Uetz
1967-P. R. Elliker
1968-A. N. Myhr
1969-Samuel O. Noles
1970-Milton E. Held
1971-Dick B. Whitehead
1972-Orlowe M. Osten
1973-Walter F. Wilson
1974-Earl O. Wright
1975-P. J. Skulborstad
1976-H. E. Thompson, Jr.
1977-H. V. Atherton
1978-David F. Fry
1979-Howard Hutchings
1980-Bill Kempa
1981-William Arledge
1982-Harry Haverland
1983-Robert Marshall
1984-A. Richard Brazis
1985-Archie Holliday
1986-Sidney E. Barnard
1987-Roy Ginn
1988-Leon Townsend
1989-Robert Gravani
1990-Ron Case
1991-Bob Sanders

Affiliate News



Past Presidents of Iowa's IAMFES (l to r):

Gary Schall, 1990; Wilbur Nielsen, 1986; Glenn Cavin, 1973; Clarence Jellings, 1981; James Burkett, 1949; Dale Cooper, 1962; Ralph Sander, 1985; Robert Sanders, 1959; Jim Murphy, 1988; Donald Jaeger, 1970; Ray Ormond, 1983; Carl Webster, 1977; Chris Singelstad, 1976; Eugene Peters, 1982; Roger Lenius, 1989; John Halback, 1975; W. S. La Grange, 1979; Don Larson, 1978; John Hill, 1987; Derward Hansen, 1984; Earl Wright, 1963; and D. H. Wilke, 1974. Past Presidents attending meeting but not pictured are: Frank Donovan, 1950; R. A. Belknap, 1954; Charles Griffith, 1980.

Iowa Affiliate of IAMFES Holds 50th Annual Meeting

The 50th Annual Meeting of the Iowa Affiliate of IAMFES was held in Waterloo, Iowa on October 16 and 17, 1991.

The Iowa Affiliate board worked hard to make this a special meeting. Special efforts were made to contact all past members and encourage their attendance. Special emphasis was made to get all past-presidents to attend. There are 34 living past presidents and 25 attended this meeting. They were introduced at the banquet which was held on October 16, 1991. A total of 170 attended this banquet.

Spouses were invited and a ladies program was held the afternoon of October 16, 1991.

A special room was available for visiting and reminiscing.

The program had some very outstanding speakers and all guests were welcome to attend any or all sessions.

Committee reports were given by Dale R. Cooper, Scott Core, Vicky Streicher, Norm Mokelstad, W. S. LaGrange and John Schechtman.

W.S. "Bill" LaGrange was awarded the Merle P. Baker award at the banquet on October 16, 1991.

The officers for next year are as follows: President - Scott Core, President Elect - Vicky Streicher, 1st Vice-President - Randy Hanson, 2nd Vice-President - David Kreich, Secretary-Treasurer - Dale Cooper.

Meeting dates next year are tentatively set for October 14 and 15, 1992 at the Ramada Hotel in Waterloo, Iowa.

Upcoming IAMFES Affiliate Meetings

1992

FEBRUARY

•18, Georgia Association of Food & Environmental Sanitarians Annual Meeting will be held at the Holiday Inn North/Airport, Atlanta, GA. For more information contact Mark Harrison, GAFES Secretary, Department of Food Science & Technology, Athens, GA 30602; (404)542-1088.

•25-27, Kentucky Association of Milk, Food & Environmental Sanitarians, Inc. Annual Meeting will be held at the Holiday Inn South, Louisville, KY. For more information contact Judy True, KAMFES, Inc., P.O. Box 1464, Frankfort, KY 40602; (502)564-7181.

MARCH

•10-12, Idaho Environmental Health Association's Annual Educational Conference will be held in Boise, ID. For more information contact Shireene Hale, 2195 Ironwood Court, Coeur d'Alene, ID 83814; (208)667-3481.

•18-20, Michigan Environmental Health Association's Annual Educational Conference "Racing Into The Future" will be held at the Holiday Inn Executive Conference Centre, Flint (Grand Blanc), MI. For more information contact John Kowalczyk, 401 Manor Drive, Ann Arbor, MI 48105; (313)761-1294.

APRIL

•1, Ohio Association of Milk, Food & Environmental Sanitarians Annual Meeting will be held at the Monte Carlo Restaurant, Columbus, OH, located at 1-270 and Cleveland Avenue. Registration 8:30 a.m. Featured speaker will be Doug Young, OH Department of Health. For more information contact Don Barrett, Health Department, 181 S. Washington Boulevard, Columbus, OH 43215; (614)645-6195.

•7-10, Missouri Milk, Food and Environmental Health Association's Annual Educational Conference will be held at the Ramada Inn, Columbia, MO. For more information contact Richard Janulewicz, Clay County Health Department, 1940 W 152 Highway, Liberty, MO 64068; (816)781-1600.



Pictured from l to r are:

Ray Belknap, Richard Stedman, Robert Wilson and Robert Sanders. After December 31, 1991, when Robert Sanders retires, they will all be FDA retired Milk Consultants. Ray Belknap, Richard Stedman and Robert Sanders are all ISU Dairy Industry graduates and worked in Iowa before going to work with the FDA. Robert Wilson, FDA now retired, was the FDA Regional Milk Consultant in Kansas City for 21 years. Iowa was in his region.



Mel Fisher (l) Past President, Peri Dura (c), President and Kenan Bullinger (r), Past Secretary/Treasurer, during the 1991 Business Meeting.



Peri Dura (l) receiving the Distinguished Service Award from Mel Fisher (r).

1991 Fall Educational Conference North Dakota Environmental Health Association Doublewood Inn, Bismarck, ND

The North Dakota Environmental Health Association (NDEHA) met for the annual Fall Conference Nov. 5th and 6th in Bismarck. NDEHA is affiliated with both NEHA and IAMFES. We had 68 in attendance. They represented dairy, food and general sanitarians; air and water quality specialist and solid and hazardous waste specialists. Members originate from local, district and state health departments plus the Indian Health Service and private business.

The mornings of the 5th and 6th, general sessions were held for all members. Presentations included motivational topics, drug residue problems in foods and environmental law. Part of Tuesday morning (5th) and all afternoon, concurrent sessions concentrating in dairy, food and environmental issues were held. Breaks during the day were held in the exhibit area.

From 5:00 - 8:00 pm on Tuesday, we had our traditional social gathering in the exhibit area. Poster sessions on a

wide range of topics were presented during this time ranging from ground water monitoring studies to hazardous waste.

One of the favorite topics every year is the agency reports. All the different agencies give a brief overview of their year. Many interesting incidents and case histories are related. Learning about other agency's successes and failures help members broaden their background. Dee Buske, IAMFES State Affiliate Liaison also made a short presentation on IAMFES, the Louisville convention, the tape library and next year's convention in Toronto.

Awards were given to members who showed outstanding performance in the profession. Presented with Distinguished Service Awards were Jeff Burgess, Peri Dura and Kevin Misek. A Dedicated Service Award was given to M. L. Stephenson for the many years service as Assistant Dairy Commissioner. Deb Larson and Iris Stenerson received Certificates of Merit for serving NDEHA and its members.

At the business meeting, Dickinson's bid for next year's convention was accepted. An announcement of a rehearing of amendments to the Environmental Health Practitioner licensing was made. Elections were held with all officers moving up one chair except Deb Larson, who was elected Secretary/Treasurer on a semipermanent basis and Jim Schothorst, elected Member-At-Large.



Jeff Burgess (l) receiving the Distinguished Service Award from Allan McKay (c) and Mel Fisher (r).

WAMFS Holds 12th Annual Joint Education Conference

The 12th Annual Joint Education Conference of the Wisconsin Association of Milk and Food Sanitarians (WAMFS), Wisconsin Association of Dairy Plant Field Representatives and Wisconsin Environmental Health Association held at Manitowoc, WI on September 25-26, 1991.

A wide array of topics was presented for the 235 people in attendance. Topics included: "Developing Leadership & Organizational Skills"; "Childhood Lead Exposure in Wisconsin"; "Review of NR 112" (Wisconsin's Well Code); "Groundwater Contamination"; "Foodborne Viral Infections";

"Ethnic Food Concerns in Food Establishments"; "New and Emerging Pathogens in Food"; "Private Sewage Systems: Failures and Corrections"; "Animal Abuse"; "Current Issues in Dairy Policy and Milk Pricing"; "Changes in the Sanitation Industry"; "Revision in AG 60 (Wis. Dairy Code) and the PMO"; "HACCP Programs"; "Environmental Health Students Abroad"; "Survey Results-Antibiotic Residue in Raw Milk and Implementation of Control Programs in Wisconsin"; "Lyme Disease in Dairy Cattle"; "HAZMAT" presentation, lecture and team demonstration; and "Being Positive In a Negative Situation".

The primary topic of the WAMFS business meeting was the possibility of increasing the amount of the E. H. Marth Food and Environmental Sciences Scholarship from \$750 to \$1000. Final action was not taken.

Also, at the business meeting, Dr. P. C. Vasavada was presented the Past President's Award commemorating his service as WAMFS President. During P. C.'s tenure on the Executive Board, WAMFS has made some major steps forward, including the revival of the Newsletter, establishment of the E. H. Marth Food and Environmental Sciences Scholarship and the presentation of a Drug Residue Seminar. In fact, P. C.'s progressive leadership has been so invaluable that he has been asked to continue his service as a member of the newly formed Education Committee.

Joseph J. Disch was installed as President for 1991-92. Joe is a "seasoned veteran" in that he already has served as "Acting" president during P. C.'s sabbatical in 1989. Joe was instrumental in the planning and execution of the successful 1990 IAMFES Annual Meeting in Arlington Heights, IL.

Jim Wickert, Milk Certification Section, Wisconsin Bureau of Public Health Southern Regional Office, was presented with the WAMFS Sanitarian of the Year Award. Jim is currently Editor of the WAMFS Newsletter, serves on the Education Committee and has served in various other capacities since he became a member of WAMFS and IAMFES in 1974.

James Wendler, a Senior in Dairy Science at UW-Platteville, received the E. H. Marth Food and Environmental Sciences Scholarship. Lisa Vassau, a Junior at UW-Madison, received the WAMFS Memorial Scholarship. Lisa is majoring in Spanish and International Business.

The 1992 Joint Annual Conference will be held in Eau Claire on September 23-24, 1992.

Putting Environmental Health Practitioner Licensure in Place: North Dakota's Experience

Keith Johnson, R.S., Administrator/EHP,
Custer District Health Unit, Box 185, Mandan, ND 58554

North Dakota's Environmental Health community initiated an effort to require licensure of Environmental Health Practitioners (EHP's) in 1981. This effort ended successfully with the passage of legislation to require EHP licensure in the 1983 session of North Dakota's Legislature. Anyone

who has attempted to do this in their own state knows it is a process fraught with pitfalls. This is a story of how we avoided some of those pitfalls and climbed out of others on our way through the legislative process.

We realized in 1980 that our profession needed improvement. A panel of industry professionals spoke to us at our annual meeting on their perceptions of us as professionals. Among them were dairy farmers, milk processors, restaurateurs, and newspaper editors. Each of them spoke of a need for uniform regulation, and of the need for competent inspectors. This spawned an effort to have legislation ensuring competence of EHP's ready for the 1981 Legislative session. We soon found out that this was not enough time, and that the majority of the work on such a bill takes place before it ever hits the Capitol.

Our first task was to create consensus within our membership about the need for competency assurance. Our members were employees of three State agencies, each with their own responsibilities, and of a variety of local health agencies, ranging from single cities to multi-county districts. A task group was formed within the North Dakota Environmental Health Association to find this consensus. The members were from each of the member Agencies, and representatives of the local health departments. This group agreed upon the need for competency assurance, and a draft bill was produced for review at the 1982 annual meeting of the Association.

Positive things happened on all fronts for EHP's in North Dakota that year. Our State Association affiliated with both of the major national environmental health organizations, and so information from the rest of the professional world started flowing into ours. Old rivals among the agencies in our membership started talking to each other again as work progressed on the licensure bill.

We had a bill ready for the 1983 legislative session that we were sure met every need. It had a comprehensive definition of what the practice of environmental health was. It set up the State Health Officer as the administrator of the Act, with an advisory committee of the regulated agency representatives to represent everyone's interests. We obtained bill sponsors from both Houses of the Legislature, and from both parties. We had our bases covered. Or so we thought. In the opening days of the legislative session, it became obvious that our bill was in serious trouble.

Trouble came on two fronts. First, our beautiful, comprehensive definition of what constituted the practice of environmental health was too comprehensive, pulling in allied professions from other agencies that didn't want to be regulated. Our second problem was the perception by other state agencies that we gave power over their employees to the State Health Officer, the head of the State Health Department. In one afternoon, the same committee met that had produced the original draft. They enlisted the Secretary of State, a perceived neutral party, to act as Administrator of the licensure provisions. They pared the comprehensive definition of environmental health down to four core programs that we inarguably within the realm of environmental health. Those programs were food, beverage, housing and lodging sanitation. Any language not absolutely necessary to the bill was eliminated, leaving it as enabling legislation

only, with the details to be worked out in Administrative rules. Such major changes to the Act necessitated a calling campaign and mailing to the professionals across the state to explain what had happened and to again enlist their support. This being done, our job was to make sure our cause was represented at the committee hearings. This was done by a calling and mailing campaign radiating from the state agencies affected by the Act. Since some of our state agency support was still lukewarm, we used local health agency people to front for us, asking the state agency directors only to say that they supported the bill. Legislators probed the differences among our membership many times, looking for division, but support for the bill withstood this test.

After receiving 'do pass' recommendations from committees in both houses, and some amendments along the way, the bill finally passed the Senate in a form amended by the House - by one vote. It was done.

What did we learn?

1. Enlist the support of your regulated community. Many of the votes for our bill came only because of legislators' perceptions that it was their constituents that were asking for licensure.
2. Be honest and up front about the differences within your ranks as Environmental Health Practitioners. Get those differences resolved before you stand in front of a legislative committee. If you don't, they will make hash of you.
3. Decide what you want to accomplish. This process has the added bonus of serving to minimize differences between member agencies. Each agency must be represented in the decision-making process, either by a member, or by someone they trust. After everyone knows what they are trying to do, necessary changes to your bill can be made with less hand-wringing. Draft the bill only to accomplish your stated goals. You can't solve every problem by drafting one bill. Keep it as simple as possible.
4. Committee members chosen to produce a draft bill must not only represent their agencies; they must be effective communicators and negotiators. If one member refuses to move on a point they consider particularly dear to their heart, ask the agency they represent to replace them. Don't dance around difficult questions. Confront them and resolve them.
5. A strong central coordinator should be picked from the membership of your Association to lead the legislative effort. It is helpful if that person is from a local agency, rather than one of the State agencies. This eases suspicions among other members, and among legislators.
6. Avoid any perception that you are building fences around your profession with licensure. Do this by including standards of education and ethics that meet national standards. Include continuing education requirements and competency testing, if possible. Licensure, rather than a certification process, was chosen in North Dakota because it had legal teeth, and so avoided the fence-building accusation.
7. Communicate, communicate, communicate - to everyone. Keep no secrets. Don't allow naysayers to stay outside the process. Bring them in. Make them propose solutions. They often have good solutions to very legitimate problems.

There are many technical factors that have not been discussed here. Each state has people that can handle those. The real trick is building consensus and keeping everyone moving in the same direction toward a common vision of what professionalism in environmental health can be. In North Dakota, we found that the effort to attain that goal was worth it.

Editor's Note: The United States Internal Revenue Service prohibits "substantial political activity" by groups that are classified as 501(c)(3) "tax exempt" organizations. Sadly, the IRS has never defined "substantial," so most (c)(3)s stay totally out of the political arena.

On the other hand, most associations are classed by the IRS as 501(c)(6). (c)(6)s are allowed to get as politically involved as they want.

Before starting a program such as North Dakota's, be sure you know your tax classification.

Basic Pasteurization Courses

The Texas Association of Milk, Food and Environmental Sanitarians has finalized plans for four training seminars for 1992. The training seminars are entitled "Basic Pasteurization Course."

The "Basic Pasteurization Course" will be geared towards regulatory personnel, plant managers, plant superintendents, supervisors, and plant engineers, operators, and milk sanitarians.

Each course will have a maximum enrollment of fifty registrants. Enrollment will be administered by Ms. Janie F. Park. It is requested that all applicants contact Ms. Park by telephone at (512)458-7281. Monday through Friday, between the hours of 7:00 a.m. CST through 4:00 p.m. CST. Filling of seminar dates will be prioritized on a first come, first served basis. The enrollment fee is \$150.00 per applicant and may be remitted to Ms. Janie F. Park, TAMFES, P. O. Box 2363, Cedar Park, TX 78613-2363. Checks should be payable to TAMFES. Sustaining members may supply one applicant for these seminars at no charge. Regulatory officials are exempt from the \$150.00 enrollment fee.

The 1992 "Basic Pasteurization Course" training dates for the four seminars and the locations are:

Dallas	March 10-12	Le Baron Hotel 1055 Regal Row (214)634-8550
San Antonio	April 7-9	Econo Lodge 333 NW Loop 410 (512)344-4581
Corpus Christi	July 14-16	Holiday Inn Emerald Beach 1102 S. Shoreline Blvd. (512)883-5731
Dallas	October 20-22	Le Baron Hotel 1055 Regal Row (214)634-8550

Lodging will be the responsibility of the individual registrants. Telephone numbers and addresses of host hotels

are listed for your convenience. Please state when registering that you are with TAMFES in order to get the appropriate group rates. Airport service available from hotels.

Please be reminded that the sooner you apply, the more likely you are to be enrolled at your place and on your date of greatest choice. We look forward to seeing you at one of the training seminars.



Dee Buske, IAMFES Affiliate Liaison

From the Affiliate Liaison . . .

Is it too late to say "Happy Holidays?" (When you read this we will probably be in the third week of January.) I do want to say, however, that I'm excited about the developments and growth not only in the individual Affiliates but in the Affiliate Council.

Although in many states the travel budgets of our members have been severely cut, they still find a way to be involved. Programs at the meetings are timely and presented in an interesting format. North Dakota rounded out their meeting by individual agency reports, giving everyone a chance to be part of the program, and me a chance to see that without complete knowledge of their jobs and a sense of humor their work day lives would be pretty hard to take. Wyoming, South Dakota, Nebraska and Mississippi are all growing. I mention these specifically since they were struggling and are now winning that struggle.

The Affiliate Council had a thought provoking session at the Annual Meeting in Louisville. The discussion goes on and I can see that the delegates will have much to offer their individual affiliates in 1992 and beyond.

If you do belong to an affiliate, I ask you to be assertive. Volunteer to help with your next meeting. Let your leaders know what you can offer. If you don't have an affiliate, let's get one started. Many are in "the works." Call me if you don't know who is working in your area, or call to volunteer to be a part of a new affiliate. Communication is a wonderful thing but only if we use it. Exercise your option — give me a call at 1-800-369-6337 (US) or 1-800-284-6336 (Canada).

I wanted this to be short, brilliant, witty, informative. Just the thing to encourage those of you not involved with your affiliate to join now. (What went wrong?) We need your thoughts and help.

IAMFES

Announces the Availability
of the *NEW*

Procedures to Implement the Hazard Analysis at Critical Control Point (HACCP) System Manual

This manual, the latest in a series of procedural manuals developed by the **IAMFES Committee on Communicable Diseases Affecting Man**, provides vital information, including, procedures to:

- Implement the HACCP System
- Analyze Hazards and Assess Risks
- Determine Critical Control Points
- Monitor Critical Control Points
- Collect Samples
- Test Samples for Pathogens
- Evaluate Processing Systems for Hazards
- Diagram Processing Systems
- Measure Time-Temperature Exposure of Foods
- Conduct Experimental Studies
- Measure pH
- Measure Water Activity, etc.

FOR ORDER INFORMATION, CONTACT IAMFES AT 800-369-6337 (U.S.), 800-284-6336 (CANADA) OR FAX 515-232-4736.

Dairy, Food and Environmental Sanitation

Instructions for Authors

Nature of the Magazine

Dairy, Food and Environmental Sanitation is a monthly publication of the International Association of Milk, Food and Environmental Sanitarians, Inc. (IAMFES). It is targeted for persons working in industry, regulatory agencies, or teaching in milk, food and environmental protection.

The major emphases include: 1) practical articles in milk, food and environmental protection, 2) new product information, 3) news of activities and individuals in the field, 4) news of IAMFES affiliate groups and their members, 5) 3-A and E-3-A Sanitary Standards, amendments, and lists of symbol holders, 6) excerpts of articles and information from other publications of interest to the readership.

Anyone with questions about the suitability of material for publication should contact the editor.

Submitting Articles

All manuscripts and letters should be submitted to the Editor, Margie Marble, 502 E. Lincoln Way, Ames, Iowa 50010-6666.

Articles are reviewed by two members of the editorial board. After review, the article is generally returned to the author for revision in accordance with reviewer's suggestions. Authors can hasten publication of their articles by revising and returning them promptly. With authors' cooperation articles are usually published within three to six months after they are received and may appear sooner.

Membership in IAMFES is not a prerequisite for acceptance of an article.

Articles, when accepted, become the copyright property of *Dairy, Food and Environmental Sanitation* and its sponsoring association. Reprinting of any material from *Dairy, Food and Environmental Sanitation* or republishing of any papers or portions of them is prohibited unless permission to do so is granted by the editor.

Reprints

Reprints of an article may be ordered by the author. An order form for reprints will be sent to you. Reprints may be ordered with or without covers, in multiples of 100. Reprint costs vary according to the number of printed pages in the article. Reprints cannot be provided free of charge.

Types of Articles

Dairy, Food and Environmental Sanitation readers include persons working as sanitarians, fieldmen or quality control persons for industry, regulatory agencies, or in education. *Dairy, Food and Environmental Sanitation* serves this readership by publishing a variety of papers of interest and usefulness to these persons. The following types of articles and information are acceptable for publication in *Dairy, Food and Environmental Sanitation*.

General Interest

Dairy, Food and Environmental Sanitation regularly publishes non-technical articles as a service to those readers who are not involved in the technical aspects of milk, food and environmental protection. These articles deal with such topics as the organization and application of a milk or food control program or quality control program, ways of solving a

particular problem in the field, organization and application of an educational program, management skills, use of visual aids, and similar subjects. Often talks and presentations given at meetings of affiliate groups and other gatherings can be modified sufficiently to make them appropriate for publication. Authors planning to prepare general interest nontechnical articles are invited to correspond with the editor if they have questions about the suitability of their material.

Book Reviews

Authors and publishers of books in the fields covered by *Dairy, Food and Environmental Sanitation* are invited to submit their books to the editor. Books will then be reviewed and the review will be published in an issue of *Dairy, Food and Environmental Sanitation*.

Preparation of Articles

All manuscripts should be typed, double-spaced, on 8-1/2 by 11 inch paper. Side margins should be one inch wide.

The title of the article should appear at the top of the first page. It should be as brief as possible and contain no abbreviations.

Names of authors and their professions should follow under the title. If an author has changed location since the article was completed, his new address should be given in a footnote.

Illustrations, Photographs, Figures

Wherever possible, submission of photographs, graphics, or drawings to illustrate the article will help the article. The nature of *Dairy, Food and Environmental Sanitation* allows liberal use of such illustrations, and interesting photographs or drawings often increase the number of persons who are attracted to and read the article.

Photographs which are submitted should have sharp images, with good contrast.

Examples of Proper Bibliographic Citations

Paper in a journal

Alderman, G. G. and E. H. Marth. 1974. Experimental production of aflatoxin in citrus juice and peel. *J. Milk Food Technol.* 37:308-313.

Paper in a book

Marth, E. H. 1974. Fermentations. pp. 771-882. In B. H. Webb, A. H. Johnson, and J. A. Alford (eds.), *Fundamentals of dairy chemistry* (2nd ed.), AVI Publishing Co., Westport, CT.

Book

Fennema, O. R., W. D. Powrie, and E. H. Marth. 1973. *Low-temperature preservation of foods and living matter*. Marcel Dekker, Inc., New York. 598 p.

Patent

Hussong, R. V., E. H. Marth, and D. G. Vakaleris. 1964. Manufacture of cottage cheese. U. S. Pat. 3,117,870. Jan. 14.

Amendments To The 3-A Sanitary Standards For Sifters For Dry Milk And Dry Milk Products, Number 26-02

Number 26-03

Formulated by
International Association of Milk, Food and Environmental Sanitarians
United States Public Health Service
The Dairy Industry Committee

It is the purpose of the IAMFES, USPHS, and DIC in connection with the development of the 3-A Sanitary Standards program to allow and encourage full freedom for inventive genius or new development. Specifications for sifters for dry milk and dry milk products heretofore and hereafter developed which so differ in design, material, fabrication or otherwise as not to conform with the following standards, but which, in the fabricator's opinion, are equivalent or better, may be submitted for the joint consideration of the IAMFES, USPHS, and DIC at any time.

C.1.1

Rubber and rubber-like materials may be used for balls, bonded or removable gaskets, flexible connectors, inspection ports, vibration dampeners, bonding screening media to screen frame assemblies, and parts used in similar applications.

C.1.2

Rubber and rubber-like materials when used for the above specified applications shall comply with the applicable provisions of the 3-A Sanitary Standards for Multiple-Use Rubber and Rubber-Like Materials used as Product Contact Surfaces in Dairy Equipment, 18-00.

C.1.3

Plastic materials may be used for screening media, screen frame assemblies, vibration dampeners, bonding screening media to screen frame assemblies, balls, bonded or removable gaskets, flexible connectors, inspection port covers and parts used in similar applications.

C.1.4

Plastic and plastic-like materials when used for the above specified applications shall comply with the applicable provisions of the 3-A Sanitary Standards for Multiple-Use Plastic and Plastic-Like Materials used as Product Contact Surfaces for Dairy Equipment, 20-14 as amended.

C.1.8

Solder, when used, shall be silver bearing solder and shall be corrosion-resistant, free of cadmium, lead and antimony, non-absorbent, and shall not impart any toxic substance to the product when exposed to the conditions encountered in the environment of intended use and in cleaning and bactericidal treatment.

D.3

Screen Attachment

Silver bearing solder may be used to fill the joints where the screen is attached to the frame. The resulting joint

shall be completely flooded with solder and be free of pits, folds and crevices.

D.3.2

Rubber and rubber-like materials and plastic materials may be used for attaching the screening media to the screen frame assembly provided the material fully floods the surfaces joined and is free of pits, folds and crevices.

D.3.3

The rubber or plastic shall remain intact and retain its surface conformation for the expected life of the screening media.

D.9.1.3

Smaller radii may be used when they are required for essential functional reasons, such as those for vibration dampers, and for bonding screening media to screen frame assemblies. In no case shall such radii be less than 1/8 in. (4 mm).

D.9.1.4

The minimum radii for fillets of welds in product contact surfaces shall be not less than 1/4 in. (6 mm) except that the minimum radii for such welds may be 1/8 in. (3 mm) when the thickness of one or both parts joined is less than 3/16 in. (5 mm).

These amended standards are effective September 28, 1992 at which time the 3-A Sanitary Standards for Sifters for Dry Milk and Dry Milk Products, Number 26-02 are rescinded and become null and void.

Amendments To 3-A Sanitary Standards For Portable Bins For Dry Milk And Dry Milk Products, Number 34-01

Number 34-02

Formulated by
International Association of Milk, Food and Environmental Sanitarians
United States Public Health Service
The Dairy Industry Committee

It is the purpose of the IAMFES, USPHS, and DIC in connection with the development of the 3-A Sanitary Standards Program to allow and encourage full freedom for inventive genius or new developments. Portable bins for dry milk and dry milk products specifications heretofore or hereafter developed which so differ in design, materials, and fabrication or otherwise as not to conform to the following standards but which, in the fabricator's opinion, are equivalent or better, may be submitted for the joint consideration of the IAMFES, USPHS, and DIC at any time.

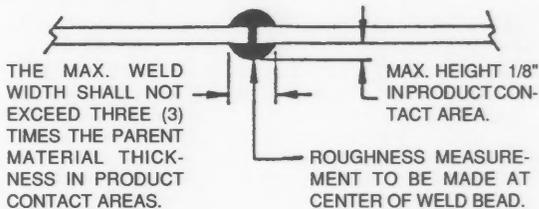
D.2

Permanent joints in product contact surfaces shall be continuously welded. Product contact surfaces of welded areas shall be at least as smooth as a No. 4 finish on stainless steel sheets free of imperfections such as pits, folds and crevices except that: Welds in aluminum product contact surfaces shall be free of pits, folds and crevices using the Gas Metal-Arc Welding process with backing bar, the Gas Tungsten-Arc Welding process, the combination of GMAW and GTAW, or equivalent, lightly finished with a stainless steel wire brush, resulting in a maximum weld surface irregularity of twelve thousandth of an inch differential within one eighth of an inch increments. The maximum weld height shall be 1/8 in. (3 mm). The maximum weld width shall not exceed three times the parent material thickness (See Appendix, Section H).

APPENDIX

H

Weld Type and Height



These amended standards are effective September 28, 1992 at which time the 3-A Standards for Portable Bins for Dry Milk and Dry Milk Products, Number 34-01, are rescinded and become null and void.

Amendments To 3-A Sanitary Standards for Fittings Used On Milk And Milk Products Equipment And Used on Sanitary Lines Conducting Milk and Milk Products, Number 08-20B Rev.

(Diaphragm Type Valves)

Formulated by
International Association of Milk, Food and Environmental Sanitarians
United States Public Health Service
The Dairy Industry Committee

The 3-A Sanitary Standards for Fittings Used on Milk and Milk Products and Used on Sanitary Lines Conducting Milk and Milk Products, Number 08-19B rev. are amended as follows:

D

FABRICATION - POWERED VALVE ACTUATORS

D.17

Powered actuators shall be readily demountable from the body and diaphragm.

These amendments shall become effective September 28, 1992.

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Coming Events

1992

February

•3-4, Preparing for Change: Labeling Dairy Products Workshop, sponsored by the International Dairy Foods Association, to be held at the Stouffer Concourse Hotel, Los Angeles, CA. For more information contact the IDFA Marketing & Training Institute, 888 Sixteenth Street, NW, 2nd floor, Washington, DC 20006-4103, (202)296-4250.

•3-6, Freezing Technology Short Course, sponsored by the University of California-Davis, Davis, CA. Contact: Sharon Munowitch, University Extension, University of California, Davis, CA 95616-8727, (916)757-8896.

•9-12, Pacific Fisheries Technologists 43rd Annual Meeting to be held at the Sheraton Hotel, San Pedro, California. For further information, contact: Pamela Tom, Food Science & Technology Dept., University of California, Davis, CA 95616-8598. Telephone: (916)752-3837; FAX: (916)752-4759.

•9-12, 1992 Winter Conference - Pollution Prevention through Waste Minimization, sponsored by the National Environmental Health Association, will be held at the Hyatt Regency, Denver, CO. For more information contact NEHA, 720 S. Colorado Blvd., Suite 970, Denver, CO 80222-1925; (303)756-9090 or FAX (303)691-9490.

•10-12, National Mastitis Council 31st Annual Meeting to be held at the Crystal City Hyatt in Arlington, Virginia. For more information contact Anne Saeman, Director of Operations, National Mastitis Council, 1840 Wilson Blvd., Suite 400, Arlington, VA 22201, Phone: (703)243-8268, FAX (703)243-8268.

•11-13, FDA Course on Food Code Interpretations to be held at the Townhouse Fargo, Fargo, ND. For preregistration information contact Deb Larson, ND Dept of Health and Consolidated Labs, P.O. Box 937, Bismarck, ND 58502; phone: (701)221-6147.

•12-13, Dairy and Food Industry Conference will be held at The Ohio State University, Department of Food Science and Technology, 2121 Fyffe Road, Columbus, Ohio 43210-1097. For more information contact John Lindamood at (614)292-7765.

•24-25, Sanitation for Warehousemen, sponsored by the American Institute of Baking, will be held at AIB, 1213 Bakers Way, Manhattan, KS. For more information contact AIB at (913)537-4750 or (800)633-5137.

•28, Baking Industry Sanitation Standards Committee Annual Membership Meeting to be held at the Chicago Marriott Hotel, Chicago, IL. For more information, contact the BISSC headquarters at 401 North Michigan Avenue, Chicago, IL 60611; (312)644-6610.

March

•6, The 1992 National Frozen Food Month Kick-Off Dinner, sponsored by the Central Indiana Frozen Foods Associa-

tion, will be held at the Indiana Roof Ballroom, Indianapolis, IN. For more information contact the Central Indiana Frozen Foods Association, Attention: Gerald Carter, P. O. Box 50872, Indianapolis, IN 46250; (317)842-7700.

•10-11, Milk Procurement Workshop, sponsored by the organizations of the International Dairy Foods Association, will be held at the Clarion Hotel St. Louis, St. Louis, MO. For more information contact IDFA Marketing & Training Institute, Attn: Registrations, 888 Sixteenth Street, NW, 2nd Floor, Washington, DC 20006-4103; (202)296-4250.

•10-12, Basic Pasteurization Course, sponsored by the Texas Association of Milk, Food and Environmental Sanitarians, will be held at the Le Baron Hotel, 1055 Regal Row, Dallas, TX. For registration information contact Ms. Janie F. Park, TAMFES, P.O. Box 2363, Cedar Park, TX 78613-2363, (512)458-7281.

•11, U. W. Dairy Manufacturer's Conference, sponsored by the University of Wisconsin-Extension, will be held at The Paper Valley Hotel, Appleton, WI. For more information, contact Bill Wendorff, Dept. of Food Science, 1605 Linden Drive, Madison, WI 53706; (608)263-2015.

•16-18, Food Product Development/Ingredient Technology, sponsored by the University of California-Davis, Davis, CA. Contact: Sharon Munowitch, University Extension, University of California, Davis, CA 95616-8727, (916)757-8896.

•16-19, Better Process Control School, sponsored by the University of California-Davis, Davis, CA. Contact: Sharon Munowitch, University Extension, University of California, Davis, CA 95616-8727, (916)757-8896.

•18, Indiana Dairy Industry Conference to be held at Purdue University. For more information contact James V. Chambers, Food Science Department, Smith Hall, Purdue University, West Lafayette, IN 47907, Phone: (317)494-8279.

•23-25, Principles of Quality Assurance, sponsored by the American Institute of Baking, will be held at AIB, 1213 Bakers Way, Manhattan, KS. For more information contact AIB at (913)537-4750 or (800)633-5137.

•23-27, Midwest Workshop in Milk, Food and Environmental Sanitation will be held at The Ohio State University, Department of Food Science and Technology, 2121 Fyffe Road, Columbus, OH 43210-1097. For more information contact David Dzurec at (614)292-7723.

•30-April 3, Wisconsin Cheese Technology Short Course will be held at the University of Wisconsin, Madison, WI. For more information, contact Bill Wendorff, Department of Food Science, (608)263-2015.

April

•7-9, Basic Pasteurization Course, sponsored by the Texas Association of Milk, Food and Environmental Sanitarians, will be held at the Econo Lodge, 333 Northwest Loop 410, San Antonio, TX. For registration information contact Ms. Janie

F. Park, TAMFES, P.O. Box 2363, Cedar Park, TX 78613-2363, (512)458-7281.

•**12-15, Application of Predictive Microbiology and Computer Modeling Techniques to the Food Industry (SIM International Workshop)**, will be held at the Hyatt Regency Hotel, Tampa, FL. For information, contact Dr. Robert L. Buchanan, Microbial Food Safety Research Unit, USDA-ARS-ERRC, 600 East Mermaid Lane, Philadelphia, PA 19118, call (215)233-6620, FAX (215)233-6581.

•**25-29, The Sixth Conference for Food Protection** will be held at the Tremont Plaza Hotel, Baltimore, MD. For further information contact Leon Townsend, Executive Secretary, Conference for Food Protection, 110 Tecumseh Trail, Frankfort, Kentucky 40601, (502)695-0253.

May

•**3-6, Centennial Conference of the Ice Cream Short Course** to be held at the J.O. Keller Conference, The Pennsylvania State University, 306 Ag. Administration Building, University Park, PA 16802. For further information call (814)865-8301, FAX (814)865-7050.

•**4-6, Food Processing Automation Conference**, sponsored by the Food & Process Engineering Institute, will be held at the Hyatt Regency, Lexington, KY. For more information, contact Jon Hiler, Conference Manager, FPEI, 2950 Niles Road, St. Joseph, MI 49085-9659; Phone (616)429-0300, FAX (616)429-3852.

•**11-14, Purdue Aseptic Processing and Packaging Workshop** to be held at Purdue University. For more information contact James V. Chambers, Food Science Department, Smith Hall, Purdue University, West Lafayette, IN 47907, Phone: (317)494-8279.

•**25-29, Trace Elements in Health and Disease**, Third ISTERH (International Society for Trace Elements Research in Humans) Conference, and Fourth NTES (Nordic Trace Elements) Conference, to be held in Stockholm, Sweden. For more information contact ISTERH/NTES 1992, Scientific Secretariat, Dr. Lars-Olof Plantin, Clinical Research Centre, Huddinge Hospital, S 141 86 HUDDINGE, Sweden; Phone: +46-8 746 55 68; FAX: +46-8 746 74 83.

June

•**2-3, Milk Procurement Workshop**, sponsored by the organizations of the International Dairy Foods Association, will be held at the Loews Giorgio Hotel Denver, Denver, CO. For more information contact IDFA Marketing & Training Institute, Attn: Registrations, 888 Sixteenth Street, NW, 2nd Floor, Washington, DC 20006-4103; (202)296-4250.

July

•**10-17, International Workshop on Rapid Methods and Automation in Microbiology XII and Mini-Symposium (July 10-11)** at Kansas State University. Contact Daniel Y.C. Fung, Director, (913)532-5654 or FAX (913)532-5681, 207 Call Hall, KSU, Manhattan, KS 66506.

•**14-16, Basic Pasteurization Course**, sponsored by the Texas Association of Milk, Food and Environmental Sanitarians, will be held at the Holiday Inn, Emerald Beach, 1102 S. Shoreline Blvd., Corpus Christi, TX. For registration information contact Ms. Janie F. Park, TAMFES, P.O. Box 2363, Cedar Park, TX 78613-2363, (512)458-7281.

•**26-29, 79th International Association of Milk, Food and Environmental Sanitarians Annual Meeting** to be held at the Sheraton Centre, Toronto, Ontario. For more information, please contact Julie at IAMFES, (800)369-6337 (US), (800)284-6336 (Canada) or FAX (515)232-4736.

August

•**10-14, Biotechnology: Principles and Processes** to be held at the Massachusetts Institute of Technology. For more information contact the Director of Summer Session, MIT, Room E19-356, Cambridge, MA 02139, Phone: (617)253-6721.

October

•**20-22, Basic Pasteurization Course**, sponsored by the Texas Association of Milk, Food and Environmental Sanitarians, will be held at the Le Baron Hotel, 1055 Regal Row, Dallas, TX. For registration information contact Ms. Janie F. Park, TAMFES, P.O. Box 2363, Cedar Park, TX 78613-2363, (512)458-7281.

November

•**8-12, PACK EXPO 92, The World of Packaging Technology**, sponsored by Packaging Machinery Manufacturers Institute (PMMI), will be held at the McCormick Place, Chicago, IL. For more information contact Bonnie E. Kilduff, Exposition Manager, PMMI at (202)347-3838 or FAX (202)628-2471.

To insure that your meeting time is published, send announcements at least 90 days in advance to: IAMFES, 502 E. Lincoln Way, Ames, IA 50010-6666.

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112	125	138	151	164	177	190	203	216	229	242	255	268	281	294	307	320	333	346	359
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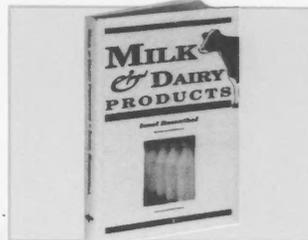
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