Table of Contents

Issue 05-1 Spring/Summer 2005

Letter from the Director 3

Consumer Information on Perchlorate Testing for Bottled Water 5

Helpful Web Links for Local Health Departments 6

Food Protection Program Policy: Herbal/Dietary Supplements 7

Food Protection Program Policy: Slaughtering and Handling of Live Aquatic Animals In Retail Food Establishments 9

Got Milk? Make Sure It's Pasteurized 13

Homemade Ice Cream: A Safe Summertime Treat? 17

Preliminary FoodNet Data on the Incidence of Infection with Pathogens Transmitted Commonly Through Food --- 10 Sites, United States, 2004 19

Food Safety While Hiking, Camping, and Boating 25

Buffet Bonanza: Keeping Food Safe (brochure) 31

GRAS: Time-Tested, and Trusted, Food Ingredients 33

Food Labeling: Food Product Dating 35

The Reporter is published by the Massachusetts Department of Public Health, Food Protection Program. For further information on these and other topics, Food Protection Program staff may be reached by calling 617-983-6712.

This publication is sent to all Boards of Health in the Commonwealth. It is requested that a copy be circulated to all board members and interested employees. Other interested individuals and agencies may request a copy by contacting the Editor.

Please address all correspondence to:
Joan L. Gancarski, Editor
The Reporter
Food Protection Program
Massachusetts Department of Public Health
305 South Street
Jamaica Plain, MA 02130

Telephone: 617-983-6764
FAX: 617-983-6770
e-mail: joan.gancarski@state.ma.us

Letter from the Director:

Paul J. Tierney, Director
Food Protection Program
Center for Environmental Health

The last 12 months have been notable for the Program's continuity of work and the accomplishments of staff. The Program's contracts with state and federal government were awarded and fulfilled, a variety of trainings were offered, FPP staff received recognition at the local, state, and federal level, and food processors, seafood dealers and dairy plants were inspected and licensed.

Additions to the FPP staff this year included: James Hope and Sunny Cai. James is a Senior Food and Drugs inspector assigned to the Food Processing and Dairy Plant Inspection Units, and Sunny is an epidemiologist focusing on foodborne illness investigations. Previously, James, a bacteriologist, worked for five years at the State Laboratory, including in the Clinical Laboratory sample screening for Hepatitis A, and Sunny worked as an environmental scientist for both the City of Boston Public Health Commission and the State of Florida.

There were two staff departures this year: Frauke Argyros, who had been the foodborne illness coordinator, joined the science laboratory faculty at Northeastern University, and Senior Food and Drug Inspector Everett Gasbarro left to pursue his food safety career with a major Massachusetts food corporation The final departure this year was the move of the Division of Community Sanitation to the Massachusetts Department of Public Health's main office at 250 Washington Street, Boston. (617-624-5757).

In our attempt to keep you informed about food safety and sanitation issues, we are including some noteworthy articles in this edition of the REPORTER:

- Consumer Information on Perchlorate Testing for Bottled Water
- Helpful Web Links for Local Health Departments
- Food Protection Program Policy: Slaughtering and Handling of Live Aquatic Animals in Retail Food Establishments
- Food Safety While Hiking, Camping and Boating
- Buffet Bonanza: Keeping Food Safe

The FPP continues to strive to fulfill its mission of inspecting facilities, responding to consumer issues, updating regulatory requirements, and keeping informed through periodic training. A few noteworthy milestones during the past year include:

- Diane Bernazzani became a Certified Food Safety Professional (CFSP) after passing the National Environmental Health Association's exam. Diane also successfully completed the final standardization requirements for certification as an FDA Certified Retail Food Inspection/Training Officer.
- Chris Majewski and Scott Allen were recognized by the U.S. Department of Agriculture for their work in the closing of a turkey farm which had been operating under insanitary conditions. Herb Vedder, USDA Deputy District Manager, presented a "Certificate of Appreciation" Plaque to each inspector.
- The FPP offered three two-day foodborne illness sessions focusing on the training of local health agents, now totaling 17 classes since May 2002
- During Spring and Summer 2004, the Food Protection Program staff, led by the FPP Retail Food Safety Unit and foodborne illness staff, investigated events that had resulted in the viral exposure and illness of Massachusetts residents. In each case, the investigation expanded to include the cooperation of other DPH divisions, other state agencies, local health departments, and national health agencies. In each case, the source of the contamination was a sick foodhandler with hepatitis A.
- Another significant foodborne illness outbreak occurred at a well-known spa retreat in the Berkshires. In this case, the spread of the norovirus was attributed to the use of spa guests as foodhandlers. (Guests were offered discounts if they participated in food preparation.)
- In June, four FPP staff spent a week training at the FDA facility in Maryland. The intensive class work was necessary for Massachusetts to participate in the FDA pilot program for the electronic transmittal of inspections.
- In July 2005, the FPP in cooperation with the FDA offered a four-day class entitled, "Plan Review."

During the year the FPP increased its communication to local Health Departments and Boards of Health, with more than 100 items broadcasted to each city and town in the Commonwealth. The FPP will continue to email and fax information concerned with the recalls, alerts and advisories, and other food-related public health issues.

Finally, the Food Protection Program is involved at various levels with the issue of bio-security. During the year food security assessments were conducted during inspections, staff participated in a variety of training exercises, including incident command systems and nuclear accident drills, and a table-top exercise is in its final stages of design, an exercise in food security involving regulators, industry and public safety stakeholders.

Consumer Information on Perchlorate Testing for Bottled Water

http://mass.gov/dph/fpp/pdf/perchlorate.pdf
Accessed: March 8, 2005

In June 2004, the Massachusetts Department of Public Health in conjunction with the Massachusetts Department of Environmental Protection began perchlorate monitoring of bottled waters offered for sale in Massachusetts. Perchlorate is widely used as a component of propellants in rockets, missiles and fireworks. Perchlorate is a human health concern as it can interfere with iodide uptake into the thyroid gland, thus disrupting thyroid function and potentially disrupting fetal and child development. The impact of disrupting the thyroid hormone synthesis is greatest on pregnant women and their developing fetuses, infants, children, and individuals with low levels of thyroid hormones.

Human exposure to perchlorate can occur through the ingestion of perchlorate-contaminated water. Currently, the Massachusetts Department of Environmental Protection (MDEP) is requiring all public drinking water supplies in the state to test for the possible presence of perchlorate. Although no enforceable drinking water standard has been established for perchlorate, MDEP has developed a guidance level of 1 part per billion (ppb) perchlorate in public drinking water supplies to protect sensitive populations (pregnant women, infants, children, and individuals with hypothyroidism). MDEP is presently evaluating perchlorate occurrence data and is working toward setting an enforceable standard for public drinking water supplies.

A chart, which includes perchlorate-testing data submitted to the Massachusetts Food Protection Program from permitted bottled water companies, is available at: http://mass.gov/dph/fpp/pdf/perchlorate.pdf. This information is provided to consumers who may be concerned about the possible presence of perchlorate in bottled waters. Some bottling plants have supplied testing on their water source(s), some have tested their finished bottled water products, while others have completed both. Perchlorate will not be present in the finished bottled water if it is not present in the source. Plants that tested only the source(s) have the brands that are bottled from that source listed on the chart.

For additional information on perchlorate testing for specific brands, consumers are advised to contact the bottler directly. More information about perchlorate in drinking water may be found on the Massachusetts Department of Environmental Protection website at http://mass.gov/dep/brp/dws/percinfo.htm or for information on bottled water, call the Food Protection Program at 617-983-6712.

12/07/04 edition

Helpful Web Links for Local Health Departments

Food Protection Program
Massachusetts Department of Public Health

Here are some links on the Food Protection Program website that you may find useful.

1 Food Manager Certification: Exam and Trainer Directory
http://mass.gov/dph/fpp/retail/pdf/foodexam02.pdf
This website provides a list of trainers that offer food manager certification training and exams, using the approved national-recognized exams. This list is updated regularly, therefore, check the website for the most up-to-date list.

http://mass.gov/dph/fpp/retail/pdf/foodmae1.pdf
This document provides basic background information about food manager certification in Massachusetts. The document also offers some simple "how to" information, such as "How to Become a Certified Food Protection Manager" and "How to Find Training."

2 License Application Forms
http://mass.gov/dph/fpp/fpplic.htm
This website provides copies of license application forms for wholesale food processing, seafood dealers, dairy plants, bottled water, food and water vending machines, manufacture and sale of stuffed toys, export statement request forms, and applications for licensure for all other establishments and manufacturing processes regulate by the Food Protection Program. Click on the link to view the list. These forms may be downloaded.

3 Food Regulations
http://mass.gov/dph/fpp/regs.htm
This website provides copies of Massachusetts regulations, adopted federal codes and regulations, and model ordinances. Unofficial copies of all the regulations, codes and ordinance may be downloaded for your personal use. Click on the link to view the list.

4 Employee/Applicant Reporting Agreement Model Form
http://mass.gov/dph/fpp/retail/pdf/bohexcel.pdf

Neither Massachusetts law nor regulation requires the use of this form.
This document is a model form that employers and businesses may use to emphasize the need for employees to report specific illnesses and symptoms.

Massachusetts Department of Public Health
Center for Environmental Health
305 South Street
Jamaica Plain, MA 02130-3597
(617) 983-6700 (617) 983-6770 - Fax

Food Protection Program
Policies, Procedures and Guidelines

Issue:	**Herbal/Dietary Supplements**	**No: RF - 07**

"Dietary supplement" as defined in the Dietary Supplement Health and Education Act (DSHEA) of 1994 is a product taken by mouth that contains a "dietary ingredient" intended to supplement the diet. The "dietary ingredients" in these products may include: vitamins, minerals, herbs or other botanicals, amino acids, and substances such as enzymes, organ tissues, glandulars, and metabolites. Dietary supplements can be extracts or concentrates, and may be found in many forms such as tablets, capsules, softgels, gelcaps, liquids or powders. Whatever the form, DSHEA places dietary supplements in a special category under the umbrella of "foods", not drugs, and requires that every supplement be labeled a dietary supplement.

The local board of health has the authority, under 105 CMR 590.00: State Sanitary Code, Chapter X-Minimum Standards for Food Establishments, to permit dietary supplement businesses as the DSHEA places them under the umbrella of foods. Permitting would follow food-manufacturing guidelines as with any other food product. Dietary supplements in general have not been implicated in food borne illness outbreaks and therefore may be considered non-PHF (potentially hazardous food) foods for consideration in limited preparation in residential kitchens. Depending upon the nature of the intended marketing, the residential kitchen may be permitted by either the local board of health if retailing or, if wholesaling is intended, by the Massachusetts Department of Public Health (DPH).

Physical attributes of the manufacturing areas should be similar for any other food products. It is strongly recommended that products be labeled with some type of shelf date or expiration date, which is supported by scientific data or testing. Natural herbs and supplements may lose effectiveness over time. U.S. Food and Drug Administration (FDA) regulations require that dietary supplement labels must include a descriptive name of the product stating that it is a supplement, the name and place of business of the manufacturer, packer, or distributor, a complete list of ingredients, and the net contents of the product. In addition, each dietary supplement (except for eligible small businesses) must have a nutrition label in the form of a "Supplemental Facts" label. This label must identify each dietary ingredient contained in the product.

Another labeling issue is that of claims; a dietary supplement cannot promote on its label or in any informational labeling that it is a treatment, a prevention, or a cure for a specific disease or condition. Dietary supplements may make "health related" claims (such as promotes restful sleep, increases energy); the manufacturer is responsible for the validity of these claims. The law says that if a dietary

supplement makes a “health related” claim, it must state in a “disclaimer” that FDA has not evaluated this claim. It must also state that this product is not intended to “diagnose, treat, cure, or prevent any disease”, because only a drug can make such a claim.

In accordance with DSHEA, the manufacturer of all dietary supplements is responsible for the safety of their products. Complaints about dietary supplements, as well as over the counter medications and cosmetics, should be sent to DPH/DFD who will forward to FDA for follow-up, as FDA is the primary enforcement agency for these products.

Massachusetts Department of Public Health
Center for Environmental Health
305 South Street
Jamaica Plain, MA 02130-3597
(617) 983-6700 (617) 983-6770 - Fax

Food Protection Program
Policies, Procedures and Guidelines

No: RF 3-6

Issue: Slaughtering and Handling of Live Aquatic Animals in Retail Food Establishments

Background:
Live aquatic animals intended for human consumption may pose a significant foodborne hazard if safe food handling procedures are not followed during slaughtering and handling. The purpose of this policy is to provide local boards of health with criteria that should be used when evaluating such operations. The slaughtering operation is regarded as a "Specialized Processing Method" requiring a variance in accordance with the Federal 1999 Food Code, Chapter 3, section 3-502.11. Live aquatic animals, which are normally boiled or steamed such as lobster or molluscan shellfish, do not require a variance.

Federal/State Regulations:
Live aquatic animals fall under the definition of "fish" in the FDA Food Code. In accordance with 105 CMR 590.002 (B) and the Federal 1999 Food Code, Chapter 1, section 1-201.10 (B) (26), the definition of "Fish" means fresh or saltwater finfish, crustaceans and other forms of aquatic life (including alligator, frog, aquatic turtle, jellyfish, sea cucumber, and sea urchin and the roe of such animals) other than birds or mammals, and all mollusks, if such animal life is intended for human consumption. "Fish" includes an edible human food product derived in whole or in part from "fish," including "fish" that have been processed in any manner.

Live edible fish may be allowed in retail operations in accordance with 105 CMR 590.000, section 590.008 and the Federal 1999 Food Code Chapter 6, section 6-501.115 - Prohibiting Animals, paragraph (B) which states that "Live animals may be allowed in the following situations if the contamination of food; clean equipment, utensils, and linens; and unwrapped single-service and single-use articles can not result: subparagraph (B) (1) Edible fish or decorative fish in aquariums, shellfish or crustacea on ice or under refrigeration, and shellfish and crustacea in display tank systems."

This definition of "fish" is also in the Fish and Fishery Products regulations: 105 CMR 533.000, section 533.006 and the Federal regulation 21 CFR Part 123, section 123.3. Also, in accordance with the above mentioned sections of the Fish and Fishery Products regulations there is the definition of "Processing" which means, "with respect to fish or fishery products: handling, storing, preparing, heading, eviscerating, shucking, freezing, changing into different market forms, manufacturing, preserving, packing, labeling, dockside unloading, or holding." However, under section (2) it states that the regulations do not apply to the operation of a retail establishment. In accordance with the Federal 1999 Food Code, Chapter 3, section 3-502.11, a food establishment shall

obtain a variance from the regulatory authority as specified in section 8-103.10 and under section 8-103.11 before preparing food by a specialized processing method that is determined by the regulatory authority to require a variance.

Public Health Rationale:
The following guidelines are issued to ensure that live aquatic animals, which are included in the definition of "fish," are handled in a sanitary manner during each step in the operation. They are also intended to ensure that they are obtained from approved sources and to ensure that proper documentation of the source is maintained.

The primary concern regarding live aquatic animals is that they may be carriers of harmful microorganisms that cause illness in humans, such as parasites, Salmonella and E. Coli.

Therefore, in order to prevent microbiological contamination and prevent cross-contamination, it is imperative that live aquatic animals be processed in a sanitary manner by adhering to proper sanitary procedures from the time of purchase through service to the public.

Both the physical facilities/equipment and the operating procedures must be closely evaluated. Dead, diseased or otherwise unhealthy "fish" entering a sanitary environment are unacceptable and place the environment at risk as well.

- Live aquatic animals shall be purchased from an "approved source" that complies with all applicable local, state, and federal food laws, which, in this case, means a licensed wholesaler. Proper documentation, such as sales invoices, regarding "approved source" must be maintained and available for review during an inspection. Any supplier of live aquatic animals to food establishments must be inspected under Seafood HACCP regulations or their equivalent in accordance with Seafood HACCP regulations in 21 CFR 123 Fish and Fishery Products Subpart A- General Provisions.
- Live aquatic animals must be kept alive until slaughter.
- Live aquatic animals must be slaughtered prior to sale.
- Retail and Wholesale markets that slaughter and handle live edible "fish" shall also obtain a Class 6 Dealer's License from the Commonwealth of Massachusetts, Division of Fisheries and Wildlife (M.G.L. Chapter 131, Sections 23 and 24). An application for a Class 6 Dealers License is available from the Division of Fisheries and Wildlife, 251 Causeway Street, Suite 400, Boston, MA 02114-2014, Phone: 617)-626-1575.

NOTE: The Division of Fisheries and Wildlife exempts food service establishments (i.e., restaurants) from the requirement of obtaining a Class 6 Dealer's License.

Receiving and Holding of Live Aquatic Animals
Containers used for the transport and storage of live aquatic animals shall be made from safe, clean, multiuse or single-service or single-use materials that do not allow the migration of deleterious substances, or impart colors, odors, or tastes to food. Multiuse containers must be cleaned and sanitized frequently enough to prevent contamination of the animals. These containers shall be stored in such a way that the contamination of food; clean equipment, utensils, and linens; and unwrapped single-service and single-use articles will not result. In addition, these containers shall not be stored in areas that are usually open for customers, such as dining and sales areas.

Dead animals need to be culled on a daily basis or as necessary to prevent the transfer of disease and decomposed material from one animal to another.

Live animals do not require refrigeration below 41°F but should be held at the optimal temperature for that animal.

Slaughtering and Preparation
1.Prior to slaughtering and preparation, any equipment food-contact surfaces and utensils to be used must be cleaned and sanitized in accordance with regulatory requirements.

2. Slaughtering and preparation must be conducted in a dedicated area.

3. Waste from slaughtering and/or eviscerating must be disposed of in a sanitary manner, such as in a receptacle for refuse or in a sewage disposal system.

4. Upon completion, any equipment food-contact surfaces and utensils used to slaughter must be thoroughly cleaned and sanitized before it can be used with a different type of raw animal food such as beef, other types of fish, lamb, pork or poultry. Equipment food-contact surfaces and utensils must be cleaned an sanitized each time there is a change from working with raw foods to working with ready-to-eat foods.

5. Hands must be thoroughly washed in accordance with regulatory requirements, especially when handling live "fish" and the containers that they are stored in.

Cooling
Slaughtered aquatic animals that are not immediately cooked must be cooled within 4 hours to 41°F (5°C) or less, or to 45°F (7°C) as specified under ¶ 3-501.16(C) of the 1999 FDA Food Code.

Cooking*
Live aquatic animals, if cooked on the premises, must reach a temperature of 145°F (63°C) for 15 seconds. [Recommend temperature of at least 165°F (74°C) for 15 seconds].

***Special Note: A "Consumer Advisory" is required as specified under ¶ 3-603.11 of the 1999 Food Code if the above guidelines are not met.**

Resources

Food and Drug Administration, 2001 3rd Edition, Fish and Fisheries Products Hazards and Controls Guidance, http://www.cfsan.fda.gov/~comm/haccp4.html

MA Society for the Prevention of Cruelty to Animals (MSPCA) http://www.mspca.org

MA Division of Marine Fisheries http://www.mass.gov/dfwele/dmf/

MA Division of Fisheries and Wildlife http://www.mass.gov/dfwele/dfw/dfw_toc.htm

Guideline for Evaluating the Slaughtering of Frogs and Aquatic Turtles at Retail

Prerequisites and Standard Operating Procedure(s) (SOP's) to eliminate Cross Contamination

- Receiving and Storage Areas separate
- Slaughtering and Preparation in a Dedicated Area.
- Cleaning and Sanitizing Procedures
- Handwashing And No Bare-Hand Contact With RTE Foods Procedures

Hazard Analysis

- Pathogens associated with amphibians - Salmonella, Escherichia coli, and parasites

CCP Identified

- Cooling (during and after slaughtering)
- Cooking

Critical Limits

- Slaughtered frogs and turtles cooled to 41°F (5°C) within 4 hours or to 45°F (7°C) as specified under ¶ 3-501.16(C) of the 1999 FDA Food Code
- Cooked to 145° F (63°C) for 15 seconds; [Recommend 165°F (74°C) for 15 seconds]

Monitoring Procedures

- Calibrated temperature measuring devices used to monitor cooling and cooking temperatures

Corrective Actions and Documentation Procedures

- Verify corrective actions taken by operator for inadequately cooled and/or cooked frogs and turtles. (e.g. Facilitate rapid cooling if within 4 hours or discard, continue cooking to 145° F for 15 sec.;[Recommend temperature of 165°F for 15 sec.])

Verification Process

- Temperature measuring devices calibrated in accordance to manufacturer's specifications as necessary to ensure their accuracy.
- Verify cooling and cooking temperatures

Records Maintained

- Records - check files for invoices/sales receipts. If no records are available, require PIC to make available a list of suppliers. Require PIC to obtain a letter from supplier verifying most recent shipment. Inform PIC that records must be maintained.
- Class 6 Dealer's License, if Retail or Wholesale market, posted.

Got Milk? Make Sure It's Pasteurized

by Linda Bren

FDA Consumer magazine
September-October 2004
http://www.fda.gov/fdac/features/2004/504_milk.html
Accessed: March 8, 2005

Pasteurization, since its adoption in the early 1900s, has been credited with dramatically reducing illness and death caused by contaminated milk. But today, some people are passing up pasteurized milk for what they claim is tastier and healthier "raw milk."

Public health officials couldn't disagree more.

Drinking raw (untreated) milk or eating raw milk products is "like playing Russian roulette with your health," says John Sheehan, director of the Food and Drug Administration's Division of Dairy and Egg Safety. "We see a number of cases of foodborne illness every year related to the consumption of raw milk."

More than 300 people in the United States got sick from drinking raw milk or eating cheese made from raw milk in 2001, and nearly 200 became ill from these products in 2002, according to the Centers for Disease Control and Prevention.

Raw milk may harbor a host of disease-causing organisms (pathogens), such as the bacteria campylobacter, escherichia, listeria, salmonella, yersinia, and brucella. Common symptoms of foodborne illness from many of these types of bacteria include diarrhea, stomach cramps, fever, headache, vomiting, and exhaustion.

Most healthy people recover from foodborne illness within a short period of time, but others may have symptoms that are chronic, severe, or life-threatening.

People with weakened immune systems, such as elderly people, children, and those with certain diseases or conditions, are most at risk for severe infections from pathogens that may be present in raw milk. In pregnant women, *Listeria monocytogenes*-caused illness can result in miscarriage, fetal death, or illness or death of a newborn infant. And *Escherichia coli* infection has been linked to hemolytic uremic syndrome, a condition that can cause kidney failure and death.

Some of the diseases that pasteurization can prevent are tuberculosis, diphtheria, polio, salmonellosis, strep throat, scarlet fever, and typhoid fever.

Pasteurization and Contamination

The pasteurization process uses heat to destroy harmful bacteria without significantly changing milk's nutritional value or flavor. In addition to killing disease-causing bacteria, pasteurization destroys bacteria that cause spoilage, extending the shelf life of milk.

Milk can become contaminated on the farm when animals shed bacteria into the milk. Cows, goats, and sheep carry bacteria in their intestines that do not make them sick but can cause illness in people who consume their untreated milk or milk products.

But pathogens that are shed from animals aren't the only means of contamination, says Tom Szalkucki, assistant director of the Wisconsin Center for Dairy Research at the University of Wisconsin-Madison. Cows can pick up pathogens from the environment just by lying down--

giving germs the opportunity to collect on the udder, the organ from which milk is secreted. "Think about how many times a cow lays down in a field or the barn," says Szalkucki. "Even if the barn is cleaned thoroughly and regularly, it's not steamed. Contamination can take place because it's not a sterile environment."

The Health Hype

Raw milk advocates claim that unprocessed milk is healthier because pasteurization destroys nutrients and the enzymes necessary to absorb calcium. It also kills beneficial bacteria and is associated with allergies, arthritis, and other diseases, they say.

This is simply not the case, says Sheehan. Research has shown that there is no significant difference in the nutritional value of pasteurized and unpasteurized milk, he says. The caseins, the major family of milk proteins, are largely unaffected, and any modification in whey protein that might occur is barely perceptible.

"Milk is a good source of the vitamins thiamine, folate, B-12, and riboflavin," adds Sheehan, "and pasteurization results in losses of anywhere from zero to 10 percent for each of these, which most would consider only a marginal reduction."

While the major nutrients are left unchanged by pasteurization, vitamin D, which enhances the body's absorption of calcium, is added to processed milk. Vitamin D is not found in significant levels in raw milk.

"Pasteurization will destroy some enzymes," says Barbara Ingham, Ph.D., associate professor and extension food scientist at the University of Wisconsin-Madison. "But the enzymes that are naturally present in milk are bovine enzymes. Our bodies don't use animal enzymes to help metabolize calcium and other nutrients."

"Enzymes in the food that we eat and drink are broken down in the human gastrointestinal tract," adds Ingham. "Human bodies rely on our own native enzymes to digest and metabolize food."

"Most of the native enzymes of milk survive pasteurization largely intact," says Sheehan, "including those thought to have natural antimicrobial properties and those that contribute to prolonging milk's shelf life." Other enzymes that survive are thought to play a role in cheese ripening.

Ingham says that pasteurization will destroy some bacteria that may be helpful in the fermentation of milk into products such as cheese and yogurt, "but the benefit of destroying the harmful bacteria vastly outweighs the supposed benefits of retaining those helpful microorganisms. Plus, by adding the microorganisms that we need for fermentation, we can assure a consistently high quality product."

Science has not shown a connection between drinking raw milk and disease prevention. "The small quantities of antibodies in milk are not absorbed in the human intestinal tract," says Ingham. "And there is no scientific evidence that raw milk contains an anti-arthritis factor or that it enhances resistance to other diseases."

Fans of raw milk often cite its creamy rich taste, says Szalkucki, who adds that it may be creamier because it is not made according to the standards for processed milk. "If you go to a grocery store and buy fluid milk, it's been standardized for a certain percentage of fat, such as 2 percent," he says. "Raw milk is potentially creamier because it has not been standardized and it has a higher fat content."

The Law

It is a violation of federal law enforced by the FDA to sell raw milk packaged for consumer use across state lines (interstate commerce). But each state regulates the sale of raw milk within the state (intrastate), and some states allow it to be sold. This means that in some states dairy operations may sell it to local retail food stores, or to consumers directly from the farm or at agricultural fairs or other community events, depending on the state law.

In states that prohibit intrastate sales of raw milk, some people have tried to circumvent the law by "cow sharing," or "cow leasing." They pay a fee to a farmer to lease or purchase part of a cow in exchange for raw milk, claiming that they are not actually buying the milk since they are part-owners of the cow. Wisconsin banned cow-leasing programs after 75 people became infected with Campylobacter jejuni bacteria in 2001 from drinking unpasteurized milk obtained through such a program.

Raw Milk Cheeses

The FDA allows the manufacture and interstate sale of raw milk cheeses that are aged for at least 60 days at a temperature not less than 35ºF. "However, recent research calls into question the effectiveness of 60-day aging as a means of pathogen reduction," says Sheehan.

The FDA's Center for Food Safety and Applied Nutrition (CFSAN) is currently examining the safety of raw milk cheeses and plans to develop a risk profile for these cheeses. This information will help FDA risk managers make future decisions regarding the regulation of these products to protect public health.

Ensuring Milk Safety

The FDA provides oversight for the processing of raw milk into pasteurized milk, cottage cheese, yogurt, and sour cream under the National Conference on Interstate Milk Shipments "Grade A" milk program. This cooperative program between the FDA and the 50 states and Puerto Rico helps to ensure the uniformity of milk regulations and the safety of milk and milk products. The program is based on standards described in the FDA's Pasteurized Milk Ordinance (PMO), a model code of regulations that can be adopted by the states in their own regulations.

Under the Grade A program, state personnel conduct inspections and assign ratings and FDA regional milk specialists audit these ratings, says Richard Eubanks, M.P.H., a senior milk sanitation officer on CFSAN's Milk Safety Team. "It's a rigorous process of inspection and auditing," he says, and "it covers from cow to carton," starting with the dairy farm and continuing through the processing and packaging of products at milk plants. Products that pass inspection may be labeled "Grade A."

The FDA Grade A milk program includes pasteurized milk from cows, goats, sheep, and horses. Raw milk and raw milk cheeses cannot be labeled Grade A, since they are not pasteurized and not covered under the program.

A Sampling of Raw Milk Incidents

July 2004--The Indiana Public Health Department advised consumers to check their refrigerators and freezers for raw milk cheese that may be contaminated with salmonella. Routine product sampling found the bacteria in lot number 139 of "Natural Raw Milk Cheese" made by Meadow Valley Farm after the cheese was distributed to farmers' markets and specialty food stores in parts of Indiana and Wisconsin.

2002-2003--Two children were hospitalized in Ohio for infection with *Salmonella enterica* serotype Typhimurium. These children and 60 other people in Illinois, Indiana, Ohio, and Tennessee developed bloody diarrhea, cramps, fever, chills, and vomiting from S. Typhimurium tracked to consuming raw milk. The milk producer voluntarily relinquished its license for selling raw milk upon recommendation of the Ohio Department of Agriculture.

2000-2001--In North Carolina, 12 adults were infected with *Listeria monocytogenes* linked to homemade, Mexican-style fresh soft cheese produced from contaminated raw milk sold by a local dairy farm. Ten of the 12 victims were pregnant women, and infection with the bacterium resulted in five stillbirths, three premature deliveries, and two infected newborns.

1998--In Massachusetts, 66 people received injections to protect against potential exposure to rabies after drinking unpasteurized milk from a local dairy. A cow that died at the dairy was found to be infected with rabies. Transmission of the rabies virus through unpasteurized milk, although not the common route of infection, is theoretically possible, according to the Centers for Disease Control and Prevention.

Sources: CDC, Indiana State Board of Animal Health

Homemade Ice Cream: A Safe Summertime Treat?

by Linda Bren

FDA Consumer magazine

July-August 2004

http://www.fda.gov/fdac/features/2004/404_summer.html

Accessed: March 8, 2005

Eating ice cream to beat the summer heat is one of America 's favorite pastimes. And the rich, creamy flavor of homemade ice cream--whether it's made with an old hand-cranked ice cream maker or a modern electric one--is especially tasty.

But the gastronomical delight of homemade ice cream can give some people gastric distress--or even worse--a serious illness.

"Homemade ice cream is a special treat for many, but every year it causes several outbreaks of salmonella infection with up to several hundred victims at church picnics, family reunions, or other large gatherings," says John Sheehan, director of the Food and Drug Administration's Division of Dairy and Egg Safety.

The ice cream ingredient responsible for the outbreaks: raw or undercooked eggs.

Between 1996 and 2000, the Centers for Disease Control and Prevention reported 17 outbreaks in the United States , resulting in illness in more than 500 people, that were traced to salmonella bacteria in homemade ice cream.

A person infected with *Salmonella* Enteritidis (SE), the strain of salmonella found most frequently in raw eggs, usually has fever, diarrhea, and abdominal cramps beginning 12 to 72 hours after eating or drinking a contaminated food or beverage. The infection generally lasts four to seven days, and most people recover without any treatment. But for those at high risk--infants, older people, pregnant women, and people with a weakened immune system--it can be life-threatening.

You can still enjoy homemade ice cream made with eggs without the side effects of salmonella infection by preparing it safely, says Nancy Bufano, an FDA consumer safety officer. "Just make sure you use egg products, egg substitutes, or shell eggs that are pasteurized," she says, "or use a cooked egg base."

"Egg products" are eggs that have been removed from their shells and pasteurized. Pasteurization is a heat process that destroys salmonella in eggs without cooking them. Egg products may be liquid, frozen, or dried whole eggs, whites, yolks, or blends of egg and other ingredients. Egg products are not widely available in retail stores; they are predominantly used in institutional food service. "Egg substitutes," which are also pasteurized, may be liquid or frozen and contain only the white of the egg, the part that doesn't have fat and cholesterol. "Egg substitutes are readily available and can be used in just about any recipe that calls for eggs, including ice cream," says Bufano.

Shell eggs can also be pasteurized. "These eggs are not as widely available as egg products and egg substitutes," says Bufano, "but they are easily recognizable in the refrigerated dairy case at some stores." The FDA requires pasteurized shell eggs to be individually marked or specially packaged. Each egg must be marked to indicate that it has been pasteurized, or the carton must

be shrink-wrapped or otherwise packaged so it's easy to tell if it has been opened before purchase, allowing for possible intermingling of pasteurized and unpasteurized eggs.

Commercially manufactured ice cream is typically made with pasteurized eggs or egg products.

Unpasteurized shell eggs, the kind regularly found in grocery stores, also can be used to make ice cream as long as they are cooked properly. To prepare homemade ice cream this way, mix the eggs and milk to make a custard base and then cook to an internal temperature of 160 degrees Fahrenheit, which will destroy salmonella, if present. Use a food thermometer to make sure the mixture reaches the correct temperature, and resist the temptation to taste-test it during preparation when the custard isn't fully cooked. After cooking, chill the custard thoroughly before freezing.

Even when using pasteurized products, the FDA and the U.S. Department of Agriculture (USDA) advise consumers to start with a cooked base for optimal safety, especially if serving people at high risk. Additionally, make sure that the dairy ingredients you use to prepare homemade ice cream, such as milk and cream, are pasteurized.

Another option is to make eggless ice cream, says Bufano. "There are many recipes that don't call for eggs."

The same egg selection and preparation advice applies when making other foods with raw eggs, such as Caesar salad dressing, hollandaise sauce, mayonnaise, and eggnog. Commercially prepared versions of these foods are made with pasteurized egg products.

The FDA continues to work with federal and state agencies, the egg industry, and the scientific community to eliminate egg-associated SE illnesses.

For More Information

FDA's Center for Food Safety and Applied Nutrition
(888) SAFEFOOD (723-3366)
www.cfsan.fda.gov

USDA's Meat and Poultry Hotline
(888) MPHotline (674-6854)

Preliminary FoodNet Data on the Incidence of Infection with Pathogens Transmitted Commonly Through Food 10 Sites, United States, 2004

Morbidity and Mortality Weekly report—MMWR
Centers for Disease Control and Prevention
April 15, 2005 / 54(14);352-356
Accessed: April 20, 2005

Foodborne illnesses are a substantial health burden in the United States (*1*). The Foodborne Diseases Active Surveillance Network (FoodNet) of CDC's Emerging Infections Program collects data from 10 U.S. sites* on diseases caused by enteric pathogens transmitted commonly through food. FoodNet quantifies and monitors the incidence of these infections by conducting active, population-based surveillance for laboratory-diagnosed illness (*2*). This report describes preliminary surveillance data for 2004 and compares them with baseline data from the period 1996--1998. The 2004 data indicate declines in the incidence of infections caused by *Campylobacter*, *Cryptosporidium*, Shiga toxin--producing *Escherichia coli* (STEC) O157, *Listeria*, *Salmonella*, and *Yersinia*. Declines in *Campylobacter* and *Listeria* incidence are approaching national health objectives (objectives 10-1a through 1d); for the first time, the incidence of STEC O157 infections in FoodNet is below the 2010 target (*3,4*) (Table). However, further efforts are needed to sustain these declines and to improve prevention of foodborne infections; efforts should be enhanced to reduce pathogens in food animal reservoirs and to prevent contamination of produce.

In 1996, FoodNet began active, population-based surveillance for laboratory-diagnosed cases of *Campylobacter*, STEC O157, *Listeria*, *Salmonella*, *Shigella*, *Vibrio*, and *Yersinia*. In 1997, FoodNet added surveillance for cases of *Cryptosporidium*, *Cyclospora*, and hemolytic uremic syndrome (HUS). In 2000, FoodNet began collecting information on non-O157 STEC. In 2004, FoodNet began determining whether a case was part of a national foodborne disease outbreak reported to CDC via the electronic Foodborne Outbreak Reporting System (eFORS).

FoodNet personnel ascertain cases through contact with all clinical laboratories in their surveillance areas. HUS surveillance is conducted through a network of pediatric nephrologists and infection-control practitioners, and the review of records of hospitalized patients. Because of the time required for review of hospital records, this report contains preliminary 2003 HUS data.

During 1996--2004, the FoodNet surveillance population increased from 14.2 million persons in five sites to 44.1 million persons (15.2% of the U.S. population) in 10 sites. Preliminary incidence for 2004 was calculated by using the number of laboratory-confirmed infections and dividing by 2003 population estimates. Final incidence for 2004 will be reported (at http://www.cdc.gov/foodnet) when 2004 population estimates are available from the U.S. Census Bureau.

2004 Surveillance

In 2004, a total of 15,806 laboratory-diagnosed cases of infections in FoodNet surveillance areas were identified, as follows: *Salmonella*, 6,464; *Campylobacter*, 5,665; *Shigella*, 2,231; *Cryptosporidium*, 613; STEC O157, 401; *Yersinia*, 173; *Vibrio*, 124; *Listeria*, 120; and *Cyclospora,* 15. Overall incidence per 100,000 persons was 14.7 for *Salmonella,* 12.9 for *Campylobacter,* 5.1 for *Shigella,* and 0.9 for STEC O157. The overall incidence per 1 million persons was 13.2 for *Cryptosporidium,* 3.9 for *Yersinia,* 2.8 for *Vibrio,* 2.7 for *Listeria,* and 0.3 for *Cyclospora.* However, substantial variation occurred across surveillance sites (Table).

Of the 5,942 (92%) *Salmonella* isolates serotyped, five serotypes accounted for 56% of infections, as follows: Typhimurium, 1,170 (20%); Enteritidis, 865 (15%); Newport, 585 (10%); Javiana, 406

(7%); and Heidelberg, 304 (5%). Among 112 (90%) *Vibrio* isolates identified to species, 58 (52%) were *V. parahaemolyticus,* and 16 (14%) were *V. vulnificus*. FoodNet also collected data on 106 non-O157 STEC infections. An O antigen was determined for 80 (75%) of the non-O157 STEC isolates, including O111, 40 (50%); O103, 14 (18%); and O26, 10 (13%). In 2003, FoodNet collected data on 52 HUS cases in persons aged <15 years (rate: 0.6 per 100,000 persons aged <15 years); 36 (69%) of the 52 HUS cases occurred in children aged <5 years (rate: 1.3 per 100,000 children aged <5 years).

In 2004, FoodNet cases were part of 239 nationally reported foodborne disease outbreaks (defined as two or more illnesses from a common source); 138 (58%) of these outbreaks were associated with restaurants. An etiology was reported in 152 (64%) outbreaks. The most common etiologies were norovirus (57%) and *Salmonella* (18%). Cases associated with outbreaks influenced the incidence of laboratory-diagnosed infections. For example, the incidence of *S*. Javiana cases increased substantially in 2004, in part because of a multistate outbreak associated with Roma tomatoes (*5*) that included 42 laboratory-diagnosed cases in Maryland (CDC, unpublished data, 2005).

Comparison of 2004 Data with 1996--1998

To account for the increase in the number of FoodNet sites and populations under surveillance since 1996 and for variation in the incidence of infections among sites, a main-effects, log-linear Poisson regression model (negative binomial) was used to estimate statistically significant changes in the incidence of pathogens (*2*). To create a baseline period, an average annual incidence for the first 3 years (2 years for *Cryptosporidium*) of FoodNet surveillance, 1996--1998, was calculated. Next, the estimated change in incidence (relative rate) between the baseline period and 2004 was calculated, along with a 95% confidence interval (CI). The 3-year baseline, which differs from the 1996 baseline used in previous reports, resulted in more stable and precise relative rate estimates.

Comparing 1996--1998 with 2004, the estimated incidence of several infections declined significantly, as illustrated by the relative rates (Figure 1). The estimated incidence of infection with *Campylobacter* decreased 31% (95% CI = 25%--36%), *Cryptosporidium* decreased 40% (CI = 26%--52%), STEC O157 decreased 42% (CI = 28%--54%), *Listeria* decreased 40% (CI = 25%--52%), *Yersinia* decreased 45% (CI = 32%--55%), and overall *Salmonella* infections decreased 8% (CI = 1%--15%). The estimated incidence of *Shigella* infections did not change significantly in 2004 compared with the baseline period. Overall *Vibrio* infections increased 47% (CI = 7%--102%) (Figure 1); this increase was less than that reported previously because of the increased stability of the baseline rate estimate.

Although *Salmonella* incidence decreased overall, of the five most common *Salmonella* serotypes, only the incidence of *S*. Typhimurium decreased significantly (41% [CI = 34%--48%]), as illustrated by the relative rates comparing 2004 with the 1996--1998 baseline period (Figure 2). Estimated incidence of *S*. Enteritidis and *S*. Heidelberg did not change significantly; incidence of *S*. Newport and *S*. Javiana increased 41% (CI = 5%--89%) and 167% (CI = 75%--306%), respectively.

Reported by: *D Vugia, MD, California Dept of Health Svcs. A Cronquist, MPH, Colorado Dept of Public Health and Environment. J Hadler, MD, Connecticut Dept of Public Health. M Tobin-D'Angelo, MD, Div of Public Health, Georgia Dept of Human Resources. D Blythe, MD, Maryland Dept of Health and Mental Hygiene. K Smith, DVM, Minnesota Dept of Health. K Thornton, MD, Institute for Public Health, Univ of New Mexico Health Sciences Center, Albuquerque. D Morse, MD, New York State Dept of Health. P Cieslak, MD, Oregon Dept of Human Svcs. T Jones, MD, Tennessee Dept of Health. R Varghese, MD, Office of Public Health Science, Food Safety and Inspection Svc, US Dept of Agriculture. J Guzewich, MPH, Center for Food Safety and Applied Nutrition, Food and Drug Admin. F Angulo, DVM, P Griffin, MD, R Tauxe, MD, Div of Bacterial and Mycotic Diseases, National Center for Infectious Diseases; J Dunn, DVM, EIS Officer, CDC.*

Editorial Note:

During 1996--2004, substantial declines occurred in the estimated incidence of infections with *Campylobacter*, *Cryptosporidium,* STEC O157, *Listeria*, *S.* Typhimurium, and *Yersinia*. The 2004 incidence of STEC O157 infections declined below the 2010 national target of 1.0 case per 100,000 persons in FoodNet overall and in seven of the 10 surveillance sites. In addition, the decline in *Campylobacter* incidence represents progress toward the national health objective of 12.3 cases per 100,000 persons (*3*); the renewed decline in *Listeria* incidence, to 2.7 cases per 1 million population in 2004, suggests that the revised national objective to reduce foodborne listeriosis to 2.5 cases per 1 million population by 2005 might be achievable with continued efforts (*4*).

The declines described in this report have occurred concurrently with several important food safety initiatives and education efforts (*1*). The substantial decline of STEC O157 infections first noted in 2003 and sustained in 2004 is consistent with declines in STEC O157 contamination of ground beef reported by the U.S. Department of Agriculture Food Safety and Inspection Service (FSIS) for 2003 (*6*) and 2004 (http://www.fsis.usda.gov/news_&_events/NR_022805_01/index.asp). Multiple interventions might have contributed to this decline, including industry response to the FSIS 2002 notice to manufacturers to reassess control strategies for STEC O157 in the production of ground beef and enhanced strategies for reduction of pathogens in live cattle and during slaughter (*6*). The overall decline in *Campylobacter* incidence from the baseline period to 2004, the majority of which occurred before 2001, might reflect efforts to reduce contamination of poultry and educate consumers about safe food-handling practices. Although the incidence of *Listeria* infections decreased from the period 1996--1998 through 2004, the incidence in 2004 was comparable to 2002, after an increase in 2003 (Figure 1); efforts must continue to prevent foodborne listeriosis.

The decline in *Salmonella* incidence was modest compared with those of other foodborne bacterial pathogens. Only one of the five most common *Salmonella* serotypes, *S.* Typhimurium, declined significantly. To achieve the national health objective of reducing the number of cases to 6.8 per 100,000 persons, greater efforts are needed to understand the complex epidemiology of *Salmonella* and to identify effective pathogen-reduction strategies. The multistate tomato-associated *S.* Javiana outbreak that occurred in the summer of 2004 emphasizes the need to better understand *Salmonella* reservoirs and contamination of produce during production and harvest (*5*). The Food and Drug Administration recently developed a plan to decrease foodborne illness associated with fresh produce (*7*). Moreover, multidrug resistance is an emerging problem among *Salmonella* serotypes, particularly *S.* Newport; large multistate outbreaks associated with ground beef are cause for increased concern (*8*).

The findings in this report are subject to at least five limitations. First, FoodNet relies on laboratory diagnoses, and many foodborne illnesses are not laboratory diagnosed. For example, infections such as norovirus are not identified routinely in clinical laboratories. Second, protocols for isolation of enteric pathogens (e.g., non-O157 STEC) in clinical laboratories vary and are not implemented uniformly within FoodNet sites (*9*). Third, reported illnesses might have been acquired through nonfoodborne sources; reported incidence rates do not represent foodborne sources exclusively. Fourth, although the FoodNet population is similar to the U.S. population (*2*), the findings might not be generalizable to the entire population of the United States. Finally, year-to-year changes in incidence might reflect either annual variations or sustained trends.

Enhanced efforts are needed across the farm-to-table continuum to understand and control pathogens in animals and plants, to reduce or prevent contamination during processing, and to educate consumers about risks and prevention measures. Such efforts can be particularly focused when an animal reservoir species and transmission route for a pathogen are known. For example,

many *Vibrio* infections are related to consumption of raw molluscan shellfish harvested from waters where *Vibrio* are present; ultra-high hydrostatic pressure treatment of oysters will likely prevent *Vibrio* infections. Other effective prevention measures, such as pasteurization of in-shell eggs and irradiation of ground meat and raw poultry, should be used more widely, particularly for foods eaten by persons at high risk. Consumers should follow safe food-handling recommendations and not consume raw or undercooked shellfish, eggs, ground beef, or poultry. In addition, efforts are needed to prevent transmission by nonfoodborne routes (e.g., via water, person-to-person, and exposure to animals or their environments). Guidelines to prevent disease associated with direct contact with animals or their environments in public settings (e.g., fairs and petting zoos) have recently been published (*10*).

References

1. Allos BM, Moore MR, Griffin PM, Tauxe RV. Surveillance for sporadic foodborne disease in the 21st century: the FoodNet perspective. Clin Infect Dis 2004;38(Suppl 3):S115--20.

2. Hardnett FP, Hoekstra RM, Kennedy M, Charles L, Angulo FJ; Emerging Infections Program FoodNet Working Group. Epidemiologic issues in study design and data analysis related to FoodNet activities.ClinInfectDis 2004;38(Suppl 3):121-6.

3. US Department of Health and Human Services. Healthy people 2010 (conference ed, in 2 vols). Washington, DC: US Department of Health and Human Services; 2000.

4. US Department of Agriculture, Food Safety and Inspection Service. 9 CFR Part 430. Control of *Listeria monocytogenes* in ready-to-eat meat and poultry products; final rule. Federal Register 2003;68:34,208--54.

5. CDC. Outbreaks of *Salmonella* infections associated with eating Roma tomatoes---US and Canada, 2004. MMWR 2005;54:325--8.

6. Naugle AL, Holt KG, Levine P, Eckel R. 2005. Food Safety and Inspection Service regulatory testing program for *Escherichia coli* O157:H7 in raw ground beef. J Food Prot 2005;68:462--8.

7. Food and Drug Administration. Produce safety from production to consumption: 2004 action plan to minimize foodborne illness associated with fresh produce consumption. Rockville, MD: US Department of Health and Human Services, Food and Drug Administration; 2004. Available at http://www.cfsan.fda.gov/~dms/prodpla2.html.

8. CDC. Outbreak of multidrug-resistant *Salmonella* Newport---U.S., January--April 2002. MMWR 2002;51:545--8.

9. Voetsch AC, Angulo FJ, Rabatsky-Ehr T, et al. 2004. Laboratory practices for stool-specimen culture for bacterial pathogens, including *Escherichia coli* O157:H7, in the FoodNet sites, 1995-2000. ClinInfect Dis 2004;38(Suppl 3):S190-7.

10. CDC. Compendium of measures to prevent disease associated with animals in public settings, 2005: National Association of State Public Health Veterinarians, Inc. (NASPHV). MMWR 2005;54(No. RR-4).

- Connecticut, Georgia, Maryland, Minnesota, New Mexico, Oregon, Tennessee, and selected counties in California, Colorado, and New York.

FIGURE 1. Relative rates compared with 1996–1998 baseline period of laboratory-diagnosed cases of infection with *Campylobacter*, *Escherichia coli* O157, *Listeria*, *Salmonella*, and *Vibrio*, by year — Foodborne Diseases Active Surveillance Network, United States, 1996–2004

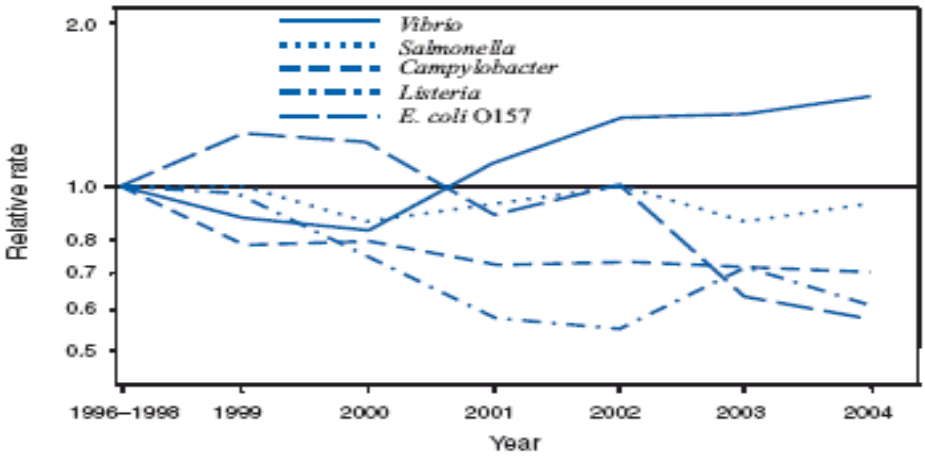

FIGURE 2. Relative rates compared with 1996–1998 baseline period of laboratory-diagnosed cases of infection with the five most commonly isolated *Salmonella* serotypes, by year — Foodborne Diseases Active Surveillance Network, United States, 1996–2004

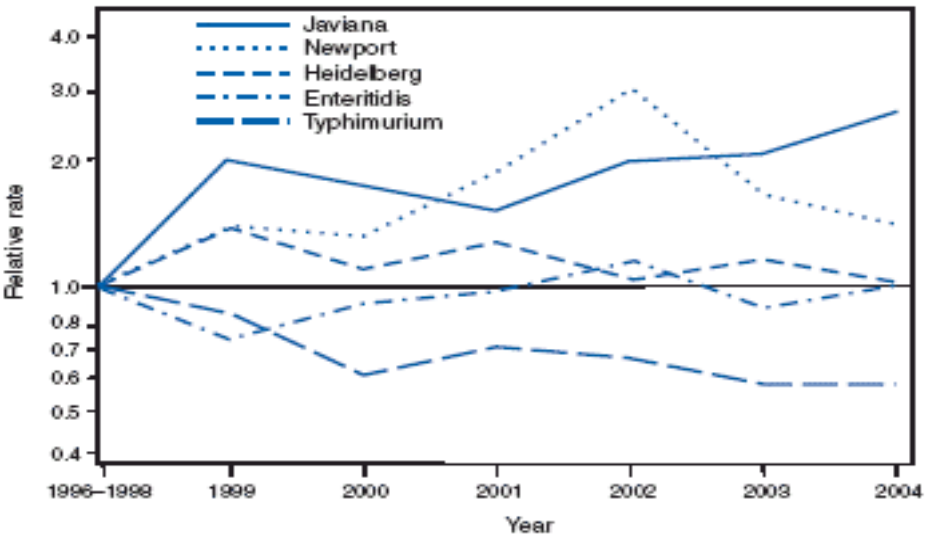

TABLE. Incidence of cases of bacterial and parasitic infection under surveillance in the Foodborne Diseases Active Surveillance Network, by site, compared with national health objectives for 2010 — United States, 2004

Pathogen	California	Colorado	Connecticut	Georgia	Maryland	Minnesota	New Mexico	New York	Oregon	Tennessee	Overall	National health objective for 2010*
Bacteria												
Campylobacter†	28.6	19.6	16.7	6.6	5.3	17.7	18.9	11.4	18.0	7.1	**12.9**	12.3
Escherichia coli O157†	0.8	0.8	0.9	0.3	0.4	2.2	0.5	1.3	1.7	0.8	**0.9**	1.0
Listeria§	4.7	3.6	5.2	1.7	3.3	1.0	1.1	3.9	1.4	2.7	**2.7**	2.5
Salmonella†	14.8	12.9	13.3	21.9	14.3	12.7	14.9	10.5	10.4	13.0	**14.7**	6.8
Shigella†	7.0	3.8	2.0	7.4	2.6	1.3	7.2	5.0	2.2	9.5	**5.1**	NA¶
Vibrio§	8.1	4.4	2.9	2.8	5.1	0.6	1.6	0.2	2.5	1.5	**2.8**	NA
Yersinia§	7.8	2.8	5.5	4.7	1.5	4.3	0.5	2.3	4.2	4.3	**3.9**	NA
Parasites												
Cryptosporidium§	6.1	9.5	8.3	19.7	4.4	27.7	6.9	22.5	8.1	8.9	**13.2**	NA
Cyclospora§	NR**	1.2	2.0	0.2	0.4	NR	NR	0.2	NR	NR	**0.3**	NA
Population in surveillance (millions)††	3.2	2.5	3.5	8.7	5.5	5.1	1.9	4.3	3.6	5.8	**44.1**	—

* Objectives are for year 2010 incidence for *Campylobacter*, *E. coli* O157:H7, and *Salmonella* and for year 2005 incidence for *Listeria*.
† Per 100,000 persons.
§ Per 1 million persons.
¶ Not applicable.
** None reported.
†† Population for some sites is entire state, for other sites, selected counties. For some sites, the catchment area for *Cryptosporidium* and *Cyclospora* is larger than for bacterial pathogens.

Food Safety While Hiking, Camping, and Boating

United States Department of Agriculture - Food Safety and Inspection Service
http://www.fsis.usda.gov/Fact_Sheets/Food_Safety_While_Hiking_Camping_&_Boating/index.asp
Accessed 3/8/05

June 2002

Outdoor activities are popular with Americans nationwide. The fresh air and exercise revives the spirit and the mind. Hiking, camping, and boating are good activities for active people and families, and in some parts of the country you can enjoy the outdoors for 2 or 3 seasons. In many cases, these activities last all day and involve preparing at least one meal. If the food is not handled correctly, foodborne illness can be an unwelcome souvenir.

"Keep Hot Foods Hot and Cold Foods Cold."

Whether you are in your kitchen or enjoying the great outdoors, there are some food safety principles that remain constant. The first is "Keep hot foods hot and cold foods cold." Meat and poultry products may contain bacteria that cause foodborne illness. They must be cooked to destroy these bacteria and held at temperatures that are either too hot or too cold for these bacteria to grow.

Most bacteria do not grow rapidly at temperatures below 40ºF or above 140ºF. The temperature range in between is known as the "Danger Zone." Bacteria multiply rapidly at these temperatures and can reach dangerous levels within 2 hours.

If you are traveling with cold foods, bring a cooler with a cold source. If you are cooking, use a hot campfire or portable stove. It is difficult to keep foods hot without a heat source when traveling, so it's best to cook foods before leaving home, cool them, and transport them cold.

"Keep Everything Clean."

The second principle is that bacteria present on raw meat and poultry products can be easily spread to other foods by juices dripping from packages, hands, or utensils. This is called cross-contamination. When transporting raw meat or poultry, double wrap or place the packages in plastic bags to prevent juices from the raw product from dripping on other foods. Always wash your hands before and after handling food, and don't use the same platter and utensils for raw and cooked meat and poultry. Soap and water are essential to cleanliness, so if you are going somewhere that will not have running water, bring it with you. Even disposable wipes will do.

Food Safety while Hiking and Camping

Sometimes you just have to get out and walk around in the solitude and beauty of our country. You may want to hike for just a few hours, or you may want to hike for a few days. One meal and some snacks are all that's needed for a short hike. Planning meals for a longer hike requires more thought. You have to choose foods that are light enough to carry in a backpack and that can be transported safely.

Hot or Cold?

The first principle is to keep foods either hot or cold. Since it is difficult to keep foods hot without a heat source (although the new insulated casserole dishes will keep things hot for an hour or so), it is best to transport chilled foods. Refrigerate or freeze the food overnight. For a cold source, bring frozen gel-packs or freeze some box drinks. The drinks will thaw as you

hike and keep your meal cold at the same time. What foods to bring? For a day hike, just about anything will do as long as you can fit it in your backpack and keep it cold – sandwiches, fried chicken, bread and cheese, and even salads – or choose non-perishable foods.

Clean

The second principle is to keep everything clean, so remember to bring disposable wipes if you are taking a day trip. (Water is too heavy to bring enough for cleaning dishes!)

Safe Drinking Water

It is not a good idea to depend on fresh water from a lake or stream for drinking, no matter how clean it appears. Some pathogens thrive in remote mountain lakes or streams and there is no way to know what might have fallen into the water upstream. Bring bottled or tap water for drinking. Always start out with a full water bottle, and replenish your supply from tested public systems when possible. On long trips you can find water in streams, lakes, and springs, but be sure to purify any water from the wild, no matter how clean it appears.

The surest way to make water safe is to boil it. Boiling will kill microorganisms. First, bring water to a rolling boil, and then continue boiling for 1 minute. Before heating, muddy water should be allowed to stand for a while to allow the silt to settle to the bottom. Dip the clear water off the top and boil. At higher elevations, where the boiling point of water is lower, boil for several minutes.

As an alternative to boiling water, you can also use water purification tablets and water filters. The purification tablets – which contain iodine, halazone, or chlorine – kill most waterborne bacteria, viruses, and some (but not all) parasites. Because some parasites – such as C*ryptosporidium parvum*, *Giardia lamblia,* and larger bacteria – are not killed by purification tablets, you must also use a water filter. These water filtering devices must be 1 micron absolute or smaller. Over time purification tablets lose their potency, so keep your supply fresh. Water sanitizing tablets for washing dishes can also be purchased (just don't confuse the two). Water purification tablets, filters, and sanitizing tablets can be purchased at camping supply stores.

What Foods to Bring?

If you are backpacking for more than a day, the food situation gets a little more complicated. You can still bring cold foods for the first day, but you'll have to pack shelf-stable items for the next day. Canned goods are safe, but heavy, so plan your menu carefully. Advances in food technology have produced relatively lightweight staples that don't need refrigeration or careful packaging. For example:

1 peanut butter in plastic jars;
2 concentrated juice boxes;
3 canned tuna, ham, chicken, and beef;
4 dried noodles and soups;
5 beef jerky and other dried meats;
6 dehydrated foods;
7 dried fruits and nuts; and
8 powdered milk and fruit drinks.

Powdered mixes for biscuits or pancakes are easy to carry and prepare, as is dried pasta. There are plenty of powdered sauce mixes that can be used over pasta, but check the required ingredient list. Carry items like dried pasta, rice, and baking mixes in plastic bags and take only the amount you'll need.

Cooking at Camp

After you have decided on a menu, you need to plan how you will prepare the food. You'll want to take as few pots as possible (they're heavy!). Camping supply stores sell lightweight cooking gear that nest together, but you can also use aluminum foil wrap and pans for cooking.

You'll need to decide in advance how you will cook. Will you bring along a portable stove, or will you build a campfire? Many camping areas prohibit campfires, so check first or assume you will have to take a stove. Make sure to bring any equipment you will need. If you are bringing a camp stove, practice putting it together and lighting it before you pack. If you build a campfire, carefully extinguish the fire and dispose of the ashes before breaking camp. Likewise, leftover food should be burned, not dumped. Lastly, be sure to pack garbage bags to dispose of any other trash, and carry it out with you.

Use a Food Thermometer

Another important piece of camping equipment is a *food thermometer*. If you are cooking meat or poultry on a portable stove or over a fire, you'll need a way to determine when it is done *and* safe to eat. Color is not a reliable indicator of doneness, and it can be especially tricky to tell the color of a food if you are cooking in a wooded area in the evening.

When cooking hamburger patties on a grill or portable stove, use a digital thermometer to measure the temperature. Digital thermometers register the temperature in the very tip of the probe, so the safety of thin foods -- such as hamburger patties and boneless chicken breasts -- as well as thicker foods can be determined. A dial thermometer determines the temperature of a food by averaging the temperature along the stem and, therefore, should be inserted 2 to 2½ inches into the food. If the food is thin, the probe must be inserted sideways into the food.

It is critical to use a food thermometer when cooking hamburgers. Ground beef may be contaminated with *E. coli* O157:H7, a particularly dangerous strain of bacteria. Illnesses have occurred even when ground beef patties were cooked until there was no visible pink. The only way to insure that ground beef patties are safely cooked is to use a food thermometer, and cook the patty until it reaches 160ºF. For chicken, cook breasts or cutlets to 170ºF; legs and thighs to 180ºF. Pork should be cooked to 160ºF. Heat hot dogs and any leftover food to 165ºF. Be sure to clean the thermometer between uses.

Keeping Cold

If you are "car camping" (driving to your site), you don't have quite as many restrictions. First, you will have the luxury of bringing a cooler. What kind of cooler? Foam chests are lightweight, low cost, and have good "cold retention" power. But they are fragile and may not last through numerous outings. Plastic, fiberglass, or steel coolers are more durable and can take a lot of outdoor wear. They also have excellent "cold retention" power, but, once filled, larger models may weigh 30 or 40 pounds.

To keep foods cold, you'll need a cold source. A block of ice keeps longer than ice cubes. Before leaving home, freeze clean, empty milk cartons filled with water to make blocks of ice, or use frozen gel-packs. Fill the cooler with *cold* or *frozen* foods. Pack foods in reverse order. First foods packed should be the last foods used. (There is one exception: pack raw meat or poultry *below* ready-to-eat foods to prevent raw meat or poultry juices from dripping on the other foods.) Take foods in the smallest quantity needed (e.g., a small jar of mayonnaise). In the car, put the ice chest in the air-conditioned passenger section, not in the trunk. At the campsite, insulate the cooler with a blanket, tarp, or poncho. When the camping trip is over, discard all perishable foods if there is no longer ice in the cooler or if the gel-pack is no longer frozen.

Cleanup

Whether taking a hike or camping at an established site, if you will be washing dishes or cookware, there are some rules to follow. Camping supply stores sell biodegradable camping soap in liquid and solid forms. But use it sparingly, and keep it out of rivers, lakes, streams, and springs, as it will pollute. If you use soap to clean your pots, wash the pots at the campsite, not at the water's edge. Dump dirty water on dry ground, well away from fresh water. Some wilderness campers use baking soda to wash their utensils. Pack disposable wipes for hands and quick cleanups.

Food Safety While Boating

Keeping food safe for a day on the boat may not be quite as challenging as for a hike, but when you are out on the water, the direct sunlight can be an even bigger food safety problem. Remember the "Danger Zone"? It is true that bacteria multiply rapidly at warm temperatures, and food can become unsafe if held in the "Danger Zone" for over 2 hours. Above 90ºF, food can become dangerous after only 1 hour. In direct sunlight, temperatures can climb even higher than that. So bring along plenty of ice, and keep the cooler shaded or covered with a blanket.

Keep Your Cooler Cool

A cooler for perishable food is essential. It is important to keep it closed, out of the sun, and covered, if possible, for further insulation. Better yet, bring two coolers: one for drinks and snacks, and another for more perishable food. The drink cooler will be opened and closed a lot, which lets hot air in and causes the ice to melt faster. Pack your coolers with several inches of ice, blocks of ice, or frozen gel-packs. Store food in watertight containers to prevent contact with melting ice water.

Keep Cold Foods Cold

Perishable foods, like luncheon meats, cooked chicken (Yes, that includes fried chicken!), and potato or pasta salads, should be kept in the cooler. Remember the rule: hot foods hot, cold foods cold? And the 2-hour rule: no food should be in the "Danger Zone" for more than 2 hours? Well, unless you plan to eat that bucket of fried chicken within 2 hours *of purchase,* it needs to be kept in the cooler. For optimum safety, consider buying it the night before, refrigerating it in a shallow container (not the bucket), and then packing it *cold* in the cooler.

Of course, some foods don't need to be stored in the cooler: fresh fruits and vegetables, nuts, trail mix, canned meat spreads, and peanut butter and jelly. (However, once canned foods are opened, put them in the cooler.)

If you don't have an insulated cooler, try freezing sandwiches for your outing. Use coarse-textured breads that don't get soggy when thawed. Take the mayonnaise, lettuce, and tomato with you to add at mealtime. In a pinch, a heavy cardboard box lined with plastic bags and packed with frozen gel packs or ice will keep things cold until lunchtime. Freeze water in milk cartons for your cold source.

Seafood

If you are planning to fish, check with your fish and game agency or state health department to see where you can fish safely, then follow these guidelines:

Finfish:

1 Scale, gut, and clean fish as soon as they're caught.

2 Live fish can be kept on stringers or in live wells, as long as they have enough water and enough room to move and breathe.

3 Wrap fish, both whole and cleaned, in water-tight plastic and store on ice.

4 Keep 3 to 4 inches of ice on the bottom of the cooler. Alternate layers of fish and ice.

5 Store the cooler out of the sun and cover with a blanket.

6 Once home, eat fresh fish within 1 to 2 days or freeze them. For top quality, use frozen fish within 3 to 6 months.

Shellfish:

1 Crabs, lobsters, and other shellfish must be kept alive until cooked.

2 Store in live wells or out of water in a bushel or laundry basket under wet burlap or seaweed.

3 Crabs and lobsters are best eaten the day they're caught.

4 Live oysters should be cooked within 7 to 10 days.

5 Live mussels and clams should be cooked within 4 to 5 days.

6 Eating raw shellfish is extremely dangerous. People with liver disorders or weakened immune systems are especially at risk.

Cleanup

Cleanup on the boat is similar to cleanup in the wild. Bring disposable wipes for handwashing, and bag up all your trash to dispose of when you return to shore.

General Rules for Outdoor Food Safety

Plan ahead: decide what you are going to eat and how you are going to cook it; then plan what equipment you will need.

1 Pack safely: use a cooler if car-camping or boating, or pack foods in the frozen state with a cold source if hiking or backpacking. Keep raw foods separate from other foods. Never bring meat or poultry products without a cold source to keep them safe.

2 Bring disposable wipes or biodegradable soap for hand- and dishwashing.

3 Plan on carrying bottled water for drinking. Otherwise, boil water or use water purification tablets.

4 Do not leave trash in the wild or throw it off your boat.

5 If using a cooler, leftover food is safe only if the cooler still has ice in it. Otherwise, discard leftover food.

6 Whether in the wild or on the high seas, protect yourself and your family by washing your hands before and after handling food.

NOTES

Buffet Basics

Plan a BAC-free buffet with these tips!

Size Matters!

If you're planning a buffet at home and are not sure how quickly the food will be eaten, **keep buffet portions small**. Prepare a number of small platters and dishes ahead of time. Store cold back-up dishes in the refrigerator and keep hot dishes in the oven (set at 200° - 250° F) prior to serving. This way, your late-arriving guests can enjoy the same appetizing arrangements as the early arrivals.

Take Temperatures!

Cooked, hot foods should be kept at 140° F or warmer. Use a food thermometer to check. Serve or keep food hot in chafing dishes, crock pots, and warming trays. ***Note:*** Some warmers only hold food at 110° F to 120° F, so make sure your warmer has the capability to hold foods at 140° F or warmer.

Chill Out!

Cold foods should be kept at 40° F or colder. Keep cold foods refrigerated until serving time. If food is going to stay out on the buffet table longer than 2 hours, place plates of cold food on ice to retain the chill.

Keep it Fresh!

It can be unsafe to add new food to a serving dish that already contained food. Many people's hands may have touched the food, which has also been sitting at room temperature for awhile. Instead, **replace empty platters with freshly filled ones**.

Watch the Clock!

Remember the 2-Hour Rule: Don't leave perishable food out at room temperature on a buffet table for more than 2 hours unless you're keeping it hot or cold. If the buffet is held in a place where the temperature is above 90° F, the safe-holding time is reduced to 1 hour.

If you have any questions or concerns about food safety during the holiday season, contact:

- The **U.S. Department of Agriculture (USDA) Meat and Poultry Hotline** at (800) 535-4555 or (202) 720-3333 (Washington, DC area). The TTY number for the hearing impaired is (800) 256-7072
- The **U.S. Food and Drug Administration Food Information Line** at (888) SAFE FOOD
- The **Fight BAC!**(R) Web site at: **www.fightbac.org**

Bon appétit!

JMH Communications, Inc., New York, NY

Partnership for Food Safety Education • 655 15th St. NW, Suite 700 • Washington, DC 20005

Buffet Bonanza: Keeping Food Safe!

Guard your buffet table from BAC! by following these food safety tips.

FIGHT BAC!
Keep Food Safe From Bacteria®

Buffets are a great way to celebrate special occasions. What could be more tempting than a buffet table laden with a mouth-watering feast? But when foods are left out at room temperature for long periods of time, buffets can provide an inviting environment for BAC! (a.k.a. bacteria). Here's how you can keep BAC! away from your buffet table.

The Lowdown on BAC!

To survive and reproduce, bacteria need the right conditions: food, moisture, time, and temperature. If consumed, harmful bacteria can cause foodborne illness. When preparing food, follow the 4 Cs of food safety: **clean, cook, chill,** and **combat cross-contamination.**

Brilliant Buffets

Beware of BAC!

At buffets, you can select from a wide variety of foods, some of which may contain uncooked or lightly-cooked eggs. But Grade A eggs with clean uncracked shells can be contaminated with *Salmonella* Enteritidis bacteria. That's why it's important to cook eggs thoroughly to kill any bacteria that may be present.

Savory Salads . . .

Traditional recipes for Caesar dressing may contain uncooked eggs. If Caesar salad is a favorite among your guests, you can keep BAC! out of your salad bowl with this safe, savory recipe below.

Zesty Sauces . . .

Spice it up! You can add zest to hot meats, poultry, and eggs by adding hollandaise and béarnaise sauces. If your homemade recipes for these sauces call for uncooked eggs, you can modify them by cooking the egg mixture on the stovetop to 160° F. Then follow the recipe's directions.

Fun Platters . . .

Tempt your guests with an array of fun platters. Refrigerate finger sandwiches and cheese chunks right up until serving time. During the buffet, keep shrimp cocktail, fruit salad, and dips chilled on a bed of ice.

Note: Keep in mind that BAC! can multiply quickly in moist foods like soufflés and foods that contain dairy products, so be sure to refrigerate them right up until serving time.

Caesar Salad Dressing

(1 Quart)

Ingredients

- 2 cups olive oil
- 8 cloves of pressed or finely-chopped garlic
- 4 whole eggs
- 2 tablespoons ground black pepper
- 1 cup lemon juice
- ½ cup Worcestershire sauce
- ½ cup of vinegar
- ¼ cup anchovy paste
- 2 cups freshly grated Parmesan cheese

Directions

- In saucepan, place ½ cup of olive oil and garlic. Sauté lightly. Do not brown.
- Remove from heat and blend with an additional 1 ½ cups of olive oil. Set aside.
- In same pan, place eggs and ground black pepper. Add lemon juice, Worcestershire sauce, vinegar, and anchovy paste.
- Blend with whisk over low heat until food thermometer reaches 160° F.
- Remove from heat and cool slightly. Pour mixture into blender and blend on low speed. Slowly pour in garlic oil, blending thoroughly. Stop blender and stir in Parmesan cheese.
- Serve immediately. If you're not serving immediately, cover and place in the refrigerator.

– The California Egg Commission

Remember to wash hands thoroughly in hot, soapy water before and after food preparation.

GRAS: Time-Tested, and Trusted, Food Ingredients

by Carol Rados

FDA Consumer magazine
March-April 2004 Issue
http://www.fda.gov/fdac/features/2004/204_gras.html
Accessed: March 8, 2005
United States Food and Drug Administration
United States Department of Health and Human Services

If Marco Polo were to attempt to bring back spices from the Orient today, he would have more to worry about than pirates. The 13th century explorer now would be required to prove that his cargo is not toxic, does not cause birth defects, and will not interfere with nutrition or affect individuals with allergies--unless the flavorings already are "generally recognized as safe" (GRAS) by the Food and Drug Administration.

GRAS is one of four legal categories set up by Congress under the 1958 Food Additives Amendment to the Federal Food, Drug, and Cosmetic Act (FD&C Act). At the time, knowledge about food science and the potential long-term harmful effects of food chemicals on health were beginning to surface. Congress decided it was not necessary for the food industry to prove the safety of substances such as salt, sugar, and spices intentionally added to foods if they were already generally regarded as safe by qualified scientists.

A GRAS substance, therefore, is one that has a long, safe history of common use in foods, or that is determined to be safe based on proven science. If, however, new evidence suggests that a GRAS substance may no longer be safe, the FDA can prohibit its use or require further studies to determine its safety.

Some substances may be GRAS for one use, but not for others. For example, some uses of a food substance are intended for a narrowly defined population, such as newborn infants who consume infant formula as the sole item of the diet. In this case, there may be special considerations associated with that population, but not with general use of the food substance.

Manufacturers add substances to foods to prevent spoilage or to enhance appearance, taste, texture, or nutritive value. Without them, cakes wouldn't rise, salt would lump, bread would mold more easily, ice cream would separate into ice crystals, and marshmallows would harden into bite-sized rocks. Food additives allow us to enjoy a variety of safe, wholesome, and tasty foods all year round. They also help make convenience foods readily available.

New Food Additives

The FDA approves new ingredients for use in the food supply based on reviews of extensive scientific research on safety. To market a new food additive, a manufacturer must first petition the FDA for its approval. The petition must provide convincing evidence that the proposed additive performs as it is intended. Animal studies using large doses of the additive for long periods often are needed to show that the substance would not cause harmful effects in people when eaten in expected amounts. Studies of the additive in humans also may be submitted to the FDA.

If an additive is approved, the FDA issues a regulation that may include the types of foods in which it can be used, maximum amounts to be used, and how it should be identified on food labels. To further assure safety, the FDA may require the manufacturer to monitor its use. All

additives are subject to ongoing safety reviews as scientific understanding and methods of testing continue to improve.

If ingredients such as new sweeteners are added to conventional foods without being approved by the FDA, the food may be considered adulterated or misbranded. The FD&C Act prohibits marketing conventional foods containing ingredients that are not either GRAS or newly approved by the FDA, as well as health claims made about their use on the product's labeling.

For More Information

The FDA Center for Food Safety and Applied Nutrition
http://www.cfsan.fda.gov/~lrd/foodadd.html
"Everything" Added to Food in the United States (EAFUS database)
http://www.cfsan.fda.gov/~dms/eafus.html

Regulatory Categories for Substances Added to Foods

Other than pesticides and animal drugs, substances added to foods fall into four legal categories.

· **Food additives**--substances that have no proven track record of safety and must be approved by the FDA before they can be used.

· **Generally recognized as safe (GRAS)**--substances for which use in food has a proven track record of safety based either on a history of use before 1958 or on published scientific evidence, and that need not be approved by the FDA prior to being used.

· **Prior-sanctioned**--substances that were assumed to be safe by either the FDA or the U.S. Department of Agriculture before 1958, to be used in a specific food. (For example, while the preservative nitrate can be used in meat because it was sanctioned before 1958, it cannot be used on vegetables because they were not covered by the prior sanction.)

· **Color additives**--dyes that are used in foods, drugs, cosmetics and medical devices and must be approved by the FDA before they can be used.

GRAS or prior-sanctioned status does not guarantee a substance's safety. Sometimes new evidence shows that a substance may not be as safe as it was commonly thought to be. If new data suggests that a substance under either of these categories may be unsafe, the FDA may take action to remove the substance from food products or require the manufacturer to conduct studies to evaluate the newly raised concern.

Food Labeling
Food Product Dating

United States Department of Agriculture
Food Safety and Inspection Service
http://www.fsis.usda.gov/Fact_Sheets/Food_Product_Dating/index.asp
Accessed: March 8, 2005

"Sell by Feb 14" is a type of information you might find on a meat or poultry product. Are dates required on food products? Does it mean the product will be unsafe to use after that date? Here is some background information which answers these and other questions about product dating.

What is Dating?
"Open Dating" (use of a calendar date as opposed to a code) on a food product is a date stamped on a product's package to help the store determine how long to display the product for sale. It can also help the purchaser to know the time limit to purchase or use the product at its best quality. It is not a safety date.

Is Dating Required by Federal Law?
Except for infant formula and some baby food (see below), product dating is not required by Federal regulations. However, if a calendar date is used, it must express both the month and day of the month (and the year, in the case of shelf-stable and frozen products). If a calendar date is shown, immediately adjacent to the date must be a phrase explaining the meaning of that date such as "sell by" or "use before."

There is no uniform or universally accepted system used for food dating in the United States. Although dating of some foods is required by more than 20 states, there are areas of the country where much of the food supply has some type of open date and other areas where almost no food is dated.

What Types of Food Are Dated?
Open dating is found primarily on perishable foods such as meat, poultry, eggs and dairy products. "Closed" or "coded" dating might appear on shelf-stable products such as cans and boxes of food.

Types of Dates

- A **"Sell-By"** date tells the store how long to display the product for sale. You should buy the product before the date expires.
- A **"Best if Used By (or Before)"** date is recommended for best flavor or quality. It is not a purchase or safety date.
- A **"Use-By"** date is the last date recommended for the use of the product while at peak quality. The date has been determined by the manufacturer of the product.
- **"Closed or coded dates"** are packing numbers for use by the manufacturer.

Safety After Date Expires
Except for "use-by" dates, product dates don't always refer to home storage and use after purchase. But even if the date expires during home storage, a product should be safe, wholesome and of good quality -- if handled properly and kept at 40° F or below. See the accompanying refrigerator charts for storage times of dated products.

Foods can develop an off odor, flavor or appearance due to spoilage bacteria. If a food has developed such characteristics, you should not use it for quality reasons.

If foods are mishandled, however, foodborne bacteria can grow and cause foodborne illness -- before or after the date on the package. For example, if hot dogs are taken to a picnic and left out several hours, they wouldn't be safe if used thereafter, even if the date hasn't expired.

Other examples of potential mishandling are products that have been: defrosted at room temperature more than two hours; cross contaminated; or handled by people who don't use proper sanitary practices. Make sure to follow the handling and preparation instructions on the label to ensure top quality and safety.

Dating Formula & Baby Food

Federal regulations require a use-by date on the product label of infant formula and the varieties of baby food under FDA inspection. If consumed by that date, the formula or food must contain not less than the quantity of each nutrient as described on the label. Formula must maintain an acceptable quality to pass through an ordinary bottle nipple. If stored too long, formula can separate and clog the nipple.

Dating of baby food is for quality as well as for nutrient retention. Just as you might not want to eat stale potato chips, you wouldn't want to feed your baby meat or other foods that have an off flavor or texture.

The use-by date is selected by the manufacturer, packer or distributor of the product on the basis of product analysis throughout its shelf life; tests; or other information. It is also based on the conditions of handling, storage, preparation and use printed on the label. Do not buy or use baby formula or baby food after its use-by date.

What Do Can Codes Mean?

Cans must exhibit a packing code to enable tracking of the product in interstate commerce. This enables manufacturers to rotate their stock as well as to locate their products in the event of a recall.

These codes, which appear as a series of letters and/or numbers, might refer to the date or time of manufacture. They aren't meant for the consumer to interpret as "use-by" dates. There is no book which tells how to translate the codes into dates.

Cans may also display "open" or calendar dates. Usually these are "best if used by" dates for peak quality.

In general, high-acid canned foods such as tomatoes, grapefruit and pineapple can be stored on the shelf 12 to 18 months; low-acid canned foods such as meat, poultry, fish and most vegetables will keep 2 to 5 years -- if the can remains in good condition and has been stored in a cool, clean, dry place.

Dates on Egg Cartons
If the egg carton has an expiration date printed on it, such as "EXP May 1," be sure that the date has not passed when the eggs are purchased. That is the last day the store may sell the eggs as fresh.

On eggs which have a Federal grademark, such as Grade AA, the date cannot be more than 30 days from the date the eggs were packed into the carton.

As long as you purchase a carton of eggs before the date expires, you should be able to use all the eggs safely in three to five weeks after the date you purchase them.

UPC or Bar Codes
Universal Product Codes appear on packages as black lines of varying widths above a series of numbers. They are not required by regulation but manufacturers print them on most product labels because scanners at supermarkets can "read" them quickly to record the price at checkout.

Bar codes are used by stores and manufacturers for inventory purposes and marketing information. When read by a computer, they can reveal such specific information as the manufacturer's name, product name, size of product and price. The numbers are not used to identify recalled products.

Storage Times
Since product dates aren't a guide for safe use of a product, how long can the consumer store the food and still use it at top quality? Follow these tips:

- Purchase the product before the date expires.
- If perishable, take the food home immediately after purchase and refrigerate it promptly. Freeze it if you can't use it within times recommended on chart.
- Once a perishable product is frozen, it doesn't matter if the date expires because foods kept frozen continuously are safe indefinitely.
- Follow handling recommendations on product.
- Consult the storage chart on the next page.

If product has a "Use-By Date," follow that date.
If product has a "Sell-By Date" or no date, cook or freeze the product by the times on the following charts.

Refrigerator Home Storage (at 40° F or below) of Fresh or Uncooked Products

Storage of Fresh or Uncooked Products	
Product	**Storage Times After Purchase**
Poultry	1 or 2 days
Beef, Veal, Pork and Lamb	3 or 5 days
Ground Meat and Ground Poultry	1 or 2 days
Fresh Variety Meats (Liver, Tongue, Brain, Kidneys, Heart, Chitterlings)	1 or 2 days
Cured Ham, Cook-Before-Eating	5 or 7 days
Sausage from Pork, Beef or Turkey, Uncooked	1 or 2 days
Eggs	3 or 5 **weeks**

Refrigerator Home Storage (at 40° F or below) of Processed Products Sealed at Plant

Storage of Processed Products Sealed at Plant		
Processed Product	**Unopened, After Purchase**	**After Opening**
Cooked Poultry	3 or 4 days	3 to 4 days
Cooked Sausage	3 or 4 days	3 to 4 days
Sausage, Hard/Dry, shelf-stable	6 weeks/pantry	3 weeks
Corned Beef, uncooked, in pouch with pickling juices	5 or 7 days	3 to 4 days
Vacuum-packed Dinners, Commercial Brand with USDA seal	2 weeks	3 to 4 days
Bacon	2 weeks	7 days
Hot dogs	2 weeks	1 week
Luncheon Meat	2 weeks	3 to 5 days
Ham, fully cooked	7 days	slices, 3 days; whole, 7 days
Ham, canned, labeled “keep refrigerated”	9 months	3 to 4 days
Ham, canned, shelf stable	2 years/pantry	3 to 5 days
Canned Meat and Poultry, shelf stable	2 to 5 years/pantry	3 to 4 days

Commonwealth of Massachusetts
Executive Office of Health and Human Services
Department of Public Health
Center for Environmental Health
Food Protection Program
305 South Street
Jamaica Plain, MA 02130

Telephone: 617-983-6712
FAX: 617-983-6770

Mitt Romney
Governor

Kerry Healey
Lieutenant Governor

Ronald Preston
Secretary of Health and Human Services

Paul Cote
Interim Commissioner
Department of Public Health

Suzanne K. Condon
Associate Commissioner
Center for Environmental Health

Paul J. Tierney
Director
Food Protection Program