

# SAFE FOOD NEWS

Volume VIII, No. 1

Fall 2003

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**This newsletter can be found on the SafeFood web site.**

**Check it out at:**

<http://www.colostate.edu/Orgs/safefood/>

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## LISTERIOSIS DURING PREGNANCY

The recent outbreak of listeriosis in south Texas associated with consumption of queso fresco and involving six pregnant women and seven babies thus far again highlights the importance of following safe food consumption and handling practices during pregnancy. In the Summer 2003 issue of SafeFood News, we talked about issues with toxoplasmosis during pregnancy. *Listeria monocytogenes* is another pathogen that can cause grave consequences during pregnancy, particularly for the unborn child.

*Listeria monocytogenes* is widely distributed in nature and can be found in soil, ground water, plants and animals. Most infections in humans, however, result from eating contaminated food. *Listeria monocytogenes* has the ability to survive refrigeration temperatures, food preservatives such as salt, and conditions with little or no oxygen. Foods commonly associated with listeriosis have an extended shelf life and are usually eaten without further cooking. Reported outbreaks have been traced back to foods such as coleslaw, Mexican-style soft cheeses like queso fresco, raw milk, paté, pork tongue, hot dogs, processed meats and deli salads. Other foods that are a concern for harboring *L. monocytogenes* include raw and smoked seafood and ready-to-eat foods that have not been reheated to proper temperatures.



Infection from *L. monocytogenes* typically occurs in individuals with a weakened immune system, including pregnant women. During pregnancy, hormonal changes occur that cause the immune system to be suppressed so that the fetus is not aborted. It is estimated that pregnant women have a 17 times higher risk of developing listeriosis from eating contaminated food than other healthy adults, and account of 27% of all reported cases of listeriosis. Once in the bloodstream, *Listeria* bacteria can travel to any site, but seem to have a preference for the central nervous system and the placenta. The fetus is also unusually prone to infection from *L. monocytogenes*, which can lead to miscarriage, stillbirth, or infection of the neonate and health problems for the baby following birth.

Symptoms may take a few days or even weeks to appear and can be mild to severe. In pregnant women, listeriosis may cause mild, flu-like symptoms with the sudden onset of fever, chills, muscle aches and sometimes diarrhea or an upset stomach. Some women may not have any symptoms. A blood test can be performed to determine if the onset of symptoms is caused by *Listeria* infection and if confirmed, the patient can then be treated with antibiotics.

To avoid infection from *L. monocytogenes*, pregnant women are advised to practice safe food handling procedures, such as storing all perishable foods at or below 40°F and using perishable or ready-to-eat foods as soon as possible. If a perishable food cannot be eaten within 4 days, it is best to freeze it. Kitchen surfaces, cutting boards and utensils should be washed before and after food preparation (especially after contacting raw meat). Pregnant women are advised to avoid consumption of soft cheeses such as queso fresco, Camembert and Brie, unpasteurized milk and foods made from unpasteurized milk, raw or undercooked meat, refrigerated smoked seafood, deli salads, and hot dogs, luncheon meats and deli meats that have not been properly reheated. Leftover foods should be reheated to 165°F before eating.

*Sources:*

FDA/USDA/CDC. Draft Assessment of the Relative Risk to Public Health from Foodborne *Listeria monocytogenes* Among Selected Categories of Ready-to-Eat Foods. 2001.  
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[http://www.fsis.usda.gov/OA/pubs/lm\\_tearsheet.htm](http://www.fsis.usda.gov/OA/pubs/lm_tearsheet.htm)

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## FSIS STRENGTHENS REGULATIONS TO REDUCE *LISTERIA MONOCYTOGENES* IN 'READY-TO-EAT' MEAT AND POULTRY PRODUCTS

A new ruling by USDA's Food Safety and Inspection Service will take effect this fall in an effort to further reduce the incidence of *Listeria monocytogenes* in certain ready-to-eat (RTE) meat and poultry products. Federal establishments who produce RTE meat and poultry products will be required to develop written programs and to verify the effectiveness of those programs through testing. Choices range from implementing a sanitation program, a post-lethality treatment and/or a growth inhibitor for *Listeria monocytogenes* on RTE products. The rule also enables establishments to make claims on their RTE product labels that describe the processes used to eliminate or reduce *Listeria monocytogenes*, or suppress its growth. FSIS believes this will be one way for consumers to be able to identify products with enhanced safety specific to this pathogen.

*Source:* Food Safety and Inspection Service, United States Department of Agriculture. News Release; June 4, 2003.

## DONENESS VERSUS SAFETY

Everyone seems to have a different opinion when determining what it means to "adequately cook" meats and poultry. The actual temperature at which food is "safe" from pathogenic bacteria may differ from "doneness" according to accepted palatability standards. Often, the two are not one and the same. While experts stress internal temperature guidelines based on use of a food thermometer, consumers tend to prefer visual cues to determine the doneness of meats. Unfortunately, "doneness" reflects subjective qualities such as appearance, texture and optimum flavor of a food, indicators which recent research has shown to be unreliable for safety. According to USDA's Food Safety and Inspection Service, visual signs of doneness should be reserved for situations in which doneness is reached *after* the food has reached a safe temperature.

### ***Poultry***

Poultry will generally reach a safe temperature (160°F) before it is “done.” Although at 160°F, pathogenic bacteria have been destroyed, poultry will still be pink and raw looking near the bone and the juices will be red and/or cloudy. Not until poultry reaches 170°F for white meat and 180°F for dark meat will it visually appear done (flesh no longer pink and juices clear). With whole chickens and turkeys, at 180°F the joints will move easily. For stuffed birds, only a food thermometer is recommended for determining when the product has been thoroughly cooked.

### ***Beef***

Beef roasts cooked to 160°F will generally have very little pinkness to the meat, and the juices will not be pink or red. Below the temperature of 160°F, the center of the roast will be pink or red, depending on the internal temperature. A beef roast or steak cooked to 145°F in the center can be considered safe, since the outside of the roast would have reached a temperature high enough to destroy bacteria, unless it is a rolled roast or one that has been mechanically tenderized.

### ***Pork***

Pork roasts are safe when cooked to 160°F, even though the center of the roast may be somewhat pink. Pork chops may have just a trace of pink color at this temperature. For both beef and pork, without a food thermometer, it would be difficult to visually determine whether a roast that was pink in the center had reached a safe temperature.

### ***Ground Meat and Poultry***

Research indicates that the color of the meat and juices are *not* accurate indicators of doneness. Ground beef may turn brown before it has reached a temperature at which bacteria are destroyed. Cooking a hamburger to 160°F with a food thermometer can assure that the patty is safe, regardless of color.

### ***Combination Dishes***

Casseroles and other combination dishes display no accurate visual signs of doneness because “until hot and steamy” is difficult to verify. These foods should be cooked to 165°F as measured with a food

thermometer to be sure they have been heated to a safe temperature.

### ***Bottom Line***

Using an accurate food thermometer takes the guesswork out of cooking. No more cutting into your turkey or beef roast to see if it looks done, or consuming undercooked hamburgers just because the meat was no longer pink. By using a food thermometer on a regular basis, consumers can be assured that the food they cook is “done” as well as safe.

*Source:* Food Safety and Inspection Service (FSIS), U.S. Department of Agriculture. Washington, D.C. Consumer Education and Information Bulletin. Slightly Revised May 2000.

## **FOOD SAFETY: THE GAME PLAN FOR TAILGATE PARTIES**

**I**n autumn, pre-game tailgate parties are a long-standing American tradition enjoyed by many. Although tailgating is typically a cool weather activity in most areas of the country, it still requires the same safe food handling practices as summer picnicking. Let’s take a look at some tailgate tips offered by USDA’s Food Safety and Inspection Service (FSIS).

### ***Hot Tips***

Foods like chili or stew can be kept hot with an insulated container. To ensure the food stays hot, first fill the container with boiling water, let stand for a few minutes, empty, and then put in the piping hot food. Keep the insulated container closed to keep the food hot (140° F or above) for several hours.

### ***Chill Out***

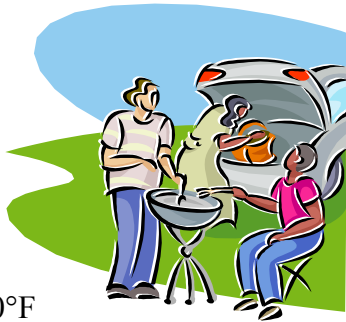
Plan ahead and chill the food in your refrigerator before packing for your tailgate. Carry all cold perishable foods, including potato or pasta salads, luncheon meats, raw hamburger patties, and cooked meat or chicken in an insulated cooler packed with several inches of ice, frozen gel packs or containers of frozen water. Wrap raw meat and poultry securely to prevent their juices from cross contaminating ready-to-eat foods.

### Wash Up

Pack clean, wet, disposable cloths or moist towelettes and paper towels for cleaning hands and surfaces. If no potable water will be available, pack along water for cleaning up.

### Grill It Right

Meat and poultry cooked on a grill often browns very fast on the outside, so check using a food thermometer to be sure they are cooked thoroughly. Cook hamburgers, sausage and all cuts of pork to 160°F. For taste as well as safety, FSIS recommends cooking poultry breast meat to 170°F and dark meat to 180°F. Beef, veal and lamb steaks and roasts may be safely cooked to 145°F for medium rare. It is best to avoid partially cooking food ahead of time, which allows bacteria to multiply to the point that subsequent cooking cannot destroy them.



### The Wrap-Up

If bringing hot take-out food, eat it within 2 hours of purchase. Holding food at an unsafe temperature is a prime cause of foodborne illness. Food should not be left out of the cooler or off the grill for more than 2 hours (1 hour when the outside temperature is above 90°F). Cook only the amount of food that will be eaten to avoid the challenge of keeping leftovers at a safe temperature. Remember to discard any leftovers that are not ice cold after the game.

Following this game plan is sure to reach the goal of preventing foodborne illness.

Source: Food Safety and Inspection Service; U.S. Department of Agriculture. News Release: Oct. 16, 2002.



## MAKING MEAT SAFE

While meat processors may never be able to 100% guarantee their products from the presence of pathogenic microorganisms, much progress is being made to reduce the risk to consumers. Breakthroughs in food safety technology are helping processors keep pace with tighter food safety regulations. Three common strategies for pathogen reduction during meat processing are the use of steam, hot water and organic acids. Lactoferrin products may also prove to be useful in reducing pathogens on meat products.

One such innovative product, called Activin™, is a patented form of Activated Lactoferrin, a natural protein found in dairy products. Recently approved by the FDA and USDA, Activin™ has been found to be effective in preventing the growth of more than 30 different types of harmful bacteria found in beef, including *E. coli*, *Salmonella* and *Campylobacter*. Containing strong antimicrobial properties, lactoferrin acts in three beneficial ways: 1) it binds iron, (essential for bacteria to grow), thereby making the bacterial cells become iron deprived and stop growing; 2) it binds to bacteria, causing the microbial cell membrane to lose its integrity so that bacteria cells die, and 3) it prevents bacteria from forming essential attachment structures, which prevents them from colonizing and multiplying.

Another technology that is rapidly gaining acceptance by processors and retailers is irradiation technology. Irradiation of raw ground beef has officially moved from “experimental” to “proven” status. Pallet-sized irradiation systems are in place at several third-party facilities. This year, Dairy Queen began offering irradiated ground beef, as has the U.S. National School Lunch Program.

Ozonated water is yet another approach that is now being employed at a number of meat processing plants, primarily to help control *Listeria*, but also for its antibacterial effect on other microorganisms. Another intervention being widely applied in ready-to-eat (RTE) products is the addition of lactates to processed meat formulations to help provide a residual inhibitor against *Listeria*. USDA has said it will reduce its sampling schedule for meat processing

plants if lactates are added as *Listeria* inhibitors to products. Even herbs are being recognized for their antimicrobial activities. An extract of oregano, called Elite Oregano, is showing promise for its ability to kill pathogens such as *Listeria* in RTE foods.

With all anti-microbial applications, it is essential to first control the pathogen with a good HACCP plan that highlights special critical control steps, then adds additional protection when the product is ready for final packaging. While there is no silver bullet, the continued efforts of trained government inspectors, combined with effective intervention strategies, will further reduce and perhaps effectively minimize the threat of microbial contamination in both raw meats and RTE meat products.

*Sources:*

- 1) Activin® website: [www.activinlf.com](http://www.activinlf.com)
- 2) Jeremy Russel, *Action on the Pathogen Front*. The National PROVISIONER. June 2003; pp. 98-106.
- 3) *Searching for Food Safety Solutions*. MMT, April 2003; pp 28-36.

## THE JOY OF GIVING FOOD SAFELY

When the holidays roll around, people often enjoy sending home-prepared food gifts to loved ones and friends. Many time-crunched consumers opt for the convenience of mail order food items. Whichever is the case, the same rules apply for safely sending perishable food items through the mail. Whenever possible, send foods that do not require refrigeration, such as hard salami, hard cheese or country ham. When sending perishable foods, transit time and a cold source are key factors. The Food Safety Inspection Service (FSIS) offers the following guidelines for mailing perishable foods.

- Make sure that perishable items, like meat or poultry, are sent cold or frozen and packed with a cold source, such as frozen gel packs. If dry ice is used, warn the recipient by writing “Contains Dry Ice” on the outside of the box.
- Both the item and the outer package should be labeled “Keep Refrigerated” to alert the recipient.

- Items should be packed in a sturdy box, sealed with recommended packing tape and clearly labeled with a permanent marker, making sure the address is complete and correct.
- It is best to specify overnight delivery and notify the recipient of its expected arrival.
- Do not send packages to business addresses or where there will not be adequate refrigerator storage.
- Send packages early in the week, so they do not sit in the post office or mailing facility over the weekend.
- When receiving a perishable food item, open it immediately and check its temperature. The food should arrive frozen or partially frozen with ice crystals still visible. Even if a product is smoked, cured and/or fully cooked, it still is a perishable product and must be kept cold.
- If perishable food arrives warm, notify the company. **Do not consume the food. Do not even taste suspect food.**

A very useful chart that outlines the length of time perishable foods can safely be stored, based on the condition of the food item upon arrival, can be downloaded from the FSIS website: [www.fsis.usda.gov/OA/pubs/maillorder.htm](http://www.fsis.usda.gov/OA/pubs/maillorder.htm).

Additionally, a consumer flyer with tips for safely mailing and receiving perishable food gifts is available at [www.fightbac.org](http://www.fightbac.org). One may contact the USDA Meat and Poultry Hotline at 1-(800) 535-4555 for questions regarding meat, poultry and egg products. The FDA Outreach and Information Center can be contacted at 1-(888) 723-3366 regarding any foods other than meat, poultry and egg products.

*Source:*

*Mail Order Food Safety*. Food Safety Bulletin. Revised November 1999. Food Safety and Inspection Service; United States Department of Agriculture. [www.fsis.usda.gov/OA/pubs/maillorder.htm](http://www.fsis.usda.gov/OA/pubs/maillorder.htm).

## GARLIC FOR MOSQUITOES?

**G**arlic, a common staple found in countless kitchens and recipes worldwide, has long been considered a special food - not just for the unique flavor it imparts, but also for its medicinal value. Most of its therapeutic value, as well as its flavor and odor, can be attributed to sulfur compounds contained within the garlic clove. In recent years, garlic has been widely studied for its role in promoting health. There is good evidence that garlic possesses antibacterial, antiviral, antifungal, antiprotozoan and even insect-repellent properties.

Given the recent surge of the West Nile virus spread by infected mosquitoes, it is interesting to explore the value of garlic as one more method for avoiding mosquito bites. A number of studies have shown that the oil fraction of garlic destroys certain species of mosquito larvae. Garlic sprays (made primarily with garlic extract) are available on the market for use on plants as an alternative botanical pesticide to chemical pesticides. The sulfurs contained within the garlic extract have been shown to be effective against a wide range of insects, including mosquitoes, and the lingering odor can deter mosquitoes from the area for weeks.

It is thought that garlic may be an alternative mosquito repellent for humans as well. In a field study conducted in India, a preparation made of 1 percent garlic oil, petroleum jelly and beeswax that was rubbed on the arms and legs of study subjects was found to be effective in preventing mosquito bites for up to eight hours.

In addition, there is some evidence that heavy consumption of garlic through supplements or well-flavored foods may help ward off mosquitoes. When garlic is eaten and its components are metabolized, compounds are released from the body through the skin and the breath. Although they may not be detectable by others (or may, in the case of garlic breath!), mosquitoes use smell to locate a host. For example, carbon dioxide and lactic acid released from the breath of humans are two known mosquito attractants that can be detected within 40 yards. While it has not been proven through clinical studies, it is thought that the sulfur compounds present on the

skin and in the breath after eating garlic may help ward off those pesky mosquitoes.

Before deciding to use garlic supplements, it's best to consult with your health care provider. For example, garlic supplements are not recommended for pregnant or lactating women, for persons on blood thinning medications, for those going into surgery or for those on certain medications such as the anti-HIV drug Saquinavir.

The bottom line: Mosquito repellents containing DEET are still your best bet for avoiding mosquitoes - but a little garlic breath may also be a good thing.

Sources:

Amonkar, S.V., Reeves, E.L. Mosquito Control with Active Principle of Garlic, *Allium sativum*. *Journal of Economic Entomology*. 63(4): 1172-1175, 1970

Bhuyan, M. Saxena, B.N., Rao, K.M. Repellent Property of Oil Fraction of Garlic, *Allium sativum* Linn. *Indian Journal of Experimental Biology*. 12: 575-576, 1974

Fradin, M.S. Mosquitoes and Mosquito Repellents: A Clinician's Guide. *Annals of Internal Medicine*, 128: 931-940, 1998

HDRA- The Organic Organisation. Natural Pesticides No. TNP3: Garlic, *Allium sativum*. Last updated June, 2000.  
[http://www.hdra.org.uk/pdfs/international\\_programme/TNP3-Garlic.pdf](http://www.hdra.org.uk/pdfs/international_programme/TNP3-Garlic.pdf), accessed on August 22, 2003.

## In the News . . .



### **Basil Wrapping Extends Shelf Life**

Here's something to chew on the next time you reach for a fresh sprig of basil to season your spaghetti sauce. Because this flavorful herb contains bacteria-fighting properties, innovative research is underway incorporating basil into plastic wrapping to help preserve foods. According to the research team at the Technion-Israel Institute of Technology, basil extracts ooze out of the wrapping onto the surface of

the food, killing harmful microorganisms. As reported in the Journal of Agricultural and Food Chemistry, basil wraps can slow the growth of eight types of pathogenic bacteria, including *E. coli* and *Listeria*. Because only small quantities of extract are needed, the flavor of basil does not transfer into the wrapped foods. It is unknown how soon the wraps will be available to consumers, but it is something to look for down the road.

Source: FoodProductiondaily.com; *Basil wrapping extends shelf life*. 6-30-03.

 **Calls to Cut Acrylamide**

Acrylamide has been making headlines since last year when Swedish researchers first revealed the presence of this potentially carcinogenic compound in food. Acrylamide is found in certain carbohydrate-rich foods cooked at very high temperatures. The Center for Science in the Public Interest (CSPI), a nonprofit, public interest group, has petitioned the FDA to require food manufacturers to limit the amount of acrylamide in their products. CSPI requests that the FDA set an interim acceptable level of acrylamide for certain categories of food, such as French fries. According to Michael Jacobson, CSPI executive director, the FDA should require manufacturers that are producing fries at higher levels to bring acrylamide levels down to that of many of their competitors. It is the first such formal request made to the FDA.

Source: FoodQualitynews.com; *Calls to cut acrylamide*. 06-06-03.

 **Food Irradiation**

The U.S. Food and Drug Administration has approved the irradiation of meat and other fresh foods in an attempt to make foods safer. However, cost has proven to be a big hurdle in widespread implementation of the system. Food irradiation is expensive for companies because the technology is still relatively new and the machinery is relatively complicated to construct and implement. However, in the aftermath of large meat recalls in the past couple of years, interest is growing from a financial investor's standpoint. Elsa Murano, Under Secretary of Food Safety at USDA, believes irradiation would be more cost-effective if there were a central irradiation location to which meat plants could send their products. Dr. Mark McLellan, director of the

Institute of Food Science and Engineering at Texas A&M University foresees an increase in the use of irradiated foods in the restaurant and food service industries, especially with the recent USDA provision for offering irradiated ground beef through the National School Lunch Program. Dairy Queen is now introducing irradiated hamburgers and it is likely that other food service establishments will begin following suit.

Sources:

- 1) FoodQualitynews.com; 05/12/03. *Companies slow to take up irradiation.*
- 2) FoodQualitynews.com; 05/23/03. *Green light for irradiation?*

**COMING EVENTS**

**SERVSAFE® TRAININGS**

**Denver Metro Region**

Manager level ServSafe® trainings are offered monthly in the Denver metro area through the Colorado Restaurant Association. Cost: members - \$130; non-members - \$170. Please call 303-830-2972 for a complete schedule of dates and locations.

**Eastern Region**

*Contact Joy Akey (970) 332-4151*

<i>Date</i>	<i>Location</i>	<i>Intended Audience</i>	<i>Fee</i>
10/08/03 8:00 a.m. - 5:00 p.m.	Brush, CO	Mgrs Certification Trng	\$95 (after 9/8/03)
11/17/03 2 - 6 p.m.	Sterling, CO (Logan Cty Extension Ofc)	Food Handler Trng	\$20 Deadline: 11/12/03

**Western Region**

*Contact Mesa County Cooperative Extension (970)244-1834*

<i>Date</i>	<i>Location</i>	<i>Intended Audience</i>	<i>Fee</i>
10/27/03	Delta, CO	Mgrs Certification Trng	\$100 after 10/10/18/03, \$120
10/08/03 8 - 5 p.m.	Eagle, CO 500 Broadway	Mgrs Certification Trng	\$85

**Contact:** Glenda Wentworth Ph: 970.328.8630

## RESOURCES

### Proceedings of National Food Safety Research Priorities Listening Session

On June 30, 2003, CSREES and ARS hosted a National Stakeholders' Listening Session on Food Safety Research Priorities in Denver, Colorado. Colorado State University was pleased to host the session. The session provided an opportunity for national, state and local public and private organizations and agencies to talk about their food safety research issues and to identify up to five food safety research priorities they saw as requiring increased attention over the next five years.

The session was well received; 16 agencies and associations presented oral comments at the one-day meeting and another 12 submitted written comments post session. While the USDA specifically sought comments on research priorities related to food safety topics in meat and poultry and fresh fruits and vegetables, they also solicited comments on other food safety topics and received comments from a broad base of constituents. A copy of the proceedings is available in pdf form at <http://www.cahs.colostate.edu/fshn/foodsafety>.

The food safety research priorities identified by partners and stakeholders provided valuable input for USDA food safety agencies. National Program Leaders from CSREES and ARS plan to conduct a series of follow-up meetings to develop national and agency-wide strategies for working with partners and stakeholders to help them achieve their 5-year food safety research goals.

### Fact Sheet: Keeping Bag Lunches Safe

Whether it's off to school or work we go, millions of Americans carry "bag" lunches. To review the basics for keeping foods safe until lunch time, the fact sheet, *Keeping Bag Lunches Safe*, can be downloaded from the FSIS website at: [www.fsis.usda.gov/OA/pubs/facts\\_lunches.htm](http://www.fsis.usda.gov/OA/pubs/facts_lunches.htm).

### USDA/FDA Foodborne Illness Education Information Center

If you're looking for some good food safety education resources, be sure to check out the **USDA/FDA Foodborne Illness Education Information Center's Database** at: [www.nal.usda.gov/foodborne/fbiform.htm](http://www.nal.usda.gov/foodborne/fbiform.htm). The database offers a detailed compilation of all types of food safety education programs and materials nationwide. In fact, if you have developed a program or materials that you would like to add to the database, you can obtain an application form from the website to submit electronically. For those of you who work in the area of food safety education, this is a wonderful resource.

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This newsletter was prepared by Food Science & Human Nutrition Extension Specialists:

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