

In This Issue

A Marketing
Opportunity, Perhaps?
International Food
Safety Standards

Sampling Plans
*Environmental Sampling
Part 1 of 3*

What is Good
Customer Service?

Specifications &
Considerations

Visit Our Booth
at These Tradeshows:

**Southeast (Formerly Dixie)
IFT Suppliers' Night**
February 23, 2009
Atlanta, GA

**National Meat Association
(NMA) MeatXpo '09**
February 22–25, 2009
Las Vegas, NV
Booth # 109



EXPERT RESOURCES.
UNSURPASSED RESULTS.

888-525-9788
www.food-safetynet.com

ISO 17025 and
USDA Accredited



CAUGHT 'N THE NET

E. coli O157:H7 in Non-Intact Beef Products

By Dr. Gary C. Smith

Blade-tenderization and “moisture-enhancement” (via needle-injection) increase tenderness, but both procedures can translocate *E. coli* O157:H7 into the interior of beef cuts. Internalization of surface inoculum into beef cuts has been quantified as 3 to 4% in Kansas State University research⁴ and 0.28 to 3.09% in research by Colorado State University/Food Safety Net Services.¹

From 2000 through 2008, outbreaks of *E. coli* O157:H7 infections associated with non-intact beef steaks/roasts were responsible for more than 25 confirmed cases and product recalls of several hundred thousands of pounds of products. In most of the outbreaks, inadequate cooking was the culprit. A Final Internal Temperature (FIT) of 60°C achieves a 5-log reduction of *E. coli* O157:H7; oven-broiling achieves the 60°C FIT best, while gas-grilling is least effective.⁴



Fortunately, the incidence of *E. coli* O157:H7 on beef subprimal cuts is low; of 1,014 cuts obtained from six packing/processing plants across the US over a 5-week test period, 2 (0.2%) were positive for *E. coli* O157:H7 using the PCR-BAX method.¹ And, research has been conducted on interventions that can be applied before mechanical tenderization to reduce the transfer of *E. coli* O157:H7 to the interior of cuts or to improve thermal inactivation of the pathogen—during cooking—if it is internalized. Results of some of these studies follow:

1. Application of surface trimming, hot water (82°C), warm 2.5% lactic acid (55°C), warm 5% lactic acid (55°C), or 2% activated lactoferrin followed by warm 5% lactic acid (55°C)—before blade-tenderization or moisture-enhancement—reduced *E. coli* O157:H7 loads on the surface of inoculated subprimal cuts, thus subsequently reducing the internalization of surface pathogens.¹
2. Adding enough citric acid, acetic acid or lactic acid—to the injection solution for moisture-enhancement—to achieve final product concentrations of 0.2%, 0.3% or 0.3% of the acids above, respectively, helps in thermal inactivation of internalized *E. coli* O157:H7.⁵
3. 0.2% wt/wt citric acid or 0.3% wt/wt acetic acid, in the needle-injection solution, reduced intentionally internalized *E. coli* O157:H7 by 4-5 log CFU per gram in non-intact beef products cooked to an internal temperature of 65°C.²
4. The existing marination and tenderization formulations for non-intact beef products such as steaks and roasts might be improved by replacing ingredients such as potassium lactate and calcium lactate with organic acids (e.g., citric acid or acetic acid), which may improve thermal inactivation of *E. coli* O157:H7 internalized in such products, undercooked intentionally or by mistake.³ ■

References:

- ¹ Heller *et al.*, 2007. *J. Food Protection* 70:1174-1180.
- ² Mukherjee *et al.*, 2007. IFT Food Expo. Abstract.
- ³ Mukherjee *et al.*, 2008. *J. Food Protection* 71:1349-1356.
- ⁴ Phebus *et al.*, 2000. *KSU Cattlemen's Day* 2000:52-53.
- ⁵ Yoon *et al.*, 2007. IFT Food Expo. Abstract.

For questions or comments about this article, email gsmith@food-safetynet.com.





A Marketing Opportunity, Perhaps? International Food Safety Standards

By Dr. Keith E. Belk, Director of Scientific Affairs

Anyone trained in HACCP is aware that HACCP principles also were adopted by the Codex Alimentarius Commission as an international food safety standard in 1997. The Codex HACCP standard was patterned similarly to the National Advisory Committee on Microbiological Criteria for Foods (NACMCF) seven principles for HACCP first published in 1989 and subsequently revised in 1992 and 1997. Because Codex Alimentarius is named by the World Trade Organization (WTO) in an appendix to the **Sanitary and Phytosanitary Measures Agreement (SPS)** as one of three recognized international standards development bodies, standards published by Codex can be used to prevent or to resolve technical barriers to trade associated with food safety if they are implemented.

While broad awareness of the Codex Alimentarius HACCP standard exists, some may be unaware of a relatively new voluntary international food

safety standard that was first published in 2005 by the International Organization for Standardization (ISO)...the *ISO 22000:2005 Food Safety Management System – Requirements* standard. Although not named in the WTO appendix to the **SPS Agreement** as a recognized international standards development body for SPS-related issues, ISO is a “sister” international organization to WTO which maintains a record of standards development bodies agreeing to abide by **Agreement on Technical Barriers to Trade (TBT)** standards development and conformity assessment requirements, and which also develops international standards that are encouraged by the **TBT** to facilitate trade. ISO is the same international entity that publishes the ISO 9000 Series Quality Management standards.

Because the ISO 22000 food safety standard is in congruence with the Codex HACCP approach, implementation of the ISO 22000 standard in a

food production chain should not result in conflicts with the Codex standard with respect to regulatory compliance or trade. In conjunction with the food safety management system standard, ISO also released the *ISO 22003:2007 – Requirements for Bodies Providing Audit and Certification of Food Safety Management Systems* and *ISO 22005:2007 Traceability in the Feed and Food Chain – General Principles and Basic Requirements for System Design and Implementation* standards in 2007. Particularly for exporters, implementation of the ISO 22000 standard(s) may offer new marketing and trade opportunities for the future.

According to Færgemand and Jespersen (Sept-Oct 2004; *ISO 22000* to ensure integrity of food supply chain; In: *ISO Management Systems*; pp. 21-24), the difference between ISO and Codex food safety standards (or, for that matter, U.S. HACCP regulations) primarily is in the number of process control elements that must be incorporated

into the food safety management system; the ISO standard requires incorporation of prerequisite controls, communication planning, and traceability in addition to HACCP. It is designed to tie the differing sectors of a food production chain together, including peripheral and service entities (e.g., packaging and equipment manufacturers; pesticide, fertilizer and pharmaceutical manufacturers; etc.), as the entire production chain attempts to minimize food safety risks. The standard requires the following elements: Scope, Normative Reference, Terms and Definitions, Food Safety Management System, Management Responsibility, Resource Management, Planning and Realization of Safe Products, and Verification, Validation and Improvement. Hazard analysis, identification of CCPs, verification/validation activities, and corrective action procedures *per se*, are included as a component of the Planning and Realization section.

.....
U.S. companies should begin to consider adoption of the ISO 22000 food safety standard to facilitate trade competitiveness.
.....

Requirements of ISO 22000 are generic and were intended to apply to any company or entity, including those directly or indirectly involved in food production. They are targeted specifically to production of safe food. Also, the standard allows smaller companies to implement a combination of controls developed externally to the company, as might be the case in a supply chain (Færgemand and Jespersen, 2004). As U.S. food export opportunities continue to improve, particularly to Europe, U.S. companies should begin to consider adoption of the ISO 22000 food safety standard to facilitate trade competitiveness. ■

For questions or comments about this article, email kbelk@food-safetynet.com.



Sampling Plans

Environmental Sampling - Part 1 of 3

By Sherri L. Jenkins, Vice President of Auditing and Consulting Services

There are many different types of sampling plans for a production facility to implement. A few examples are environmental sampling, product sampling of both raw materials and finished product, and equipment sampling. Many customers actually require that their suppliers have most of these in place. Third party auditors must check to make sure these plans are in place and are being executed them as designed.

So what does a good plan look like and why is it important? Environmental sampling is important because you need to know that you have started operations with a clean processing area and can maintain it in a sanitary condition throughout the daily operations. The environment can also lend to indirect product contamination, generally by way of people contact.

The best way to organize these is to start building a database of these items so when it comes time to sample, the sampling sites can be randomly generated each time.

more robust program in the end.

When lab results are received, they should be entered into another database or a system similar to **FSNet**. Then tracking and trending of the data can be performed so that progress is monitored.

There are many different ways to approach writing an environmental sampling program, and this illustration just happens to be one of them. Hopefully, you will find it useful to get you started on your program. Remember, the data from a robust program will go a long way in helping to understand and maintain a facility. ■

For questions or comments about this article, email sjenkins@food-safetynet.com.

.....
This article is part one of a three part series and will discuss the environmental sampling plan.
.....

The first step is to break up the areas of your processing facility into zones. These zones should be large enough to contain ample items to sample over a period of time, yet small enough to ensure that everything gets sampled on a frequent basis. Next, the components of the area need to be categorized into Direct Contact, Indirect Contact, and Environment.

When deciding on the amount of samples to take at a given time, a good rule of thumb is to at least sample everything within a year's time. This would be the very minimum. Then the samples can be divided over the number of sampling times. For instance, if there are 300 sample sites and sampling is to take place each week, 300 samples would be divided by 52 weeks in a year. This would equal 5.76 samples each week which would be rounded up to 6 samples each week. It is not a requirement to sample on a weekly basis, but it does yield a

What is Good Customer Service?

By Wendy Harmon, Customer Service Coordinator

As you read this article, think about the types of customer service you have received over the past few months. The service may have been given in a restaurant, grocery store, a bank or simply by someone attempting to sell you an item.

customers in order to find out what they really want from the business affiliation. A customer satisfaction survey is by far the easiest means to determine exactly what clients expect from a business. Many surveys can be conducted in-house via the telephone, by mail or the newest trend - online. Results will yield invaluable information and a look into exactly how satisfied customers are with your services and what they seek from your business endeavor.

service involves a demonstrated commitment to listening. Employees should be trained to see situations through the eyes of the customer and understand that he or she wants end-results rapidly. Additionally, employees should strive to continuously engage with a customer, which drives improved customer loyalty and satisfaction.

want, within your ability. This doesn't mean you bend the rules for every client or oil the loudest squeaky wheel that comes along. But this does entail an attempt to put your best foot forward and show the customer you aren't afraid to make a concerted effort in order to meet their needs or obtain the end result they are seeking.

In today's environment where everyone wants everything "now", customer service seems a foreign or long forgotten, even an archaic, word at times. The fast-paced society we live in today seems to have no place-holder for friendly customer service. Do customers even want true customer service anymore or simply a means to their ever changing and demanding needs?

Companies should likewise seek to find out what level of customer service their competitors are giving. Do they go beyond the call of duty for their clients or is their customer service mediocre compared to your businesses? What is their level of commitment and how do they determine the needs of their customers? Many competitors may have websites which allow clients to give valuable feedback that is returned to the company instantly.

.....
Do we know how to retain customers and create long-lasting business relationships?
.....

Some companies attempt to be all things to all customers. Realistically, this is where businesses can stumble and lose focus on what is really important - customer loyalty.

We all know what great customer service should be, but does each of us know the how's or why's involved in giving exceptional customer service? Do we know how to retain customers and create long-lasting business relationships?

Companies should always put their customers first. They have chosen your company, and your employees should honor their choice by focusing their attention and an effort on discovering what it is the customer is searching for.

You'll never please every customer every time. But if you practice the never ending process of learning, listening, and valuing each client, your customers will be loyal to you and will keep coming back again and again. ■

For questions or comments about this article, email wharmon@food-safetynet.com.

With these thought-provoking questions, we must first turn to our

Along with determining the needs of customers, great customer

Great customer service also means compromising from time to time and being flexible in order to give customers what they

Specifications & Considerations

By Dr. Wendy Warren-Serna, Chief Science Officer

Raw material and finished product specifications are helpful in developing a measurable structure around quality performance. Depending on the raw material or stage in production, expectations for chemical, microbiological and organoleptic properties can be established and tested routinely to verify compliance. The overall goal of such a program is to return value to the operation in terms of improved process control and better product performance. This may be in terms of improved raw material supplier performance (consistency), product shelf-life, reduced quality complaints, and reduced risk of foodborne illness.

Key considerations should be carefully reviewed by an operation in establishing product specifications. If specific performance criteria are considered as part of a specification, a clear understanding of the basis of such criteria is warranted. For example, if a raw material is examined for microbial quality, ensure that the proper microorganisms or acceptable indicators are selected relative to the nature of the material and desired level of control that is needed. Examination of total coliforms in an agricultural, and more specifically, plant-based raw material may not be informative. It may be more relevant to measure a particular group of coliforms, or more general populations (i.e., APC) relative to the performance of the raw material and required level of control in the finished product.

Test approach for verification of a stated specification requirement should be carefully reviewed. Not all test methods are created equal for all food types and raw materials. Use of different test methods may be misleading or inappropriate. Test methods should be reviewed for consistency and discussed with the testing provider to ensure proper protocols are followed and thus, accurate and relevant data is provided.

Expectations for chemical, microbiological and organoleptic properties can be established and tested routinely to verify compliance.

Specifications should be examined regularly to ensure the appropriateness for a given raw material or product type. Often, specifications remain active for long periods of time, without reconsideration for new raw materials, processing techniques and applicability to the original goal. When properly designed and implemented, the specification should demonstrate a return value to the operation enforcing it. The review process should be performed in collaboration with resources that can challenge the requirement for applicability, test methods and required performance. ■

For questions or comments about this article, email wwarren@food-safetynet.com.

Our New Lab in Fresno, CA Is Now Open!

Food Safety Net Services opened our newest facility in early December 2008. The facility is located in the San Joaquin Valley of central California in the city of Fresno. After months of preparation and staff training, the first set of customer samples was received on Monday, December 8th.

The new facility is located in a custom remodeled space, with new equipment and the most state-of-the-art testing technologies available. Like all of our facilities, the Fresno laboratory is open 7 days a week for extended hours to best serve our valued customers. The Laboratory Manager for our newest facility is Paul Browning who comes to FSNS with numerous years of experience in the food and laboratory industries.

We are proud of our partnerships with established customers in this new area, are getting to know more local companies and learning how we can best serve the industries surrounding this fertile part of the country. We are excited to present this outstanding facility to our valued clients as we continue to provide unequivocal technical standards and unsurpassed, individualized customer service in support of important industry issues. For more information about the Fresno laboratory, or any of our other facilities throughout the US, please visit our website at www.food-safetynet.com or call us at 888.525.9788. ■



For comments on this newsletter, please contact Bobbi Giblin at (210) 384-3429 or bgiblin@food-safetynet.com.

Gina Bellinger
President
gbellinger@food-safetynet.com • 210.384.3424

John Bellinger
Chairman of the Board
jbellinge@food-safetynet.com • 210.477.3636

Dr. Gary C. Smith
Partner, Board of Directors
gsmith@food-safetynet.com • 210.913.8939

Dr. Wendy Warren-Serna
Chief Science Officer
wwarren@food-safetynet.com • 210.340.8870

Alan Uecker
Chief Financial Officer
aeucker@food-safetynet.com • 210.477.3639

Dr. Shanna Boleman
Vice President,
Technical Sales & Marketing
sboleman@food-safetynet.com • 817.228.9795

Sherri Jenkins
Vice President,
Auditing & Consulting Services
sjenkins@food-safetynet.com • 210.542.8587

Dr. Keith Belk
Director of Scientific Affairs
kbelk@food-safetynet.com • 970.215.3486

Tim Santy
Director of Laboratory Operations
tsanty@food-safetynet.com • 210.477.3631

Edward Miller
Director of Human Resources
emiller@food-safetynet.com • 210.477.3637

Dr. Wendy Maduff
Director of Technical Services
wmaduff@food-safetynet.com • 210.477.3634

Wendy Harmon
Customer Service Coordinator
wharmon@food-safetynet.com • 210.384.8028

David Bosco
Regional Laboratory Manager
dbosco@food-safetynet.com • 602.385.4030 x5209

Dustin Morgenroth
Laboratory Manager, San Antonio
dmorgenroth@food-safetynet.com • 210.308.0675 x218

Ray Collins
Laboratory Manager, DFW
rcollins@food-safetynet.com • 972.602.2078 x5109

Greg Schultz
Laboratory Manager, Green Bay
gschultz@food-safetynet.com • 920.465.4013

Paul Browning
Laboratory Manager, Fresno
pbrowning@food-safetynet.com • 559.250.8917