Beef Trim Baseline Results and How FSIS Will Use Them

Loren Lange
Deputy Assistant Administrator
Office of Public Health Science

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***E. coli* Public Meeting**

Beef Trim Baseline
Overview

- **Samples were collected and analyzed from December 2005 through early January 2007**

- **Design was based on getting results from 2,000 samples**

- **Samples were analyzed at four laboratories:**

   - **The three FSIS Laboratories in Athens, St. Louis, and Alameda**

   - **Food Safety Net Services, Ltd., San Antonio, TX**

- **All *Escherichia coli* O157:H7 analyses were completed by FSIS. All other analyses were conducted by Food Safety Net Services. Each sampling event required the collection of two samples.**

Beef Trim Baseline
(Overview Continued)

- **Laboratory analyses were conducted to measure the presence and quantitative level of the following bacteria:**

  - ***Escherichia coli* O157:H7**

  - ***Salmonella* (including serotyping)**

  - **Generic *Escherichia coli***

  - **Total coliforms**

  - **Enterobacteriaceae**

  - **Aerobic Plate Count (APC)**

- **Existing FSIS laboratory methods would be used where applicable**

Beef Trim Baseline

Sample Collection Design Issues

- **Where**

- **When**

- **How**

- **What**

Beef Trim Baseline
Where

- **Samples would be collected at facilities that slaughtered cattle and boned the carcasses to produce trim.**

- **Design included collecting data on the interventions used on the slaughter line.**

- **Samples would be collected in facilities that could make adjustments to lower risk.**

- **FSIS recognized that trimmings for ground beef are also produced at other processing facilities and at retail stores.**

Beef Trim Baseline
WHEN

- **Two Major Options Considered:**

    - **End of Boning Line, and**

    - **after product was accepted for use in raw ground beef.**

- **Second option was selected based on data needed to update the *E. coli* O157:H7 risk assessment.**

- **Baseline population then became beef trimmings in slaughter/boning operations that had passed existing food safety systems and were available for use in raw ground beef production.**

Beef Trim Baseline
How

- **When study was designed, there was a wide variety of methods for sampling beef trim:**

  - **Collect Purge**

  - **Core drilling**

  - **Various amounts of surface slices**

- **FSIS had lengthy discussions with ARS and industry scientists.**

- **Decision was to use N60, a sample of 60 thin surface slices from a production lot.**

Beef Trim Baseline
(How Continued)

- **The number 60 is based on microbial sampling plans recommended by ICMSF[1] where the hazard is severe and where conditions may increase the hazard.**

[1] **ICMSF (International Commission on Microbiological Specifications for Foods), 2002. Microorganisms in Food, Microbiological Testing in Food Safety Management, vol. 7. Kluwer Academic/Plenum Publishers, New York. 327-330 pps.**

Beef Trim Baseline
What

- **The term "beef trimmings" included sub-primal cuts such as boneless chuck or parts of boneless chuck when they were being produced for use as components of raw ground beef.**

- **Study considered trying to characterize source as to fat content, but chose to direct inspectors to randomly select a sample of trimmings.**

- **The baseline study would not include samples obtained from head meat, organ meat, or Advanced Meat Recovery product, or very high fat content trimmings destined for such products as finely textured beef or partially defatted chopped beef.**

Beef Trim Baseline
Positive/Negative Results

Microorganisms	Samples Analyzed	Number Positive	Percent Positive
Indicator Organisms			
Enterobacteriaceae	**1719**	**1015**	**59.0**
Generic *Escherichia coli*	**1719**	**270**	**15.7**
Pathogenic Organisms			
Escherichia coli O157:H7	**1900**	**13**	**0.68**
Salmonella	**1719**	**22**	**1.28**

E. coli O157:H7 MPN ranges for beef trimmings, FSIS Baseline
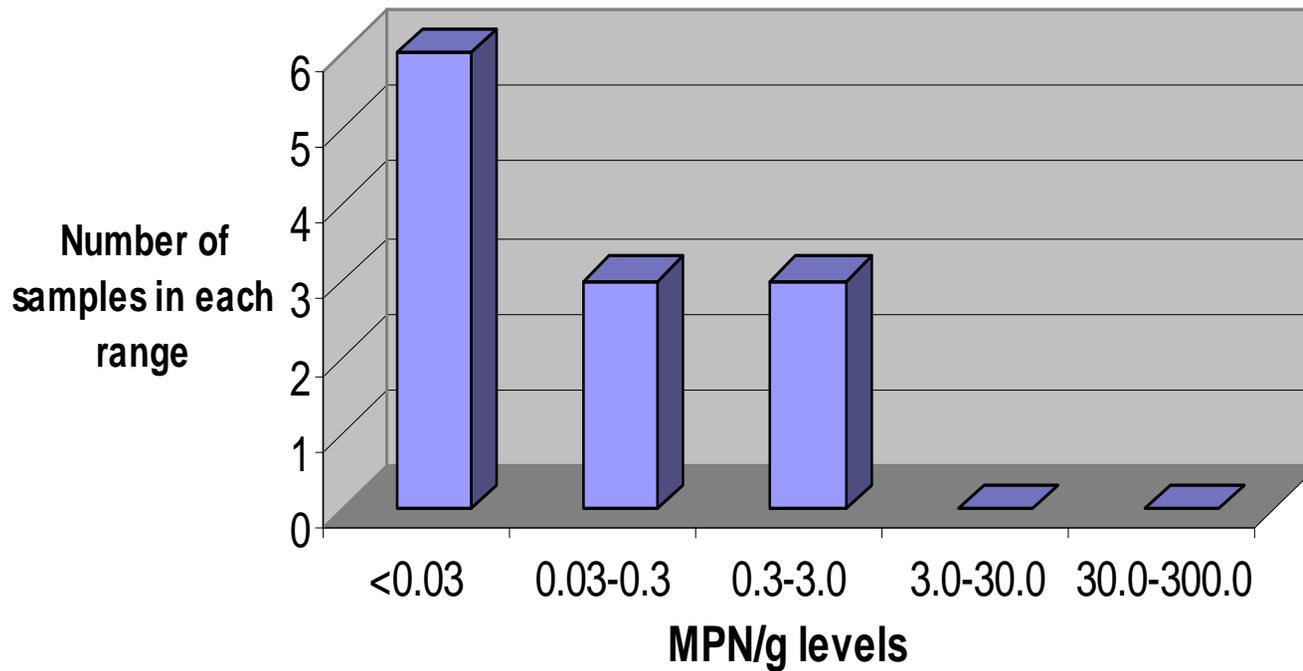
E. coli O157:H7 MPN ranges for ground beef, CY2007
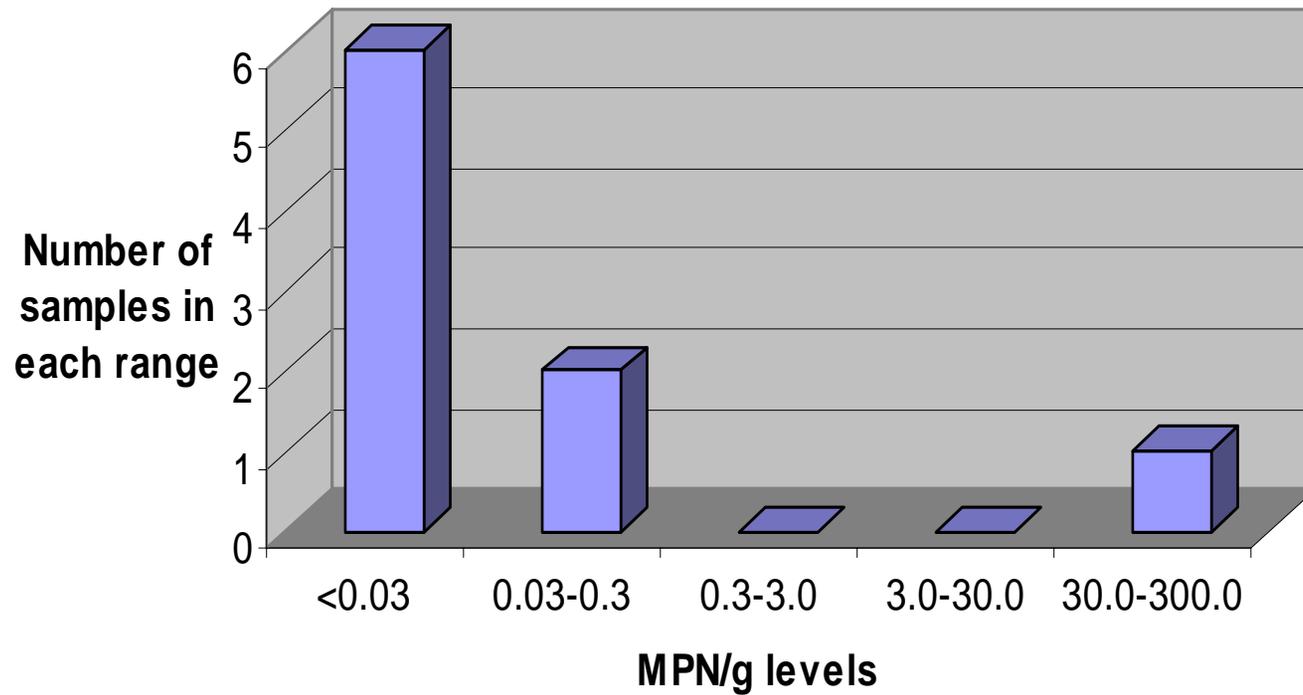
Salmonella MPN ranges for positive samples in beef timmings, FSIS Baseline
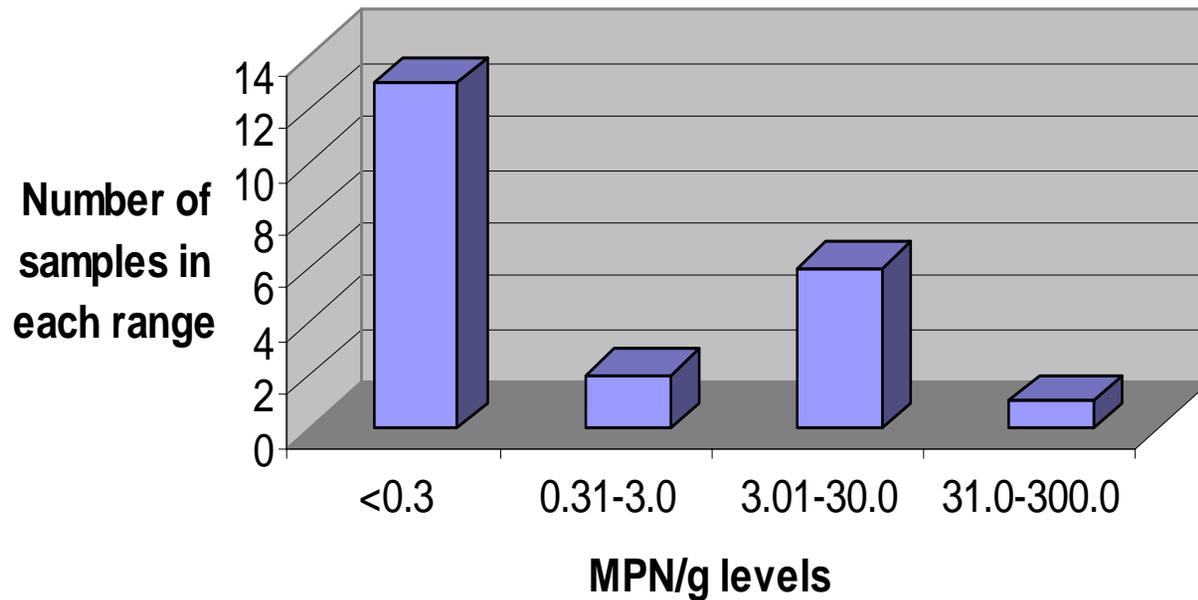
Distribution of Generic *Escherichia coli*

Range, cfu/g	Number of Samples	Percent of Total	Cumulative Number	Cumulative Percent
$<10^{(1)}$	1449	84.29	1449	84.3
10-100	239	13.90	1688	98.2
101-1,000	20	1.16	1708	99.4
1,001-10,000	10	0.58	1718	99.9
10,001-100,000	1	0.06	1719	100.0
TOTAL	1719	100	-	-

[1] Negative by Method

Beef Trim Baseline
Next Steps

- **Complete analysis to generate estimates of national prevalence accounting for non-responses and new producers not in the sampling frame**

- **Analyze the data collected on interventions and look for associations with bacteria levels**

- **Analyze data on pathogen levels versus indicator organisms**

- **Explore implications for policy changes**