E. coli O157:H7 Contamination of Beef – Regulatory Perspective

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FSIS Responsibility

FSIS is the public health regulatory agency within USDA

- FSIS ensures that the commercial supply of meat, poultry, and processed egg food products in the U.S. is not adulterated or misbranded

- FSIS authorizing authorities (FMIA, PPIA, EPIA) do not bind the Agency to in-plant activity
## Healthy People 2010 Objectives

**Campylobacter infections***:

<table>
<thead>
<tr>
<th>1997 Baseline</th>
<th>2010 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>24.6</td>
<td>12.3</td>
</tr>
</tbody>
</table>

**Escherichia coli O157:H7 infections***:

<table>
<thead>
<tr>
<th>1997 Baseline</th>
<th>2010 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>1.0</td>
</tr>
</tbody>
</table>

**Listeria monocytogenes infections***:

<table>
<thead>
<tr>
<th>1997 Baseline</th>
<th>2010 Target**</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>0.25</td>
</tr>
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</table>

**Salmonella infections***:

<table>
<thead>
<tr>
<th>1997 Baseline</th>
<th>2010 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.7</td>
<td>6.8</td>
</tr>
</tbody>
</table>

*Laboratory confirmed cases/100,000 humans (FoodNet)
**Changed to year 2005 by E.O. (President Clinton)
Current (2006) FoodNet Results

- STEC O157 incidence at 1.31 compared to Healthy People 2010 goal of 1.00
  - *up* from 1.06 in 2005 and 0.9 in 2004
  - STEC O157 illnesses did not decrease significantly from baseline period (1996-1998)*

FSIS Testing

- 1994 -
  - October 17, FSIS began collecting 5,000 samples of ground beef annually, divided equally between Federal establishments and retail operations
  - Not statistically designed, but intended to stimulate industry actions to reduce the presence of *E. coli* O157:H7

- 2007 -
  - Through December 18, FSIS analyzed 12,200 samples of ground beef at approximately 2,000 Federal establishments and retail operations (fewer than 200 samples collected at retail), with 29 positives
  - FSIS began testing manufacturing trimmings (3,742 samples annually), including foreign produced trim.
  - FSIS put in motion a mechanism to began testing other raw beef components such as head meat and cheek meat (1,500 samples)
FSIS Testing Method Changes

• 1994-
  – In the wake of a large-scale outbreak related to fast-food hamburgers in the Western U.S., FSIS declares “zero tolerance” for *E. coli* O157:H7 in raw ground beef
  – FSIS monitoring begins
• 1997-
  – FSIS increases single 25-g test portion to five 65-g test portions (325 grams)
• 1999 -
  – FSIS implements new detection method based on immunomagnetic capture and chromogenic plating media
• 2006 -
  – FSIS implements BAX PCR for screening
  – FSIS initiates baseline study of trimmings used for ground beef
• 2007-
  – FSIS implements risk-based sampling
Ground beef samples positive for *E. coli* O157:H7 by calendar year

- IMS introduced
- MSA-BCIG
- 325-g test portion
- Industry reassesses HACCP

*Percent positive* *E. coli* O157:H7

- 1994: 0.0
- 1995: 0.1
- 1996: 0.2
- 1997: 0.3
- 1998: 0.4
- 1999: 0.5
- 2000: 0.6
- 2001: 0.7
- 2002: 0.8
- 2003: 0.9
- 2004: 0.1
- 2005: 0.2
- 2006: 0.3

*n* = 11645
Inspection System Design

- Microbiological data, in the form of verification testing results for each establishment, supplement on-site observations and give a perspective on compliance with regulatory requirements over time.

- *Changes in the % positive rate* for pathogens of public health concern serve as an early warning of systemic problems arising, tracked quarterly and annually:
  - Public health assumption is that a reduction in the % positive rate of product containing pathogens of public health concern *should* result in a reduction on disease incidence in humans.
Performance Measure

• *E. coli* O157:H7
  • FSIS estimates, using attribution data, that a % positive rate not exceeding 0.20% in ground beef would achieve the Healthy People 2010 goal of 1.0 illnesses/100,000 cases (non-volume adjusted) for the ground beef contribution
  • FSIS will continue to enforce a risk mitigation strategy to keep the % positive rate below 0.20%, and continue to drive the % positive rate lower each year through 2010
2008 Focus

• *E. coli* O157:H7
  • Increasing FSIS understanding regarding control practices for all types of beef products (Checklist #5 associated with FSIS Notice 65-07)
  • Implementing targeted (risk-based) testing of trim and other raw beef components (ground beef program began January 2008)
• Contribution of foreign raw beef for domestic use
• Significant new focus on sanitary dressing procedures and linespeeds at slaughter
New Safety Issue

- **STEC** (non-O157 Shiga toxin producing *E. coli*)
  - Follow-up to October 17, 2007 public meeting; ~Spring 2008
  - Intend to initiate process to begin testing for STECs in beef in 2008
Thank you