Assuring Food Safety of Red Meat for Domestic and International Consumers

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What does this mean?

- Can be very different depending on the product
  - Raw items
    - Chilled
    - Frozen
  - Cured/processed
  - Fully cooked
  - Canned/Shelf Stable

- Covered by different regulatory agencies
  - FDA
  - FSIS
  - Can involve APHIS
  - Can involve EPA
Table 1: Product classes, performance standards/guidance and allowed positives for category 1, 2T, 2 and 3.

| Product class      | Performance standard (percent positive for Salmonella) (%) | Number of samples tested | Maximum number of positives to achieve standard | Category 1
|                   |                                                                 |                         |                                           | recent two set results ≤6
|                   |                                                                 |                         |                                           | last set ≤6 and prior set >6 w/o failing
|                   |                                                                 |                         |                                           | either last one or two sets ≥6 w/o failing
|                   |                                                                 |                         |                                           | most recent set ≥13
| Broiler           | 20.0                                                         | 51                      | 12                                          | last set ≤1 and the prior set >2 w/o failing
|                   |                                                                 |                         |                                           | either the last one or two set results ≥1 w/o failing
|                   |                                                                 |                         |                                           | most recent set ≥3
| Cow/Bull          | 2.7                                                          | 58                      | 2                                           | last set ≤2 and the prior set >2 w/o failing
|                   |                                                                 |                         |                                           | either the last one or two set results ≥2 w/o failing
|                   |                                                                 |                         |                                           | most recent set ≥6
| Ground Beef *     | 7.5                                                          | 53                      | 5                                           | last set ≤13 and the prior set >13 w/o failing
|                   |                                                                 |                         |                                           | either the last one or two set results ≥13 w/o failing
|                   |                                                                 |                         |                                           | Most recent set ≥27
| Ground Chicken    | 44.6                                                         | 53                      | 26                                          | last set ≤14 and the prior set >14 w/o failing
|                   |                                                                 |                         |                                           | either the last one or two set results ≥14 w/o failing
|                   |                                                                 |                         |                                           | Most recent set ≥30
| Ground Turkey *   | 49.9                                                         | 53                      | 29                                          | last set ≤3 and the prior set >3 w/o failing
|                   |                                                                 |                         |                                           | either the last one or two set results ≥3 w/o failing
|                   |                                                                 |                         |                                           | Most recent set ≥7
| Market Hog        | 8.7                                                          | 55                      | 6                                           | last set no positive and the prior set 1 positive
|                   |                                                                 |                         |                                           | either the last one or two set results positive
|                   |                                                                 |                         |                                           | Most recent set ≥2
| Steer/Heifer      | 1.0                                                          | 82                      | 1                                           | last set ≤6 and the prior set >6 w/o failing
|                   |                                                                 |                         |                                           | either the last one or two set results ≥6 w/o failing
|                   |                                                                 |                         |                                           | Most recent set ≥14
| Turkey **          | 19                                                           | 56                      | 13                                          | last set ≤6 and the prior set >6 w/o failing
|                   |                                                                 |                         |                                           | either the last one or two set results ≥6 w/o failing
|                   |                                                                 |                         |                                           | Most recent set ≥14

*Guidance measure set
§Establishment category, which is based on the most recent two sets completed
ΦFSIS is now rounding down the allowable positives for Category 1 status for those product classes having odd numbered standards or guidelines. Therefore the current performance standards will be: Turkey (Category 1: ≤6 vs ≤7 Salmonella positive results), Ground Beef (Category 1: ≤2 vs ≤3 Salmonella positive results), and Ground Turkey (Category 1: ≤14 vs ≤15 Salmonella positive results).

Source: FSIS 2011: October to December 2010 Quarterly report
### PURPOSE:
Suppliers of slaughter cattle must certify non-use of “prohibited mammalian protein” in their cattle finishing rations (i.e., ruminant meat & bone meal). In 1997, FDA banned the use of such ingredients in feed for ruminant animals. The FDA ban was implemented to prevent the introduction of BSE (Bovine Spongiform Encephalopathy) into the U.S. cattle herd. This initiative is intended to support U.S. efforts to keep the nation's cattle herd BSE-free.

### PROCEDURE:
All direct suppliers of cattle are required to certify their compliance to the FDA ruminant feeding ban for “prohibited mammalian protein” (ruminant meat & bone meal). This requirement applies to the owner/agent of cattle that are slaughtered at any beef slaughter facility (USA & Canada).

### FDA REQUIREMENTS
Cattle feeders are required to keep invoices and labeling for all feed they receive that contains animal protein products, whether or not the animal protein is prohibited (required by CFR 589.2000).

Affidavits must be renewed annually for all cattle suppliers.

### AFFIDAVITS - FREQUENCY:
“Prohibited Feed” Affidavits are required initially for all current suppliers (by 04/01/01). “New” suppliers (after 04/01/01) are required to complete affidavits before cattle are slaughtered.

Affidavits must be renewed annually for all cattle suppliers.

### MONITORING:
Verification of this program will monitored as follows:
1. **Affidavit Audit:** Will conduct random audits of direct cattle suppliers for signed and current "Prohibited Feed Affidavit". This will apply to cattle slaughtered at facilities within 6 months of when the audit is initiated. This audit will be conducted minimally twice per year.
2. **Feedlot Audit:** Individual cattle suppliers will be randomly selected for an on-site “feeding record” audit. These reviews will consist of an audit of feedlot rations for presence/absence of animal proteins, and associated review of purchase invoices and labels of feeds containing any animal protein products. This will apply to cattle slaughtered at facilities within 6 months of when the audit is initiated. This audit will be conducted minimally twice per year.

### BQA EXEMPTION
Feeder participating in sanctioned Beef Quality Assurance (BQA) programs, and that have a defined CCP for “prohibited mammalian proteins”, can be exempted from the “Feedlot Audit”. BQA status must be current and an audit of the “prohibited protein” CCP conducted within the past 12 months.

### NON-COMPLIANCE
If a current, signed affidavit from an owner/agent is not on-record with, cattle will not be slaughtered until the “Prohibited Feed” affidavit is completed.
New Technologies and Research

• 2010 Beef Industry Food Safety Summit:
  – Tracing pathogen contamination through post-harvest environment
  – Effect of wet or dried distiller’s grains on fecal prevalence of E. coli O157-H7
  – Quantitative herd-level evaluation of Salmonella shedding on dairies
  – Evaluation of different temperatures and exposure times of hot water to reduce pathogen levels
  – E. coli O157-H7 and S. Typhimurium survival and transfer during marinated beef production
  – Industry practices being used to address E. coli O157-H7
  – Dietary orange peel and pulp can reduce Salmonella in Sheep
  – Evaluation of an experimental sodium chlorate product with and without nitroethane
  – Evaluation of gallium maltolate on fecal shedding of Salmonella in experimentally-infected cattle
  – Effect of vitamin D Supplementation on fecal shedding of E. coli O157-H7 in naturally colonized cattle

Source: 2010 Beef Industry Safety Summit Executive Summary
New Technologies and Research

• The National Pork Board reports project such as:
  – Optimization of antimicrobials for control of Listeria monocytogenes and for acceptable pork product quality
  – The development of a novel immunosensor to detect Salmonella
  – Surface Material, Temperature, and Soil Effects on Pathogen Growth in Condensate
  – Use of ationic peptides as feed additives to improve innate immunity and reduce gut colonization with Salmonella and Campylobacter in weaned pigs
Industry Response to Pathogen Risk

Pre-harvest
- Ranch

Pre-harvest to Harvest Interface
- Holding Pens
- Washing
- Dehairing

Harvest
- Steam Vacuum
- Acid Wash
- Hurdles

Post-harvest
- Fabrication
- Grinding
- At Retail

SOURCE: G.C. Smith (Beef Industry E. coli Summit, San Antonio, TX, 2003)
Audits

Audits show improvements in beef quality and address key challenges to overcome.

Gaining Ground

Audit shows improvements in beef quality and addresses key challenges to overcome.

1. Inadequate tenderness of beef. Despite its major role in the beef industry, adequate tenderness is often a problem. The Audit found that in 2000, 35% of beef samples tested were below the acceptable standard.

2. Inadequate injection-site quality control in dairy cows. Injection-site lesions can result in economic losses for producers and can be caused by improper injection techniques. The Audit found that in 2000, 20% of samples tested were below the acceptable standard.

3. Inadequate carcass trimming. Inadequate carcass trimming can result in economic losses for producers and can be caused by improper trimming techniques. The Audit found that in 2000, 25% of samples tested were below the acceptable standard.

4. Inadequate monitoring of feed quality. Feed quality can affect the quality of meat produced. The Audit found that in 2000, 30% of samples tested were below the acceptable standard.

5. Inadequate monitoring of water quality. Water quality can affect the quality of meat produced. The Audit found that in 2000, 30% of samples tested were below the acceptable standard.

6. Inadequate monitoring of environmental conditions. Environmental conditions can affect the quality of meat produced. The Audit found that in 2000, 25% of samples tested were below the acceptable standard.

To determine the extent of the problem, the National Beef Quality Assurance Advisory Board conducted a survey of market beef producers in 2000. The survey found that 20% of producers were not monitoring injection-site quality control, 25% were not monitoring carcass trimming, 30% were not monitoring feed quality, 30% were not monitoring water quality, and 25% were not monitoring environmental conditions. The Audit found that in 2000, 30% of samples tested were below the acceptable standard.

Executive Summary of the 1999 National Market Cow and Bull Quality Audit

Improving the Consistency and Competitiveness of Market Cow and Bull Beef: Increasing the Value of Market Cows and Bulls

The Audit found that in 2000, 30% of samples tested were below the acceptable standard.

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PQA Plus is broken into Good Production Practices (GPP)

- **GPP #1:** Establish and implement an efficient and effective herd health management plan.
- **GPP #2:** Use an appropriate veterinarian/client/patient relationship (VCPR) as the basis for medication decision-making.
- **GPP #3:** Use antibiotics responsibly.
- **GPP #4:** Identify and track all treated animals.
- **GPP #5:** Maintain medication and treatment records.

Source: National Pork Board PQA Plus Training Module: 2009
• GPP #6: *Properly store, label, and account for all drug products and medicated feeds.*

• GPP #7: *Educate all animal caretakers on proper administration techniques, needle-use procedures, observance of withdrawal times and methods to avoid marketing adulterated products for human food.*

• GPP #8: *Follow appropriate on-farm feed and commercial feed processor procedures.*

• GPP #9: *Develop, implement and document an animal caretaker training program.*

• GPP #10: *Provide proper swine care to improve swine well-being.*

Source: National Pork Board PQA Plus Training Module: 2009
Procurement

“Prohibited Feed” Affidavit

I ______________________________ (print), attest that to the best of my knowledge, the “finishing ration” fed to cattle under my authority, direction, or ownership and which are supplied slaughter have not been fed “prohibited” mammalian protein as defined by FDA 21 CFR 589.2000.

My role in the cattle supply chain is (check one) :

_____ Feedlot owner/operator

_____ Order Buyer or Trader (independent)

_____ Other (describe) __________________________

I agree that authorized officials may conduct inspection of feed records and feed facilities at locations from which cattle under my direction (or ownership) are fed and which were slaughtered at an

Signature: ____________________________ Date: __________________________

Address: ____________________________ Phone Number __________________

Affidavits are to be renewed annually. Failure to have a current, signed affidavit on-record is cause for the “company” to refuse to slaughter cattle under your direction or ownership. The owner/agent should keep the yellow copy of this affidavit for your records.

Note: FDA CFR 589.2000 requires ruminant feeders to keep records for all feed they receive that contains animal protein products, whether or not the animal protein is prohibited material. Such records would include purchase invoices and labeling for all feeds containing animal protein products received. Copies of these records are to be made available to FDA upon request. The complete FDA rule can be accessed on the web site ⇒ (www.access.gpo.gov/nara/cfr/waisidx_00/21cfr589_00.html).

All cattle producers are urged to secure similar “prohibited feed” assurances from their suppliers.

For questions t (01/09/04)
Definition of Food Safety is Key

• Different definitions create multiple standards, multiple certifications, and greater complexity
  – Creates more opportunities for document errors
• Have alternative programs to manage different standards, but not optimal
  – Affidavits
  – Export Verification Programs
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<tbody>
<tr>
<td>ChlorMax® 50</td>
<td>Chlortetracycline</td>
<td>0 days</td>
<td>10 days</td>
<td>Alpharma</td>
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<tr>
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<td>60 days</td>
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<td>Draxxin® inject</td>
<td>Tulathromycin</td>
<td>5 days</td>
<td>33 days</td>
<td>Pfizer</td>
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### Roles of U.S. Government in Controlling BSE

<table>
<thead>
<tr>
<th>Agency</th>
<th>Role</th>
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<tr>
<td><strong>Food &amp; Drug Administration (FDA)</strong></td>
<td>Protecting the health of the U.S. cattle herd</td>
</tr>
<tr>
<td>Monitor &amp; Enforce Feed Ban</td>
<td>Conduct BSE Surveillance to Determine Prevalence &amp; Verify Effectiveness of BSE Firewalls in U.S.</td>
</tr>
<tr>
<td><strong>Animal &amp; Plant Health Inspection Service (APHIS)</strong></td>
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<tr>
<td><strong>Food Safety &amp; Inspection Service (FSIS)</strong></td>
<td>Protecting the human food supply</td>
</tr>
<tr>
<td>Monitor &amp; enforce the Removal of SRM’s &amp; Other New BSE-Related Regulations</td>
<td></td>
</tr>
<tr>
<td><strong>Agriculture Marketing Service (AMS)</strong></td>
<td>Provide auditing service to certify marketing programs (e.g., BEV)</td>
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