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Decreasing Contamination in Veal Slaughter Plants

By *Janet McGinn, DVM, and Paula Jones-Adjetey, Special to Small Plant News*

USDA's Food Safety and Inspection Service's (FSIS) test programs have shown that laboratory positives for Shiga toxin-producing *Escherichia coli* (STEC) for veal trimmings appear to be higher than that for trimmings from other cattle slaughter classes.

Following up on these significant results, FSIS conducted a review of Food Safety Assessments (FSAs) and onsite visits to veal slaughter establishments in an attempt to identify conditions that are unique to veal that may be responsible for this problem. FSIS identified three common deficiencies in these plants, and they are

(1) Inadequate sanitary dressing;
(2) Ineffective antimicrobial intervention; and
(3) Failure to use microbial data in decisionmaking.

Foremost among these is inadequate sanitary dressing.

Effective sanitary dressing procedures serve as the foundation upon which a slaughter Hazard Analysis and Critical Control Points (HACCP) system is built. Properly conducted sanitary dressing procedures enhance the likelihood that antimicrobial treatments will achieve their

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intended effect. Inadequate sanitary dressing can introduce enough microbial contamination into the system that subsequent interventions cannot effectively reduce, let alone eliminate, pathogens.

The most frequent inadequate slaughter procedures that FSIS observed in veal plants occurred during sticking, hide removal, bunging, and evisceration. These deficiencies included:

- Cutting through the weasand (esophagus) during sticking, causing ingesta to leak onto the carcass and head;
- Cutting through the hide and not sanitizing knives, gloves, or other equipment before further dressing the carcass, causing cross-contamination;
- Allowing the exterior side of hide flaps to contact exposed carcass;
- Failing to properly bag and tie the bung;
- Allowing the bagged bung to contact the hide, which results in trailing contamination as the bung is pulled through the pelvic inlet;
- Puncturing the paunch and intestines during evisceration and allowing ingesta to leak onto the carcass; and
- Eviscerating the carcass before to hide removal (e.g., hide-on processing).

To improve sanitary dressing, FSIS recommends that veal slaughter plants:

1. Develop comprehensive formal sanitary dressing programs that include:

   a. Written procedures designed to prevent carcass contamination at each point in the slaughter process where carcasses are vulnerable to contamination. These locations include: live receiving/holding, sticking, hide removal, bunging, brisket opening, rodding the weasand, head removal, evisceration, carcass splitting and head/cheek meat processing.

   b. Verification activities that ensure employees are performing the procedures effectively to prevent contamination.

2. Assess the effectiveness of plant procedures using real-time data and microbial results. Real-time data can include carcass audits after points in the slaughter process where carcasses are vulnerable to contamination (e.g., de-hiding). The real-time data and microbial results will help plants assess whether the procedures are effectively preventing contamination.

The second deficiency FSIS identified in veal slaughter plants was the ineffective implementation of antimicrobial interventions, which may occur when plants:

- Fail to implement interventions so that they achieve full carcass or product coverage (ensuring that the entire carcass surface is treated and that all product surfaces are treated);
  - This failure may be a result of an establishment's practice of suspending veal carcasses from a single hook or allowing product to be stacked, folded, or outside the arc of spray as the antimicrobial is applied;
- Cross-contaminate adjacent product by allowing overspray from the antimicrobial treatment;
- Cross-contaminate product from employees spraying equipment, the floor, and other surfaces;

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- Cross-contaminate product from employees using contaminated or unsanitized equipment; or
- Cross-contaminate product by allowing visibly contaminated carcasses to enter the wash cabinet or receive the manual application of water or antimicrobial sprays.

FSIS recommends that plants make their antimicrobial interventions more effective by:

1. Identifying supporting documentation that closely matches the intervention.

2. Identifying critical operating parameters in the supporting documentation. These parameters are the specific conditions (such as contact time, pH, temperature, concentration, etc.) of the intervention that must be met for the intervention to be effective.

3. Incorporating the critical operating parameters into the Hazard Analysis and Critical Control Point (HACCP) system.

4. Implementing the intervention so that it meets the critical operating parameters.

The final deficiency FSIS has identified is the failure of plants to use microbial data in their decisionmaking. This failure is a critical lapse. FSIS observed that veal plants were not properly evaluating testing results, including generic *E. coli* on carcasses, STEC in beef manufacturing trimmings, and *E. coli* O157:H7 in ground veal to help determine whether their procedures are adequately preventing contamination.

To properly assess microbial testing results, FSIS recommends that plants:

1. Use test results to assess the effectiveness of their controls for preventing contamination;

2. Identify specific criteria for use when their slaughter process is out of control;

3. Verify that their slaughter controls are reducing STEC to a below-detectable level on an ongoing basis;

4. Review sanitary dressing procedures and intervention measures to investigate the cause when microbial test results indicate a loss of process control; and

5. Perform increased microbial testing to demonstrate that the corrective actions the establishment took in response to the loss of process control are effective.

The Agency has developed the "Compliance Guideline for Establishments Sampling Beef Trimmings for Shiga Toxin Producing *Escherichia coli* (STEC) Organisms or Virulence Markers," which is available on FSIS' Web site at: *http://www.fsis.usda.gov/wps/wcm/connect/e0f06d97-9026-4e1e-a0c2-1ac60b836fa6/Compliance-Guide-Est-Sampling-STEC.pdf?MOD=AJPERES.* This guidance has general information on verification testing, designing sampling plans and factors affecting the design of sampling.

To summarize, plants can minimize their risk of producing adulterated product if they:

1) Implement a comprehensive sanitary dressing program that focuses on preventing contamination throughout the slaughter process;

2) Apply interventions effectively; and

3) Use microbial data to assess their slaughter operation and to improve their process.

For more information, or if you have any questions, contact the Small Plant Help Desk at 1-877-FSISHELP (1-877-374-7435) between the hours of 8:00 a.m. and 5:00 p.m. ET, or via e-mail at *InfoSource@fsis.usda.gov.* For policy-related questions, you can also utilize the askFSIS tab on FSIS' homepage at *www.fsis.usda.gov.*

Jones-Adjetey was an FSIS intern when she co-authored this article. She is currently a graduate student at Rutgers University's Graduate School of Public Affairs and Administration.

Commonly Asked Questions & Answers

Q: *If an official (Federal) establishment tests a beef/veal carcass or part and the carcass or part is presumptive positive or positive for STEC such as* E. coli *O157:H7, can a disposition option for the product include moving it to a State-inspected facility for an adequate lethality treatment?*

A: No. When an official establishment tests a carcass or part and determines that it will address the finding on the carcass or part by sending the carcass or part for a lethality treatment, the carcass or part may only move under controls to another official establishment that is capable of applying a full lethality treatment to the product (see FSIS Directive 10,010.1 Chapter III, IV OFF-SITE DISPOSITION OF PRODUCT). Such a carcass or part is considered adulterated or potentially adulterated and such products may not move in commerce. Shipping an adulterated or potentially adulterated carcass or part from an official establishment under Federal inspection to a State-inspected facility not under Federal inspection would place that shipment in commerce, which is not permitted under the Federal Meat Inspection Act, even if the products are moved under controls.

Q: *For the purpose of raw beef product classification, would a veal rack that is prepared by "Frenching" (i.e., removal of the intercostal meat and lean and fat over the ribs) be considered an intact or a non-intact raw beef product?*

A: Contrary to what was published in the January 19, 1999 Federal Register, Beef Products Contaminated With Escherichia coli O157:H7, which, at the time, classified "Frenching" as "non-intact" along with beef that has been mechanically tenderized by needling, cubing, or pounding devices, FSIS believes a "Frenched" veal rack is intact. "Frenching" is a process similar to surface trimming where the intercostal meat, lean, and fat between and over the ribs is removed. This process is not believed to cause interior contamination of the veal rack. The finished trimmed veal rack is still intact, similar to other primal or subprimal bone-in cuts that are only trimmed. Additionally, resulting veal trimmings are then comparable to "bench" trimmings that are generated from trimming of primal and subprimal cuts.

Small Plant Editorial Staff

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