Controlling Listeria
What you need to know about USDA’s new guidance

November 27, 2012 Webinar
CONTROLLING *LISTERIA MONOCYTOGENES* IN POST-LETHALITY EXPOSED RTE MEAT AND POULTRY PRODUCTS
FSIS COMPLIANCE GUIDELINE (2012)

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Goal of Presentation


• Highlight changes in this revision

• Discuss preventive control measures for Listeria

• Information presented is from 2012 FSIS Guideline and *FSIS Listeria Guidelines Revision* (Barlow summary presentation to HACCP Contact and Coordinators, October 17, 2012)
Purpose of the Listeria Control Guideline

• Provides recommendations for establishments producing post-lethality exposed, ready-to-eat (RTE) meat and poultry products in order to comply with 9 CFR Part 430, the Listeria Rule.

• Provides updated information on sanitation, testing, and prevention of cross-contamination.

• Replaces 2006 version.

• Guidelines are voluntary and not regulatory requirements.
Reason for New Guideline

Makes no major rule changes, but provides more detailed guidance:

• Determination for which products are covered.
• Better sampling information.
• Expectations for various alternatives.
To review, the Listeria Rule establishes 3 alternatives:

- **Alternative 1** - establishment uses both a post-lethality treatment (PLT) to reduce or eliminate Lm and an antimicrobial agent (AMA) or a process (AMP) to suppress or limit growth of Lm.
- **Alternative 2** - a PLT or an AMA or AMP.
- **Alternative 3** – No PLT, AMA, or AMP; instead relies solely on sanitation program.
Listeria Control Guideline – Chapter 1

What’s New?

- Step-by-step procedure for determining if products are covered by the Listeria Rule.
- Requirements and expectations for each alternative.
- Emphasizing that sanitation is required in all three alternatives.
- Updated to include fully-cooked product that appears RTE, but are not RTE.

Reference: FSIS Listeria Guidelines Revision (Barlow presentation, Oct 2012)
Listeria Control Guideline – Chapter 1

Step 1. Determine if product is ready-to-eat.
Is there a standard identity that the product is fully cooked?

• Deli and hotdog products.
• Salads, spreads, and pâté products.
• Hams and sausage products that have been treated with a lethality treatment.
Listeria Control Guideline – Chapter 1

Step 1. Determine if product is ready-to-eat.

Products determined to be NRTE are not covered, and therefore:

- Are required to bear safe handling instructions and also should be labeled with validated cooking instructions.
- If NRTE appears to be a RTE, must be labeled conspicuously to make consumer aware that cooking is needed.

Safe Handling Instructions

This product was prepared from inspected and passed meat and/or poultry. Some food products may contain bacteria that could cause illness if the product is mishandled or cooked improperly. For your protection, follow these safe handling instructions.

- Keep refrigerated or frozen. Thaw in refrigerator or microwave.
- Keep raw meat and poultry separate from other foods. Wash working surfaces (including cutting boards), utensils, and hands after touching raw meat or poultry.
- Cook thoroughly.
- Keep hot foods hot. Refrigerate leftovers immediately or discard.
Listeria Control Guideline – Chapter 1

Step 2. Determine if product is post-lethality exposed.

Is the product exposed to the environment after the lethality treatment and before packaging?

• Lethality-treated product exposed during further processing, slicing, freezing, or packaging.

• Product is removed from cooking bag to slice or repackage (ex. restructured fully cooked ham products).

• Acidified/fermented product, salt-cured product, or dried and smoked product that is packaged (ex. cured hams, fermented sausages, jerky).
Step 3. Determine if product is covered by Listeria rule.

- If product is RTE and post-lethality exposed, then it is subject to the Listeria Rule.
- If product is RTE but does not have post-lethality exposure, than it is not subject to Listeria Rule.
- If product is not RTE, it is not subject to Listeria Rule.
Listeria Control Guideline – Chapter 1

Alternative 1 – a PLT **and** an AMA or AMP

- PLT must be applied and must be included in the HACCP plan.
- PLT must be validated.
- PLT should demonstrate at least a 1-log reduction.
- AMA or AMP is used and must be included in the HACCP plan, Sanitation SOP, or other prerequisite program.
- Where included, it must state the AMA or AMP is effective in suppressing or limiting growth of Lm (no more than 2 logs of growth over the shelf-life of the product).
- FCS testing is not required, but recommended.
- Must maintain sanitation in post-lethality exposed environment.
Example of Alternative 1

- Packages of hot dogs that are steam pasteurized (in the package) and hot dogs contain lactates or diacetate in the formulation.
Listeria Control Guideline – Chapter 1

Alternative 2a – a PLT

- PLT must be applied and must be included in the HACCP plan.
- PLT must be validated.
- PLT should demonstrate at least a 1-log reduction.
- FCS testing not required, but recommended.
- Must maintain sanitation in post-lethality exposed environment.

Example:

Packaged hot dogs that are heated after they are in the package, but do not contain lactate or diacetate in formulation.
Alternative 2b - an AMA or AMP

- AMA or AMP is used and must be included in the HACCP plan, Sanitation SOP, or other prerequisite program.
- Where included, it must state the AMA or AMP is effective in suppressing or limiting growth of Lm (no more than 2 logs of growth over the shelf-life of the product).
- FCS testing is required using established testing program.
- Must maintain sanitation in post-lethality exposed environment.

Example – Hotdogs with no PLT, but include an antimicrobial, such as lactate or diacetate.
Alternative 3 – No PLT and no AMA or AMP

- Must control Lm in post-lethality environment through sanitation measures, which may be incorporated in HACCP plan, SSOPs, or other prerequisite program.
- If controlled through sanitation or other prerequisite program, effectiveness must be verified and documented.
- FCS testing is required using established testing program.
- For Hotdog and Deli products – Must ALSO verify corrective actions are effective after a positive FCS sample is found. If second positive is found, hold and test products.
Listeria Control Guideline – Chapter 1

Establishments with multiple alternatives

HACCP – similar products (same CCPs, etc.) with differing alternatives can be grouped under same HACCP plan, provided the plan clearly distinguishes any critical differences.

Basically, FSIS will focus on the riskiest alternative.
Listeria Control Guideline – Chapter 1

Product considerations

Frozen - Although products may be heated before serving, they will be considered RTE if they do not contain safe handling instructions.

Freezing can be considered Alt 2b, unless that product is thawed and held at retail.

Cook-in-Bag - If product remains in the same bag until it reaches the consumer, then not considered post-lethality exposed. If it is sliced and served at retail, then it is considered a deli product.

Country cured hams – either RTE or NRTE, depending on whether they are processed and labeled.
Listeria Control Guideline – Chapter 1

Product considerations

Salad/Spread/Pâté Products: If RTE meats are mixed in salads or spreads, that constitutes post-lethality exposure. If pH of all ingredients is below 4.39, than product would fall under alternative 2.

Hot-Filled at 160F or higher: considered RTE, but not post-lethality exposed.

Examples: Edible oils and lard, and soups
Listeria Control Guideline – Chapter 1

Labeling considerations for NRTE and RTE

Products that are defined by standard of identity as RTE are RTE (hotdogs).

Certain products, without a standard of identity, may be expected to be RTE (spreads or pâtés).

Products can be defined as RTE because of labeling features, including Nutrition Facts.

When these factors do not prevail, then manufacturers may decide how to classify products (RTE or NRTE).
Listeria Control Guideline – Chapter 1

Labeling considerations for NRTE and RTE

1) Decide on the HACCP category that best fits the product based upon processing operations. (Even if a product is fully cooked, the manufacturer can decide that the product is NRTE, provided there is no common identity or standard of identity).

2) Generate validated cooking instructions that appear on the labeling of the NRTE product (need internal temperature and method of cooking).

3) Assess the labels to ensure that they adequately reflect the product.
Questions about Chapter 1?
Listeria Control Guideline – Chapter 2

What’s New?

• Updated references for new PLTs and AMAs.
• Sanitation section was updated.
• Validation section updated to be easier to follow.
• New section on employee training.

Reference: FSIS Listeria Guidelines Revision (Barlow presentation, Oct 2012)
Listeria Control Guideline – Chapter 2

Post-lethality Treatment (PLT)

1) Expectation is that the PLT will achieve at least a 1-log reduction before the product leaves the establishment.
2) Must be validated.
3) Must also verify the effectiveness.
Listeria Control Guideline – Chapter 2

Post-lethality Treatment (PLT)

1) Pre-packaging treatment, such as infrared technology

2) Post-packaging treatments
   – Hot water pasteurization
   – Steam pasteurization
   – High pressure processing
Listeria Control Guideline – Chapter 2

Drying as a PLT and AMA

An Aw ≤ 0.85 is considered a PLT and an AMA if the establishment provides supporting documentation that:

- Lm is reduced by at least 1 log before it leaves the establishment and
- no more than 2 logs of growth occurs over the shelf life of the product.
Listeria Control Guideline – Chapter 2

Pre-packaging treatment as a PTL

- A pre-packaging treatment, such as infrared technology, can be considered a PLT as long as there is not exposure of the product after the treatment and prior to packaging.

- If the pre-packaging treatment achieves a 5 log reduction, then process would be considered to achieve full lethality.
Listeria Control Guideline – Chapter 2

Sending product to another establishment for PLT

• An establishment can send product to another federally inspected establishment for PLT, but the product must be either labeled “for further processing” or remain in the producing establishment’s control.

• The PLT must be addressed in the producing establishment’s HACCP plan.

• IF product is known or suspected to have Lm, then PLT must achieve a 5 log reduction.
Listeria Control Guideline – Chapter 2

Validation of PLTs

• Establishments may use peer-reviewed papers, challenge studies, or in-house studies that demonstrate at least 1-log reduction.
• If papers are used, must match same critical factors.
• In the absence of published papers, unpublished studies may be used as reference documents, provided there are supporting data and results that demonstrate the specific level of application is capable of producing safe product.
Listeria Control Guideline – Chapter 2

Antimicrobial Agents (AMA) and Antimicrobial Processes (AMP)

• Expectation that AMA or AMP allow no more than 2 logs of growth of Lm over the shelf-life of the product.

• If included in HACCP plan, process must be validated and verified.

• If in Sanitation or prerequisite program, effectiveness must be evaluated according to regulation (9 CFR 416 or 9 CFR 417).
Listeria Control Guideline – Chapter 2

Antimicrobial Agents (AMA)

• Examples – potassium lactate and sodium diacetate.
• Can be added during formulation to the finished product or to the packaging material.
• If using studies as part of validation, then they must match all critical operational parameters.
Listeria Control Guideline – Chapter 2

Lactates and Diacetate as AMAs

• Sodium diacetate – allowable level up to 0.25% of formulation.
• Sodium lactate and potassium lactate – up to 4.8% of total formulation.
Listeria Control Guideline – Chapter 2

Vinegar as AMA

- Finished product pH ≤ 4.6.
- The establishment documents that this pH level in the specific product suppresses/limits growth of Lm.
- Acid can be added by starter culture.
Antimicrobial Processes (AMP)

- Examples – fermentation, drying, freezing.
- In some cases, an AMP can be considered a PLT if it can be shown that it reduces the level of Lm, in addition to limiting growth, throughout the shelf-life of the product.
- Table 2.1 in Guideline can be used as part of supporting documentation, which show growth limits for Lm.
Listeria Control Guideline – Chapter 2

Antimicrobial Processes (AMP)

- Table 2.1 from Guideline can be used as part of supporting documentation which show growth limits for Lm.

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<th>Optimum</th>
<th>Maximum</th>
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<td>98.6 F</td>
<td>113 F</td>
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<tr>
<td>pH</td>
<td>4.39</td>
<td>7.0</td>
<td>9.4</td>
</tr>
<tr>
<td>Water Activity</td>
<td>0.92</td>
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</tbody>
</table>
Listeria Control Guideline – Chapter 2

Freezing as an AMP

- Freezing is only effective as an AMP while product is frozen.
- If thawed at retail and sold refrigerated, then establishment cannot consider freezing an AMP.
- If thawed by the consumer as part of the preparation procedure, then it is an AMP.
Listeria Control Guideline – Chapter 2

Sanitation

• If levels of Lm are not controlled by proper sanitation, then they could overwhelm the effectiveness of PLTs and AMAs.

• Sanitation actions should be escalated if repeated Lm positives are found.
Listeria Control Guideline – Chapter 2

Increased levels of control by PLT, AMA, or AMP

• If increased levels of control are achieved by the PLT, the AMP or the AMA, then FSIS will sample less.
• PLT – causes 2 log reduction (versus causing a minimum of 1 log reduction).
• AMA or AMP – allows no more than 1 log of growth during shelf life (as compared to minimum of allowing 2 logs growth).
Listeria Control Guideline – Chapter 2

Attachment 2.1 – Post lethality Treatments
• Steam pasteurization and hot water pasteurization.
• Pre-package pasteurization and post-package pasteurization.
• High pressure processing.

Attachment 2.2 Antimicrobial Agents and Processes
• Bacteriophages, lactates, acetates, diacetates, and ozone.
• Growth inhibitors in packaging.
Listeria Control Guideline – Chapter 2

Attachment 2.2 Antimicrobial Agents and Processes

General Observations

- Lactates, acetates, and diacetates were found to be more effective when used in combination.
- Increased concentrations were more effective, but have to balance against sensory changes.
- Antimicrobials were found to be more listeriostatic than listericidal.
- Including in formulation is better than dipping.
- More effective when used in combination with post-packaging thermal treatments or smoking.
Appendix 2.1 Validation

- Validation includes: 1) scientific or technical support and 2) in-plant demonstration.
- Scientific support should sufficiently relate to the process, product, and hazard. (critical operational parameters).
- Appendix 2.1 gives examples of different types of support documentation.
Appendix 2.1 Validation – Establishing shelf-life of the product

- An establishment needs to establish the shelf-life of the product through a challenge study, shelf-life study, or other supporting documentation.
- Although establishments are not required to label product with a use-by date, it is recommended.
- For an AMA or AMP, a shelf-life study is important to perform as part of the challenge study.
- Both refrigeration (e.g. 40°F) and slightly abusive temperatures (e.g. 45°F) should be used in study.
Listeria Control Guideline – Chapter 2

Appendix 2.2 Sanitation

Sanitation is the ‘cornerstone’ of Listeria control in the post-lethality environment.

Establishments are required to develop and implement written SSOPs (9 CFR 416.16).

Proper and effective sanitation involves both cleaning and sanitizing, and verifying effectiveness.
Listeria Control Guideline – Chapter 2

Appendix 2.2 Sanitation

Understand sources of Lm as well as niches (reservoirs and harborage sites where Listeria can grow) within the operation.

Examples include:

• Drains, cracks in floors, hollow rollers, switches, wheels, cracked hoses, trash cans, rusty surfaces on equipment.....

• Bins, totes, tubs, or other containers...

• Peelers, slicers, shredders, blenders, brine chillers....
Appendix 2.2 Sanitation – General principles

• Removal of solids
• Clean floors
• Pre-rinse equipment
• Use effective detergent
• Properly rinse
• Inspect equipment for solid removal
• Sanitize - top to bottom (equipment followed by floor)
• Most effective – acidic quat, peracetic acid, and chlorine dioxide
• Rotate sanitizers
• Remove excess moisture
Listeria Control Guideline – Chapter 2

Appendix 2.2 Sanitation – Operational Sanitation Procedures to Prevent Cross Contamination

Each of these will be discussed:

• Control temperature and air handling units
• Equipment design
• Traffic control
• Employee hygiene
• Control cross contamination
• Control sanitation during and after construction
Listeria Control Guideline – Chapter 2

Controlling Temperature and Air Handling Units

• Maintain cold temperature (<50ºF) in packaging room for products to be refrigerated or frozen.
• Positive air pressure movement from RTE to raw areas.
• Clean cooling units and air handling units at a regular frequency.
• Eliminate dripping condensate and standing water.
Listeria Control Guideline – Chapter 2

Equipment Design

• Equipment should be easy to disassemble and clean.
• Investigate harborage sites (such as hollow rollers).
• Purchase equipment with sanitation in mind (easy to clean and, durable surfaces).
• Use preventive maintenance for equipment upkeep.
• Replace or repair pitted, corroded, and cracked equipment.
• Use separate equipment for RTE areas.
• Use lubricants with listericidal additives.
• Use procedures for tool cleaning.
Listeria Control Guideline – Chapter 2

Traffic Control

• Establish traffic patterns that minimize movement of personnel, equipment, containers, etc. from raw to RTE areas.
• Put in separation devices where possible.
• Install floor foamers.
• Use foot baths (only where necessary).
Listeria Control Guideline – Chapter 2

Employee Hygiene

• Proper hand washing.
• Strategically located hand washing stations.
• Use gloves in RTE areas where appropriate.
• Follow clothing changing procedures for entering and leaving RTE areas.
• Minimize workers moving from raw to RTE areas.
• Train employees and monitor their activities to ensure compliance.
Listeria Control Guideline – Chapter 2

Controlling cross-contamination

• Procedures to prevent ingredients from becoming a source of cross contamination.
• Pest control.
• Remove standing water and dripping condensation.
• Procedures to clean surfaces after potential FCS contamination events.
• Pallet movement.
• Eliminate the use of high pressure hoses around RTE areas.
Listeria Control Guideline – Chapter 2

Control sanitation during and after construction

• Best is to shut down impacted operations.
• Dust control.
• Create negative pressure in construction zone(s).
• Partition construction area(s) with covers.
• Cover and handle construction debris in a way that does not contaminate RTE areas.
• Intensified cleaning, followed by verification testing.
Listeria Control Guideline – Chapter 2

Appendix 2.2 Sanitation – Intensified cleaning following a positive Listeria sample

• Thoroughly clean and scrub site.
• Attempt to identify harborage site or cross contamination pathway. Clean as needed.
• Disassemble equipment and soak equipment parts overnight.

Retest, then consider if needed:
• Steam application.
• Consider replacing or repairing problematic equipment (pitted, corroded, etc).
• Suspend operations.
Listeria Control Guideline – Chapter 2

Appendix 2.2 Sanitation – Determining the Effectiveness of the Sanitation Program

• Total Plate Count (TPC, APC, SPC).
• ATP Bioluminescence.
• Keep records of implementation, monitoring, and testing of SSOPS.
Questions about Chapter 2?
Listeria Control Guideline – Chapter 3

What’s New?

• Sampling and testing information expanded.
• New outline for Listeria Control Program.
• Sampling frequency table simplified.
• Guidance on testing methods further explained and new sampling guideline provided.
• Provides optional guidance on collecting product and non-contact surface samples.

Reference: FSIS Listeria Guidelines Revision (Barlow presentation, Oct 2012)
Listeria Control Guideline – Chapter 3

Sampling for Lm or an Indicator Organism

- Establishments in Alt 2b and Alt 3 are required to test their FCS in order to verify sanitation in the environment.
- If a product or FCS is positive for Lm, then the product is considered adulterated.
- A finding of *Listeria* ssp. or LLO (Listeria-like organism) indicates conditions where Lm may be present, but the product is not considered adulterated (however, establishments are expected to take corrective action).
Listeria Control Guideline – Chapter 3

Listeria Control Program Considerations

- Many plants test for Listeria species or Listeria-like (LLO) because they are indicators for Lm.
- Establishments are expected to have Routine and Enhanced Sampling Programs.
- Step-by-step sample collection and laboratory methods should be included.
- The establishment should list all of the food contact surfaces (FCS) samples they will collect as part of their Listeria Control Program.
- A Hold and Test program should be included as part of the Listeria Control Program.
Question: My establishment tests FCS for *Listeria* ssp. and found a positive result. Are we required to further analyze the sample to determine if it’s positive for Lm?

Answer: No. There is no requirement that establishments further analyze *Listeria* ssp. positives on FCS to determine if they are positive for Lm. However, the establishment is required to take corrective actions, depending upon their control alternative.
Listeria Control Guideline – Chapter 3

Listeria Control Program Considerations

- Many plants test for Listeria species or Listeria-like (LLO) because they are indicators for Lm.
- Establishments are expected to have Routine and Enhanced Sampling Programs.
- Step-by-step sample collection and laboratory methods should be included.
- The establishment should list all of the food contact surfaces (FCS) samples they will collect as part of their Listeria Control Program.
- A Hold and Test program should be included as part of the Listeria Control Program.
Listeria Control Guideline – Chapter 3

Listeria Control Program Considerations

- The expectation in establishments with Alt 2b and 3, is that all possible FCS’s in the post-lethality processing area will be identified.

- Each piece of equipment should be listed, but not necessarily all the sampling sites on that piece of equipment.

- Establishment should collect a combination of random and discretionary samples.

- Initially, all samples should be random, but as data are-generated, sampling should become more risk based.

- FSIS recommends a 12” X 12” sample area.
Listeria Control Guideline – Chapter 3
Listeria Control Program Considerations

- Minimum routine sampling frequencies (Table 3.1):

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Daily Production Volume Ranges (lbs)**</th>
<th>Food Contact Surface (FCS) Testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative 1</td>
<td></td>
<td>Minimum Frequency*</td>
</tr>
<tr>
<td>Alternative 2a and 2b</td>
<td></td>
<td>2 times/year/line (every 6 months)</td>
</tr>
<tr>
<td>Alternative 3 Non-deli, non-hotdogs</td>
<td>1 time/month/line (monthly)</td>
<td></td>
</tr>
<tr>
<td>Alternative 3 Deli, hotdogs HACCP Size:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very small</td>
<td>1-6,000</td>
<td>1 times/month/line (monthly)</td>
</tr>
<tr>
<td>Small</td>
<td>6,001 – 50,000</td>
<td>2 times/month/line (every 2 weeks)</td>
</tr>
<tr>
<td>Large</td>
<td>50,001-&gt;600,000</td>
<td>4 times/month/line (weekly)</td>
</tr>
</tbody>
</table>

*At least 3-5 samples per production line should be sampled each time (every 6 months, quarterly, monthly, biweekly or weekly).

**Establishments producing deli or hotdogs under Alt. 3 may decide to collect samples based on HACCP size or production volume.
Listeria Control Guideline – Chapter 3

Sample Frequency Considerations

- Intermittent Production – sampling may be done at a lower frequency based on the number of days of production.
- Samples should be representative of conditions and collected over different shifts and seasons.
- Establishments are expected to increase their sampling frequency in the event of a positive finding or under special situations (construction, addition of new product, breakdowns, roof leaks, higher than normal APC counts)
Listeria Control Guideline – Chapter 3

Sampling Method Expectations

• Sample size – 12”X12” (except for small niche samples)
• Sample collection – sponge moistened with neutralizing broth or similar.
• When – Some pre-op, most taken 3 hours into operations
• Integrity – Samples stored at refrigerated temperatures.
• Compositing – not recommended, but if so, no more than 5 samples per composite.
Listeria Control Guideline – Chapter 3

Testing Method Expectations

• An enrichment step needed.
• Sample collection – sponge moistened with neutralizing broth or similar.
• Entire sponge or swab is analyzed.
• Method has been validated.
Listeria Control Guideline – Chapter 3

Testing Indirect and Non-Food Contact Surfaces (NFCS)

• May be done as part of an establishment’s Listeria Control Program.

• If an NFSC tests positive for Lm, the product is not considered adulterated, but a positive finding could indicate insanitary conditions.

• While there is no requirement that establishments perform follow-up testing in response to NFCS samples, it is important that establishments address the source of positives.
Listeria Control Guideline – Chapter 3

Product Testing

- Although product testing is not required (except under hold and test conditions for Alt 2b and 3), product testing can be used as part of an establishment’s Listeria Control Program.
- Product that tests positive for Lm would be considered adulterated and the establishment would be expected to recall the product.
- Confirmation tests should be conducted on samples found positive for Listeria species or LLO.
- Establishment is encouraged to hold all product lots being tested until results are received.
Listeria Control Guideline – Chapter 3

Appendix 3.1 – FSIS Sampling Programs
Appendix 3.2 – FSIS Sampling Procedure
Appendix 3.3 - Sample Collection and Testing Methods
Questions about Chapter 3?
Listeria Control Guideline – Chapter 4

What’s New?

• Provides expectations for follow-up sampling and intensified sampling following positive results.
• Table for follow-up sampling provided.
• New information on detecting and addressing Listeria trends.
• Findings from FSAs provided.

Reference: FSIS Listeria Guidelines Revision (Barlow presentation, Oct 2012)
Listeria Control Guideline – Chapter 4

Enhanced Sampling Program

• In the Listeria Control Program, the establishment should specify the number of samples it will collect during follow-up sampling.

• FSIS recommends that 3 to 5 samples are collected from the suspect site.

• Upstream sampling can assist in determining the source.
### Table 4.1 Timeframe for Follow-up Sampling, Intensified Sampling, and Hold and Test Performed in Response to Positive Food Contact Surface Results

<table>
<thead>
<tr>
<th>Alternative</th>
<th>After the 1st positive</th>
<th>After the 2nd Positive</th>
<th>After the 3rd Positive</th>
<th>After Multiple Positives</th>
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</thead>
<tbody>
<tr>
<td>Alternative 1</td>
<td>Follow-up sampling</td>
<td>Intensified sampling</td>
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<td>Hold and test recommended</td>
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<td>Alternative 2, Choice 1 (2a)</td>
<td>Follow-up sampling</td>
<td>Intensified sampling</td>
<td></td>
<td>Hold and test recommended</td>
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<tr>
<td>Alternative 2, Choice 2 (2b)</td>
<td>Follow-up sampling</td>
<td>Intensified sampling</td>
<td>Hold and test required* (recommended after 3rd positive)</td>
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<td>Alternative 3</td>
<td>Follow-up sampling</td>
<td>Intensified sampling</td>
<td>Hold and test required* (recommended after 3rd positive)</td>
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<td>Alternative 3 (deli or hotdog)</td>
<td>Follow-up sampling required</td>
<td>Intensified sampling</td>
<td>Hold and test required after 2nd positive.</td>
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</table>

*Establishments in Alt. 2b and 3 (non-delis or hotdog producers) are required to identify when they will hold and test product. FSIS recommends that they do so after the 3rd consecutive positive result.
Listeria Control Guideline – Chapter 4

Intensified Sampling

• Intensified samples collected from FCS, indirect, and NFCS, and product.
• Escalated intensified cleaning and sanitation.
• The finding of three consecutive positive samples for *Listeria* spp. from the same sampling site indicates a serious contamination issue.
Listeria Control Guideline – Chapter 4

Other sections in Chapter 4.

• Hold and Test
• ICMSF Sampling Plans for Lm
• Reprocessing Lm Contaminated Product
• Determining Listeria Trends
• Appendix 4.1 – Sampling Scenarios by Alternative
• Appendix 4.2 - Hold and Test Scenarios
• Appendix 4.3 – Listeria Trends Examples
• Appendix 4.4 – Findings from FSAs
THANK YOU!

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Controlling Listeria
What you need to know about USDA’s new guidance

November 27, 2012 Webinar

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