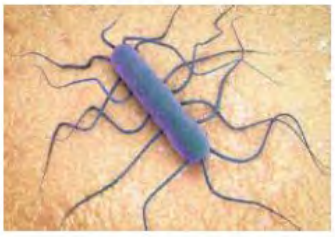
Listeria monocytogenes (Lm) Regulations
9 CFR Part 430



Introduction

Listeria monocytogenes (Lm)

- What is *Lm* and what illness does it cause?
- Identify the reasons why *Lm* is considered a public health threat in RTE meat and poultry products and who is considered to be high risk.
- How do meat and poultry products become adulterated by *Lm*?
- Verify compliance with the regulations in 9 CFR 430 by following instructions in FSIS Directive 10,240.4 Revision 4 "Listeria Rule Verification Activities"
- Verify establishments are performing all requirements for controlling *Lm* in the processing environment.
- Identify the resources available to establishment & FSIS personnel to ensure compliance with *Lm* regulatory requirements.

Listeria monocytogenes (*Lm*)

Regulations

Terminology

Listeria monocytogenes (Lm)

L. monocytogenes Public Health Significance

- Widespread pathogen – causes listeriosis.

  Linked to ready-to-eat (RTE) meat and poultry products exposed to post-lethality processing environment prior to packaging.

- Very tolerant of freezing, drying, salt, heat, pH, low water activity.

- High risk = pregnant women, young, elderly, immuno-compromised.

9 CFR 430.1 Terminology

The next slides define terms needed for this training module.

Ready-to-Eat (RTE) Product – An edible meat or poultry product that does not require any additional preparation by the consumer to achieve food safety.

Deli Product –A ready-to-eat meat or poultry product that typically is sliced, either in an official establishment or after distribution from an official establishment, and typically is assembled in a sandwich for consumption.

Hotdog Product – RTE meat or poultry frank, frankfurter, wiener, or other product that complies with a standard of identity as defined in 9 CFR 319.180 and 319.181.

9 CFR 430.1 Terminology

Lethality Treatment – a process an establishment uses to eliminate or reduce the number of pathogenic microorganisms on or in a product for that product to be safe for human consumption.

Antimicrobial Agent – a substance in or added to RTE product that will suppress or inhibit *Lm* growth in the product throughout the entire shelf life of that product.

Antimicrobial Process – an operation (e.g., freezing, fermentation) applied to RTE product that suppresses or limits *Lm* growth in the product throughout the entire shelf life of that product.

9 CFR 430.1 Terminology

Post-lethality Treatment (PLT) – additional lethality treatment following the initial lethality process that is applied to either post-lethality exposed final product or the sealed product package to reduce or eliminate *Lm* contamination in the post-lethality environment.

Post-lethality Processing Environment – an area in an establishment where product that has been subjected to an initial lethality treatment is conveyed for further processing or packaging.

Post-lethality Exposed (PLE) Product – RTE product that comes into direct contact with a FCS in a post-lethality processing environment after the lethality treatment has been applied.

9 CFR 430.1 Terminology

Prerequisite Program (PRP) – a procedure or set of procedures designed to provide the basic environmental or operating conditions necessary for the production of safe, wholesome food.

Indicator Organism – a type of bacteria (often *Listeria* spp. in RTE establishments) used to determine when objectionable microbial conditions occur either in food or processing, production areas, or storage rooms. The presence of these microorganisms means pathogens may be present in the product or the processing environment.

Listeria Alternatives per 9 CFR 430

Alternative 1- 9 CFR 430.4(b)(1) Use of a post-lethality treatment (which may also be the antimicrobial agent or process) that reduces or eliminates microorganisms on the product AND an antimicrobial agent or process that suppresses or limits the growth of L. monocytogenes.

Alternative 2- 9 CFR 430.4(b)(2) Use of either a post-lethality treatment (which may be the antimicrobial agent or process) that reduces or eliminates microorganisms on the product OR an antimicrobial agent or process that suppresses or limits the growth of L. monocytogenes.

Alternative3- 9 CFR 430.4(b)(3) Use of sanitation measures only

9 CFR 430.4 Verifying Compliance

Lm Regulation 430:

Applies to RTE product exposed to the environment following the lethality process.

Not ready-to-eat (NRTE) product and product not post-lethality exposed is NOT subject to *Lm* regulation 9 CFR 430.4.

Review Question

If an establishment produces hot dogs exposed to the environment after peeling, does it have to comply with Part 430 and choose one of the 3 alternatives?

- No
- Yes

Fully Cooked Not Shelf Stable

Fully Cooked Not Shelf Stable (FCNSS) Product

- RTE products receive lethality from full cooking step.

-Some products have standards of identity or customary or usual identity name requiring them to be ready-to-eat. Examples of items in this category: Hot Dogs and Roast Beef

Verifying Compliance with Part 430.4

Some establishments may produce fully cooked products (casserole, meat balls, etc.) that have no standard of identity requirement or customary or usual identity and choose to label it as NRTE (Not Ready-to-Eat).

The establishment would need to ensure that documentation exists to support the selected HACCP category.

Classify these under Heat-Treated-Not Fully Cooked-Not Shelf Stable (HT- NFC-NSS)

Verifying Compliance with Part 430.4

If establishment is subject to 9 CFR 430 & fails to meet these requirements contact the District Office through supervisory channels.

9 CFR 430.4 Controls

9 CFR 430 Compliance:

Verify RTE processing alternative selected.

Verification results demonstrate effectiveness of establishment control measures and made available upon request.

Verify establishment compliance with chosen alternative through appropriate SSOP or HACCP tasks in PHIS.

Listeria Regulation 9 CFR 430

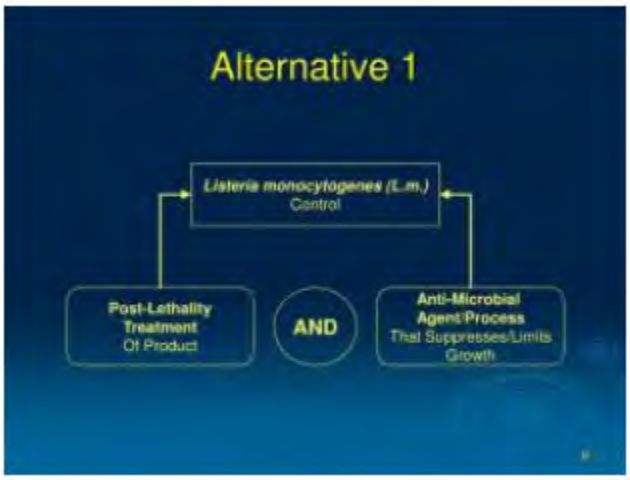
Intended to further reduce incidence of *Lm* in post-lethality exposed RTE meat and poultry products.

Includes 3 alternatives establishments use to control *Lm*.

Establishments required to maintain sanitary conditions.

Contact DO if establishment subject to Part 430 fails to meet requirements.

Listeria monocytogenes Regulations



Understanding *Lm* Regulations Alternative #1

Thought Process to Determine Compliance with 9 CFR 430

Gather information by asking questions

Assess the information

Determine compliance

Remember the "GAD" process is the thought process that the IPP will use for assessing all of the *Lm* regulatory alternatives.

Listeria Control Alternative 1

9 CFR 430.4(b)(1) Alternative 1:

- Post-lethality treatment (may also be antimicrobial agent or process)
    - Reduces or eliminates *Lm* on product

-AND-

- Antimicrobial agent or process
    - Suppresses or limits *Lm* growth throughout product shelf life ***AND***
    - Sanitation

Thought Process to Determine Compliance with 9 CFR 430

Alternative 1: Post-lethality treatment and anti-microbial agent/process:

Is the post-lethality treatment incorporated in the HACCP plan?

Does the establishment have validation data for the post-lethality treatment in accordance with 9 CFR 417.4 and 430.4(b)(1)(ii)?

Is the establishment implementing the post-lethality treatment as described in the HACCP plan?

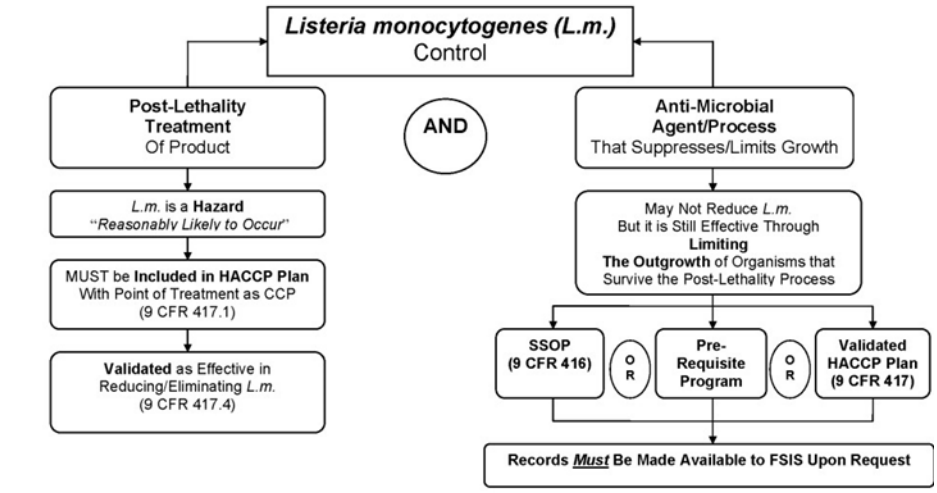
Thought Process to Determine Compliance with 9 CFR 430

Alternative 1: Post-lethality treatment and anti-microbial agent/process:

Has the establishment incorporated the use of the anti-microbial agent or process to suppress or limit the growth of *L. monocytogenes* in its HACCP plan, its Sanitation SOPs, or a pre-requisite program?

Is the establishment using the anti-microbial agent or process as described in its HACCP plan, its Sanitation SOPs, or a pre-requisite program?

Alternative 1



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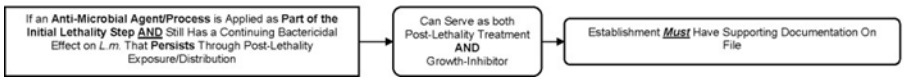


Assessing/Verifying *Lm* Alternative 1 Information

Assess the gathered information:

Review the HACCP plan Review

validation data Review HACCP

records

Review the SSOP and/or pre-requisite programs

Review Sanitation SOP and/or pre-requisite program records

Determining Compliance with 9 CFR 430

Compliance

Non-compliance

- NR
- Verify correct and preventive actions

Alternative 1 Compliance Example

Summary of Compliance Example #1: The product in this example is not shelf stable.

Because the establishment is using reduced pH and water activity as the growth inhibitors. In addition to using steam pasteurization as the post- lethality treatment.

Then= **Compliance**

Alternative 1 Non-compliance Example

The establishment has a post-lethality treatment to reduce or eliminate *Lm* incorporated into the HACCP plan, but does not have the use of the antimicrobial agent or process to suppress or limit the growth of *Lm* incorporated into its HACCP plan, its Sanitation SOP, or a prerequisite program. (Cite 430.4(b)(1) and 417.5(a)(1) & (2)).

What Makes it a Non-Compliance?

If the establishment **does not have** the following:

Antimicrobial Agent/Process (AMAP) in the HACCP plan, SSOP or Pre-requisite Program.

-AND-

Post Lethality Treatment (PLT).

Then = Non-compliance

Why? Alternative 1 states that the establishment must have BOTH a PLT and an AMAP.

Listeria monocytogenes Regulations

Understanding *Listeria monocytogenes*

Regulations Alternative #2 Choice 1 (Alt. 2a) or Choice 2 (Alt. 2b)

Thought Process to Determine Compliance with 9 CFR 430

Gather information by asking questions

Assess the information

Determine compliance

Remember the "GAD" process is the thought process that the IPP will use for assessing all of the *Lm* regulatory alternatives.

Listeria Control Alternative 2

9 CFR 430.4(b)(2): Alternative 2

Alternative 2, Choice 1 (Alt. 2a) - The establishment chooses to use a post-lethality treatment (which may be an antimicrobial agent) that reduces or eliminates Lm on the product.

Alternative 2, Choice 2 (Alt. 2b) - The establishment chooses to use an antimicrobial agent or process that suppresses or limits the growth of Lm.

Alternative 2 Options

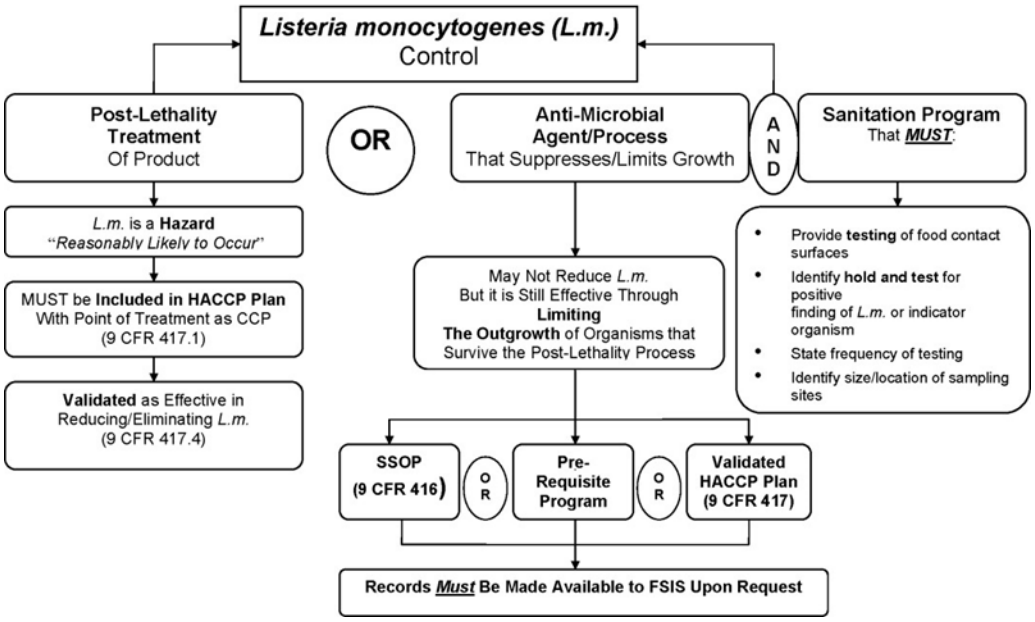
Alternative 2, Choice 1 (Alt. 2a) or Choice 2 (Alt 2B)

Choice 1 (Alt. 2a)– Post-lethality treatment

-OR-

Choice 2 (Alt. 2b) – Antimicrobial agent or process, FCS testing

Alternative 2



Gather Information by Asking Questions

Alternative 2 Choice 1 (Alt. 2a):

Is the post-lethality treatment (which may be an antimicrobial agent) incorporated in the HACCP plan?

Does the establishment have validation data for the post-lethality treatment in accordance with 9 CFR 417.4?

Is the establishment implementing the post-lethality treatment as described in the HACCP plan?

Gather Information by Asking Questions

Alternative 2 Choice 2 (Alt. 2b):

Has the establishment incorporated the use of the antimicrobial agent or process to suppress or limit the growth of *L. monocytogenes* in its HACCP plan, its Sanitation SOPs, or a prerequisite program?

Is the establishment using the antimicrobial agent or process as described in its HACCP plan, its Sanitation SOPs, or a prerequisite program?

Gather Information by Asking Questions

Alternative 2 Choice 2 (Alt. 2b): How does the establishment demonstrate that the sanitation procedures are preventing *Lm* from being in the post-lethality processing environment? It uses a microbial sampling program.

Provide for testing of food contact surfaces in the post-lethality processing environment to ensure that the surfaces are sanitary and free of *L. monocytogenes* or of an indicator organism?

Identify the conditions under which the establishment will implement hold-and-test procedures following a positive test of a food-contact surface for *L. monocytogenes* or an indicator organism?

Gather Information by Asking Questions

Alternative 2 Choice 2 (Alt. 2b):

Does the establishment's testing for verifying the on-going effectiveness of their sanitation procedures:

- State the frequency with which testing will be done?
- Identify the size and location of the sites that will be sampled?
- Include an explanation of why the testing frequency is sufficient to ensure that effective control of *L. monocytogenes*, or an indicator organism, is maintained?
- -Identify the conditions under which the establishment will implement Hold & Test procedures following a positive test of a FCS for *Lm* or an indicator organism?

Lm Sampling Frequencies

Measures and procedures for control of *Lm* decrease in strength from Alternative 1 to 3.

FSIS recommends a frequency of FCS testing for establishments that select Alternative 2 of quarterly per line.

The key is that the establishment must have support for the frequency it selects for FCS testing.

Scientific articles or historical data that includes testing are ways to support the frequency of testing.

Assess the Information

- Review the HACCP plan
- Review validation data
- Review HACCP records
- Review the SSOP and/or pre-requisite programs
- Review Sanitation SOP and/or pre-requisite program records

Determine Compliance

- Compliance
- Non- compliance
  - NR
  - Verify corrective and preventive action

Alternative 2 Choice 1 (Alt. 2a) Compliance

Alternative 2 Choice 1 (Alt. 2a) Summary: Since the establishment uses high pressure processing (HPP) as the post-lethality treatment (PLT).

Alternative 2 Choice 1 (Alt. 2a) is the use of a Post Lethality Treatment. The establishment is using a PLT-High Pressure Processing. Therefore, the establishment complies with Alternative 2, Choice 1 (Alt. 2a) of the *Listeria* regulatory requirements.

Then = **Compliance**

Alternative 2 Choice 2 (Alt. 2b) Compliance

Alternative 2 Choice 2 (Alt. 2b) Summary:

Because the establishment is using freezing as an antimicrobial process to suppress or limit *Lm* growth in the RTE product during storage and sanitation measures to prevent *Lm* or an indicator organism in the post-lethality environment.

Then= **Compliance**

Noncompliance Example

The following is an example of noncompliance with Alternative 2:

The written sanitation procedures the establishment is using to meet the requirements of Alternative 2 Choice 2 (Alt. 2b) only addresses the testing of non-food contact surfaces in the post-lethality processing environment to ensure that the surfaces are sanitary and free of *Lm* or of an indicator organism. (Cite 430.4(b)(2), 416, and 417.5(a)(1) & (2)).

What Makes it a Noncompliance?

If the establishment **does not have** the following:

Testing of Food Contact Surfaces in the post lethality environment to ensure that the surfaces are sanitary and free of *Lm* or an indicator organism.

Then = Non-compliance

Why? Alternative 2 Choice 2 (Alt. 2b) states that the establishment must sample Food Contact Surfaces as part of the *Listeria* control program.

Review Question

Establishments are required to comply with section 9 CFR 430.4 (Control of *Listeria monocytogenes*) if they produce:

- Ready-to-eat products exposed to the environment after the lethality step
- Ready-to-eat products
- Not ready-to-eat products with secondary inhibitors
- Ready-to-eat products processed and sold in impermeable packaging

Review Question

Use of an antimicrobial agent or process that suppresses or limits the growth of L. monocytogenes, along with a sanitation program addressing the testing of food contact surfaces to verify the effectiveness of the sanitation procedures.

- Alternative 2, Choice 2
- Alternative 2, Choice 1
- Alternative 1

Listeria monocytogenes Regulations



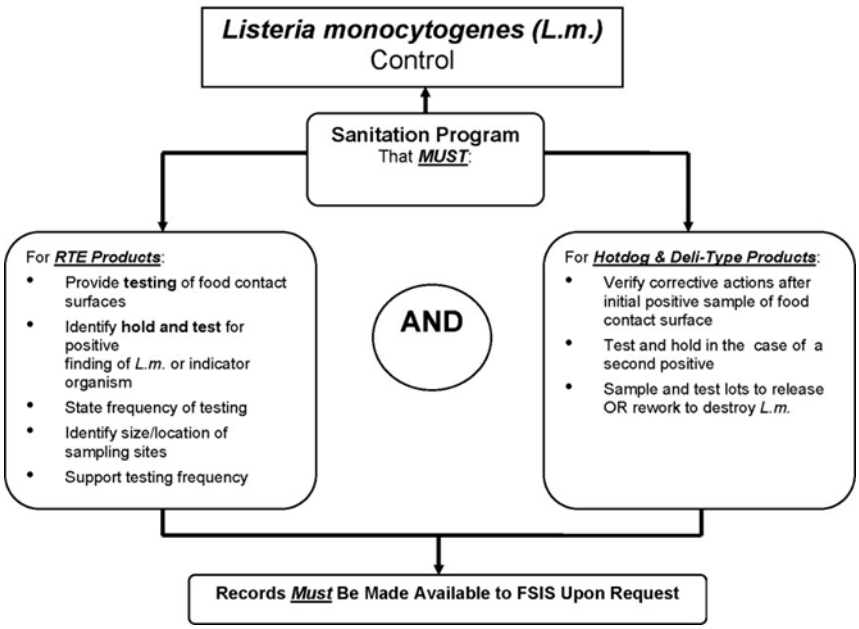
Lm Regulations Alternative #3 - Sanitation Only

Listeria Control Alternative #3-Sanitation Only

9 CFR 430.4(b)(3): Alternative 3-Sanitation Measures Only

- Sanitation only
- *Lm* or indicator organism FCS testing
    - Sampling frequency based on establishment size or volume (large, small, very small) and whether or not the establishment produces deli meats and hotdogs.

Alternative 3



Alternative #3 Sanitation Verification

Gather Information by asking questions:

Does the establishment have on-going verification testing procedures designed to:

Have sanitation measures incorporated in its HACCP, Sanitation SOP, or other prerequisite program?

Test food contact surfaces in the post-lethality processing environment to ensure that the surfaces are sanitary and free of *L. monocytogenes* or of an indicator organism?

Identify the conditions under which the establishment will implement hold-and-test procedures following a positive test of a food-contact surface for *L. monocytogenes* or an indicator organism?

Alternative #3 Sanitation Verification

Gather Information by asking questions:

Does the establishment have on-going verification testing procedures designed to: State

the frequency with which testing will be done?

Identify the size and location of the sites that will be sampled?

Include an explanation of why the testing frequency is sufficient to ensure that effective control of *L. monocytogenes*, or an indicator organism, is maintained?

Alternative #3 Sanitation Verification

Food Contact Surface Testing- establishment should take into account the following: Written

program must state the size and location of the sites that will be sampled.

Remember that only FCS testing is required. Sampling of non-food contact surfaces and product samples is not required.

The establishment MUST document the rational thought process it used in determining the frequency of FCS testing and why that frequency will ensure effective control of *Lm* or an indicator organism.

Alternative #3 Sanitation Verification

Gather Information by asking questions:

For Deli & Hot Dog products:

The frequency for testing FCS for *Lm* or an indicator organism is expected to be greater in establishments that produce **deli and hot dog type RTE products under Alternative 3.**

Has the establishment verified corrective action after a positive test for *Lm* or an indicator organism on a food contact surface and have they implemented follow-up testing?

Alternative #3 Sanitation Verification

Gather Information by asking questions:

For Deli & Hot Dog products:

If follow-up testing resulted in a second positive test, did the establishment hold lots of product that may have become contaminated by contacting the food contact surface?

Alternative #3 Sanitation Verification

Gather Information by asking questions:

For Deli & Hot Dog products:

Did the establishment sample and test product before it entered into commerce?

Alternative #3 Sanitation Verification

Gather Information by asking questions:

For Deli & Hot Dog products:

Has the establishment documented the results of the testing?

Did they rework the product using a process that has been validated to achieve at least a 5-log *Lm* reduction?

Assess Alternative #3 Information

Review the HACCP plan, SSOP and/or prerequisite programs

Review HACCP records, SSOP records, or the records associated with the prerequisite program

Alternative #3 Compliance Example Summary

Alternative 3 Example Compliance Summary: Since the establishment program included the following *Lm* regulatory requirements:

Testing of FCS in the post lethality processing environment.

Identified conditions/procedures for Hold & Test in the event of a FCS positive for an indicator organism (*L. spp.*).

The size, location of sample sites and frequency of sampling was identified. Thought

process as to why the testing frequency was sufficient.

Then = **Compliance**

Noncompliance Example with Alternative #3

The following is an example of Noncompliance with Alternative 3:

The establishment does not have sanitation measures incorporated in its HACCP, Sanitation SOP, or other prerequisite program. (Cite 430.4(b)(3), and 417.5(a)(1)&(2)).

What Makes This a Noncompliance?

Summary for example of Noncompliance with Alternative 3:

If: an establishment does not have a program for *Listeria* control incorporated into its HACCP, SSOP or other Pre-requisite program, that tests FCS to ensure that the surfaces are clean and free of *Lm* or an indicator organism.

Then = Noncompliance

Noncompliance and Enforcement

Noncompliance with 9 CFR Part 430:

- Issue NR for noncompliance with 9 CFR 430 regulations.

  Cite appropriate 430 regulation and applicable HACCP or SSOP regulation. Verify establishment corrective actions and follow-up measures.

- Contact DO if more action is needed.

CONTROL REQUIREMENTS for *LISTERIA L. monocytogenes*

Requirements	→ Increasing Risk Levels and Frequency of FSIS Verification Testing →				
	ALTERNATIVE 1	ALTERNATIVE 2		ALTERNATIVE 3	
	Post-lethality Treatment AND Antimicrobial Agent or Process	Post-lethality Treatment OR Antimicrobial Agent or Process		Sanitation and Testing Program	
		Choice 1: Post-lethality Treatment	Choice 2: Antimicrobial Agent or Process	Non-deli, Non-hotdog	Deli or hot-dog product
Validate effectiveness of post-lethality treatment (PLT). Must be included as a CCP in the establishment's HACCP Plan and should show at least a 1-log reduction in *Lm* prior to distribution of the product into commerce	X	X			
Document effectiveness of antimicrobial agent or process: Must be included as part of the establishment's HACCP, Sanitation SOP, or Prerequisite Program and should demonstrate no more than 2-logs growth of *Lm* over the estimated shelf life.	X		X		
Sanitation Program Requirements			X	X	X
Testing food contact surfaces (FCS) in the post-lethality processing environment for *Lm* or an indicator organism.			X	X	X
State testing frequency.			X	X	X
Identify size and location of sites to be sampled.			X	X	X
Explain why testing frequency is sufficient to control *Lm* or an indicator organism.			X	X	X
Identify conditions for Hold-and-Test, when FCS (+) for *Lm* or an indicator organism.			X	X	X
Additional Sanitation Program Requirements					
Follow-up testing to verify corrective actions are effective after 1st FCS (+) for *Lm* or an indicator organism. Includes testing of targeted FCS as most likely source and additional testing of the surrounding area.					X
If follow-up testing yields 2nd FCS (+), hold products that may be contaminated until problem is corrected as shown by FCS (-) in follow-up testing.					X
Hold and test product lots using a sampling plan that provides statistical confidence that the lots are not contaminated with *Lm* or an indicator organism. Release, rework, or condemn products based on results. Document results and product disposition.					X
Establishments in all three alternatives must maintain sanitation in accordance with 9 CFR 416.	X	X	X	X	X

Review Question

An establishment MUST implement hold and test procedures when a positive result for an indicator organism is found on a food-contact surface during follow-up testing (second consecutive food contact surface positive) if the establishment is producing:

- Non-deli and hot dog type RTE products exposed to the environment after the lethality treatment using Alternative 3
- RTE products exposed to the environment after the lethality treatment using Alternative 1, 2, or 3
- Deli and hot dog type RTE products exposed to the environment after the lethality treatment using Alternative 3.

Review Question

Sanitation measures only, in the HACCP plan, SSOP, or prerequisite program, including testing of food contact surfaces to verify the effectiveness of the sanitation procedures.

- Alternative 3
- Alternative 2 choice 2
- Alternative 2 choice 1

Listeria monocytogenes Regulations

Listeria monocytogenes Regulations Alternative Overview

Key Points of the *Lm* Regulation Module

Understand why *Lm* is of public health significance and how RTE product becomes adulterated with *Lm*. Understand the *Lm* Regulation 9 CFR 430.

Alternative 1 Uses BOTH a post lethality treatment (PLT) AND an anti-microbial agent or process (AMAP).

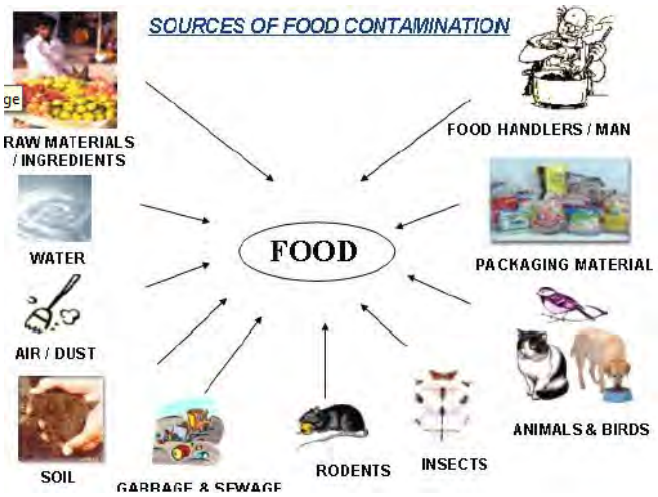
Alternative 2 uses a post lethality treatment OR an antimicrobial agent or process along with verification of sanitation procedures depending on the Alternative choice (Alt. 2a or 2b).

Alternative 3 uses Sanitation alone and additional environmental and product testing.

Key Points of the *Lm* Regulation Module continued

All 3 *Lm* Alternatives need good sanitation to prevent post-lethality contamination in accordance with 9 CFR part 416.

What actions the IPP should take in the absence of a RTE establishment not having *Lm* control measures.



Thought Process to Determine Compliance with 9 CFR 430

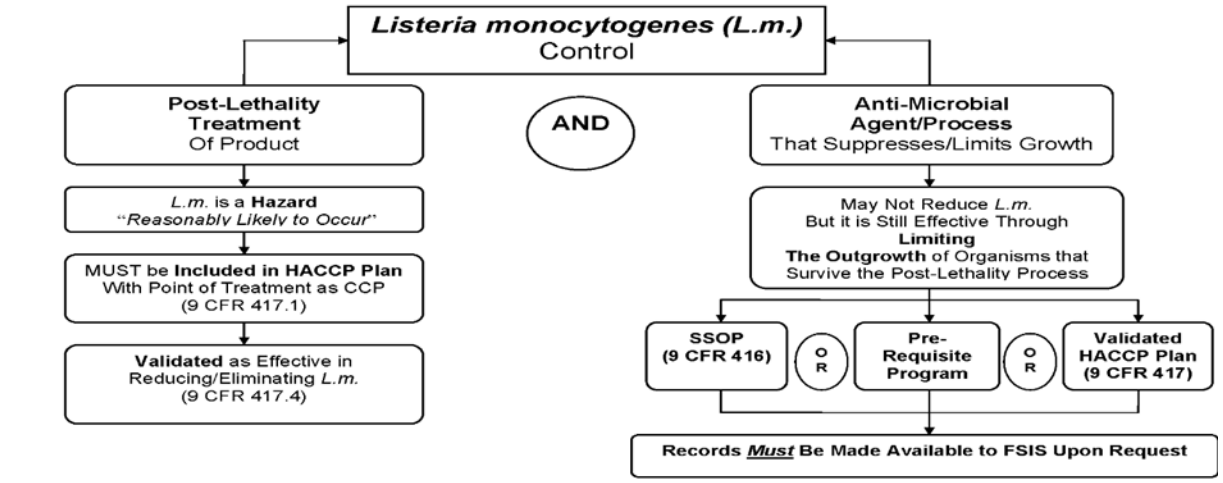
Gather information by asking questions

Assess the information

Determine compliance

Remember the "GAD" process is the thought process that the IPP will use for assessing all of the *Lm* regulatory alternatives.

Alternative 1



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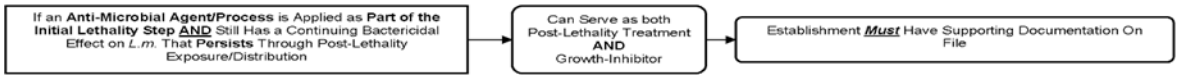
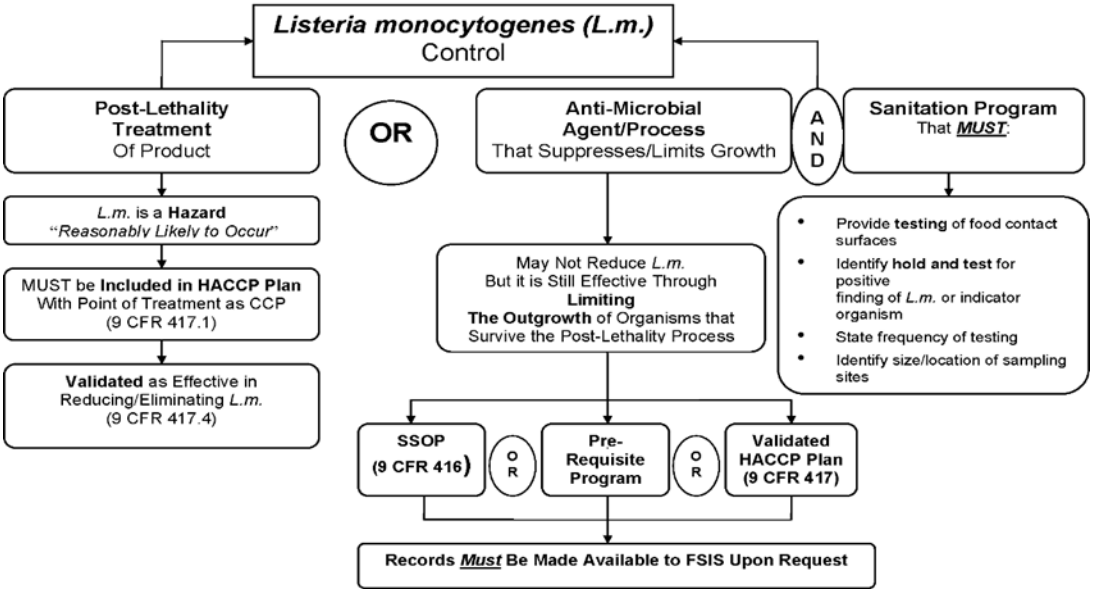
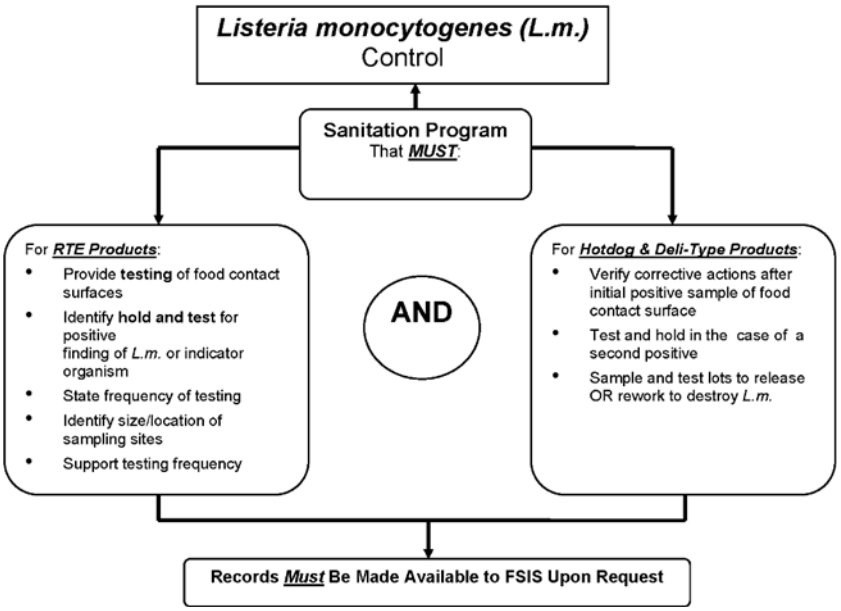


Alternative 2



Alternative 3



CONTROL REQUIREMENTS for *LISTERIA MONOCYTOGENES*

Requirements	→ Increasing Risk Levels and Frequency of FSIS Verification Testing →				
	ALTERNATIVE 1	ALTERNATIVE 2		ALTERNATIVE 3	
	Post-lethality Treatment AND Antimicrobial Agent or Process	Post-lethality Treatment OR Antimicrobial Agent or Process		Sanitation and Testing Program	
		Choice 1: Post-lethality Treatment	Choice 2: Antimicrobial Agent or Process	Non-deli, Non-hotdog	Deli or hot-dog product
Validate effectiveness of post-lethality treatment (PLT). Must be included as a CCP in the establishment's HACCP Plan and should show at least a 1-log reduction in *Lm* prior to distribution of the product into commerce	X	X			
Document effectiveness of antimicrobial agent or process: Must be included as part of the establishment's HACCP, Sanitation SOP, or Prerequisite Program and should demonstrate no more than 2-logs growth of *Lm* over the estimated shelf life.	X		X		
Sanitation Program Requirements			X	X	X
Testing food contact surfaces (FCS) in the post-lethality processing environment for *Lm* or an indicator organism.			X	X	X
State testing frequency.			X	X	X
Identify size and location of sites to be sampled.			X	X	X
Explain why testing frequency is sufficient to control *Lm* or an indicator organism.			X	X	X
Identify conditions for Hold-and-Test, when FCS (+) for *Lm* or an indicator organism.			X	X	X
Additional Sanitation Program Requirements					
Follow-up testing to verify corrective actions are effective after 1st FCS (+) for *Lm* or an indicator organism. Includes testing of targeted FCS as most likely source and additional testing of the surrounding area.					X
If follow-up testing yields 2nd FCS (+), hold products that may be contaminated until problem is corrected as shown by FCS (-) in follow-up testing.					X
Hold and test product lots using a sampling plan that provides statistical confidence that the lots are not contaminated with *Lm* or an indicator organism. Release, rework, or condemn products based on results. Document results and product disposition.					X
Establishments in all three alternatives must maintain sanitation in accordance with 9 CFR 416.	X	X	X	X	X

Review Question

Establishments are required to comply with section 9 CFR 430.4 (Control of *Listeria monocytogenes*) if they produce:

- RTE products exposed to the environment after the lethality step
- RTE products
- Not RTE products with secondary inhibitors
- RTE products processed and sold in impermeable packaging

Review Question

An establishment MUST implement hold and test procedures when a positive result for an indicator organism is found on a food-contact surface during follow-up testing (second consecutive food contact surface positive) if the establishment is producing:

- Deli and hot dog type RTE products exposed to the environment after the lethality treatment using Alternative 3
- RTE products exposed to the environment after the lethality treatment using Alternative 1, 2, or 3
- Non-deli and hot dog type RTE products exposed to the environment after the lethlity treatment using Alternative 3

Review Question

An establishment MUST identify the conditions under which it will implement hold and test procedures after a positive result for an indicator organism is found on a food-contact surface if the establishment is producing:

- Deli and hot dog type RTE products exposed to the environment after the lethality treatment using either Alternatives 1, 2, or 3
- Non-deli and hot dog type or deli or hot dog type RTE products exposed to the environment after the lethality treatment using either Alternative 2 (Choice 2) or Alternative 3
- Non deli and hot dog type RTE products exposed to the environment after the lethality treatment using Alternative 2, Choice 1.

Review Question

Use of only a post-lethality treatment (which may be the antimicrobial agent or process) that reduces or eliminates microorganisms on the product:

- Alternative 2 choice 2
- Alternative 3
- Alternative 2 choice 1

Review Question

Use of a post-lethality treatment (which may also be the antimicrobial agent or process) that reduces or eliminates microorganisms on the product AND an antimicrobial agent or process that suppresses or limits the growth of L. monocytogenes.

- Alternative 1
- Alternative 3
- Alternative 2 choice 1

Review Question

Sanitation measures only, in the HACCP plan, SSOP, or prerequisite program, including testing of food contact surfaces to verify the effectiveness of the sanitation procedures

- Alternative 3
- Alternative 2 choice 1
- Alternative 2 choice 2

Review Question

Use of an antimicrobial agent or process that suppresses or limits the growth of *L. monocytogenes*, along with a sanitation program addressing the testing of food contact surfaces to verify the effectiveness of the sanitation procedures

- Alternative 1
- Alternative 2 choice 2
- Alternative 2 choice 1