Listeria monocytogenes cross-contamination in retail deli operations questionnaire

Cornell University
2010

Martin Wiedmann (martin.wiedmann@cornell.edu; 607-254-2838)
Karin Hoelzer (kh294@cornell.edu; 607-255-1266)

Thank you for your participation!!!
Questionnaire – Expert opinion elicitation on *Listeria monocytogenes* in retail operations

Dear participating Retail Deli Expert,

Participation in this Questionnaire is completely voluntary, and all data gathered with this questionnaire will be held strictly confidential. However, this study relies strongly on the participation of experts like yourself and your contribution to this project will be of immense value to us.

**Start here:**

*Note:* As mentioned in the cover letter, this study is based on the “Delphi method”, a structured query of a panel of experts of which you are an integral part. For this method to be successful, we will contact you a few weeks after completing this questionnaire to provide you with a summary of the answers from the complete panel of experts, and invite you to participate in an anonymous telephone conference we will be hosting in collaboration with the Food Marketing Institute to discuss the results with all experts. Afterwards we will ask you to again answer a small number of questions, particularly those where experts disagreed. Your insights are of great importance to us and we want to make sure we are able to follow up with you. It is therefore very important for us to have your contact details, which will be held strictly confidentially.

Please list your name and contact details below so we can get in touch with you to follow up with you.

Name

Employer

Job Title

Email

Preferred Phone

Alternate Phone

State in which you are currently employed
Questionnaire – Expert opinion elicitation on *Listeria monocytogenes* in retail operations

Section 1

*Note:* In this section, we will ask a number of specific questions about cross-contamination in a retail deli operation. Many of these questions will ask you to estimate concrete numbers. To answer these questions, please (i) think about the range of values you believe are possible, then (ii) list the maximum and minimum value you think could ever practically occur, and finally (iii) please list the value you think would be most likely to occur. Please provide probability estimates as percent probability, where 100% indicates almost surely and 1% extremely unlikely. Unless otherwise stated, if your answer would depend on the country and/or year in question, please answer the question for the United States in 2006 (the last year for which we have observational data).

**Abbreviations:**

*Lm* = *Listeria monocytogenes*.

*Prob.* = Probability

1. Assume that the hands or gloves of an associate working in the retail deli operation are contaminated with *Lm*. How likely do you think is direct contamination from the hands or gloves of the associate to the product to occur?

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<tr>
<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
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2. How likely do you think it is that an unwrapped chub in a retail deli operation is positive for *Lm*? Please only think about the unwrapped chub, and do not consider potential contamination of the outer packaging.

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<tr>
<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
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3. Assume an unwrapped chub is contaminated with *Lm*. How likely do you think it is that this chub will contaminate other products in the retail deli operation through direct contact (again do not include contamination through potentially contaminated outer packaging)?

   (Continued on next page)

4. How confident are you that your most likely estimate for the last question (i.e., Question 3) is accurate? (Please circle the statement that best applies).

   a. Very confident
   b. Somewhat confident
   c. Neither confident nor unconfident
   d. Somewhat unconfident
   e. Very unconfident
   f. I don’t know how confident I am

5. Assume again an unwrapped chub is contaminated with *Lm*. How likely do you think it is that this chub will contaminate the hands or gloves of the associate slicing the chub?

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<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
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6. How confident are you that your most likely estimate for the last question (i.e., Question 5) is accurate? (Please circle the statement that best applies).

   a. Very confident
   b. Somewhat confident
   c. Neither confident nor unconfident
   d. Somewhat unconfident
   e. Very unconfident
   f. I don’t know how confident I am

7. Assume again an unwrapped chub is contaminated with *Lm*. If this chub is sliced on a slicer, what is the percent probability that this will contaminate the slicer blade?

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<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
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Questionnaire – Expert opinion elicitation on *Listeria monocytogenes* in retail operations

8. How confident are you that your most likely estimate for the last question (i.e., Question 7) is accurate? *(Please circle the statement that best applies).*
   a. Very confident
   b. Somewhat confident
   c. Neither confident nor unconfident
   d. Somewhat unconfident
   e. Very unconfident
   f. I don’t know how confident I am

9. Assume again an unwrapped chub is contaminated with *Lm* and this chub is sliced on a slicer. What is the percent probability that the slicer blade guard will be contaminated?

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<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
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10. How confident are you that your most likely estimate for the last question (i.e., Question 9) is accurate? *(Please circle the statement that best applies).*
   a. Very confident
   b. Somewhat confident
   c. Neither confident nor unconfident
   d. Somewhat unconfident
   e. Very unconfident
   f. I don’t know how confident I am

11. How likely do you think it is that *Lm* is present on a slicer blade in a retail deli operation during operation (i.e., mid-shift)?

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<tr>
<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
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12. Assume a slicer blade is indeed contaminated with *Lm*. Over the next hour, without intermittent cleaning, what percentage of product sliced on this slicer will become contaminated through this particular slicer? *(Continued on next page)*

13. How confident are you that your most likely estimate for the last question (i.e., Question 12) is accurate? *(Please circle the statement that best applies).*
   a. Very confident
   b. Somewhat confident
   c. Neither confident nor unconfident
   d. Somewhat unconfident
   e. Very unconfident
   f. I don’t know how confident I am

14. Assume again *Lm* is indeed present on the slicer blade. How likely do you think is transfer of *Lm* from the slicer blade to the hand or glove of an associate working in the retail deli operation (keeping in mind that *Lm* is indeed present on the slicer blade)?

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<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
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15. How confident are you that your most likely estimate for the last question (i.e., Question 14) is accurate? *(Please circle the statement that best applies).*
   a. Very confident
   b. Somewhat confident
   c. Neither confident nor unconfident
   d. Somewhat unconfident
   e. Very unconfident
   f. I don’t know how confident I am

16. In a retail deli operation during operation, how likely do you think it is that *Lm* is present on a slicer blade guard?

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<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
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</table>
17. Now assume \( Lm \) is indeed present on the slicer blade guard. How likely do you think is transfer of \( Lm \) from the slicer blade guard to the hand or glove of an associate working in the retail deli operation (keeping in mind that \( Lm \) is indeed present on the slicer blade guard)?

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<th>Max. % Prob.</th>
<th>Min.% Prob.</th>
<th>Most likely % Prob.</th>
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18. How confident are you that your most likely estimate for the last question is accurate? (Please circle the statement that best applies).

- a. Very confident
- b. Somewhat confident
- c. Neither confident nor unconfident
- d. Somewhat unconfident
- e. Very unconfident
- f. I don’t know how confident I am

19. Assume again that \( Lm \) is indeed present on a slicer blade guard. How can \( Lm \) be directly transferred from the slicer blade guard to the final product being sliced on the contaminated slicer? (Please circle all that apply.)

- a. Direct contact between food and slicer blade guard
- b. Contaminated hands/ gloves
- c. Re-splashing of water
- d. Other (Specify _________________)
- e. A direct contamination of the final product through a retail slicer blade guard is impossible.

20. Assume again \( Lm \) is indeed present on the slicer blade guard. How likely do you think is transfer of \( Lm \) from the slicer blade guard to the product sliced on that slicer to occur (keeping in mind that \( Lm \) is indeed present on the slicer blade guard)?

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<th>Max. % Prob.</th>
<th>Min.% Prob.</th>
<th>Most likely % Prob.</th>
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21. How confident are you that your most likely estimate for the last question is accurate? (Please circle the statement that best applies).

- a. Very confident
- b. Somewhat confident
- c. Neither confident nor unconfident
- d. Somewhat unconfident
- e. Very unconfident
- f. I don’t know how confident I am

22. How likely do you think it is that \( Lm \) is present on a cutting board in a retail deli operation during operation (i.e., mid-shift)?

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<th>Max. % Prob.</th>
<th>Min.% Prob.</th>
<th>Most likely % Prob.</th>
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23. Assume \( Lm \) is indeed present on a cutting board in a retail deli operation during operation. How likely do you think is transfer from the cutting board to the hands or gloves of an associate?

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<tr>
<th>Max. % Prob.</th>
<th>Min.% Prob.</th>
<th>Most likely % Prob.</th>
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24. How confident are you that your most likely estimate for the last question is accurate? (Please circle the statement that best applies).

- a. Very confident
- b. Somewhat confident
- c. Neither confident nor unconfident
- d. Somewhat unconfident
- e. Very unconfident
- f. I don’t know how confident I am

25. Assume again \( Lm \) is indeed present on a cutting board in a retail deli operation during operation. How likely do you think is direct transfer from the cutting board to the product?
26. How confident are you that your most likely estimate for the last question is accurate? (Please circle the statement that best applies).
   a. Very confident
   b. Somewhat confident
   c. Neither confident nor unconfident
   d. Somewhat unconfident
   e. Very unconfident
   f. I don’t know how confident I am

27. How likely do you think it is that \textit{Lm} is present on bowls or other utensils used in the deli during operation (i.e., mid-shift)?

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<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
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28. Assume \textit{Lm} is present on utensils in the retail deli operation. How likely do you think is transfer from the bowl or utensil to product to occur through direct contact?

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<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
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29. How confident are you that your most likely estimate for the last question is accurate? (Please circle the statement that best applies).
   a. Very confident
   b. Somewhat confident
   c. Neither confident nor unconfident
   d. Somewhat unconfident
   e. Very unconfident
   f. I don’t know how confident I am

30. Assume again \textit{Lm} is present on utensils in the retail deli operation. How likely is transfer from the bowl or utensil to the hands or gloves of an associate working in the deli operation to occur (include contamination through direct contact glove/hand with utensil/bowl only)?

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<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
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31. How confident are you that your most likely estimate for the last question is accurate? (Please circle the statement that best applies).
   a. Very confident
   b. Somewhat confident
   c. Neither confident nor unconfident
   d. Somewhat unconfident
   e. Very unconfident
   f. I don’t know how confident I am

32. How likely do you think is \textit{Lm} to be present on a scale (touchpad and/or scale weigh-table) in the retail deli operation during operation?

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<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
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33. Assume \textit{Lm} is present on the touchpad of a scale in the retail deli operation. How likely do you think is \textit{Lm} transfer from the scale touchpad to the gloves or hands of an associate to occur?

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<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
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34. How confident are you that your most likely estimate for the last question is accurate? (Please circle the statement that best applies).
   a. Very confident
   b. Somewhat confident
   c. Neither confident nor unconfident
   d. Somewhat unconfident
   e. Very unconfident
   f. I don’t know how confident I am

35. Assume \textit{Lm} is present on a scale weigh table in the retail deli operation. How likely do you think is \textit{Lm} to contaminate product weighted on the scale through direct contact?

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<tr>
<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
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36. How confident are you that your most likely estimate for the last question is accurate? *(Please circle the statement that best applies).*
   a. Very confident
   b. Somewhat confident
   c. Neither confident nor unconfident
   d. Somewhat unconfident
   e. Very unconfident
   f. I don’t know how confident I am

37. How likely do you think it is that *Lm* is present on a deli case handle during operation?

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<th>Max. % Prob.</th>
<th>Min.% Prob.</th>
<th>Most likely % Prob.</th>
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38. Assume *Lm* is in fact present on a deli case handle. How likely do you think is direct transfer to the hands or gloves of an associate to occur?

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<th>Max. % Prob.</th>
<th>Min.% Prob.</th>
<th>Most likely % Prob.</th>
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39. How confident are you that your most likely estimate for the last question is accurate? *(Please circle the statement that best applies).*
   a. Very confident
   b. Somewhat confident
   c. Neither confident nor unconfident
   d. Somewhat unconfident
   e. Very unconfident
   f. I don’t know how confident I am

40. Assume again that *Lm* is indeed present on a deli case handle. How can *Lm* be directly transferred from the deli case handle to the final product? *(Please check all that apply.)* *(Question 40 continued)*
   a. Direct contact between food and deli case handle
   b. Contaminated hands/ gloves
   c. Re-splashing of water
   d. Other (Specify _________________)
   e. A direct contamination of the final product through a deli case handle is impossible.

41. Assume *Lm* is in fact present on a deli case handle. How likely do you think is direct transfer from the deli case handle to the final product to occur?

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<tr>
<th>Max. % Prob.</th>
<th>Min.% Prob.</th>
<th>Most likely % Prob.</th>
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42. How confident are you that your most likely estimate for the last question is accurate? *(Please circle the statement that best applies).*
   a. Very confident
   b. Somewhat confident
   c. Neither confident nor unconfident
   d. Somewhat unconfident
   e. Very unconfident
   f. I don’t know how confident I am

43. How likely do you think it is that *Lm* is present in a deli case or on a deli case tray during operation?

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<tr>
<th>Max. % Prob.</th>
<th>Min.% Prob.</th>
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44. Assume *Lm* is in fact present on a deli case tray or in a deli case. How likely do you think is direct transfer to the hands or gloves of an associate to occur?

| Max. % Prob. | Min.% Prob. | Most likely % Prob. |
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45. How confident are you that your most likely estimate for the last question is accurate? *(Please circle the statement that best applies).*

- a. Very confident
- b. Somewhat confident
- c. Neither confident nor unconfident
- d. Somewhat unconfident
- e. Very unconfident
- f. I don’t know how confident I am

46. Assume again *Lm* is in fact present in a deli case or on a deli case tray. How likely do you think is direct transfer to the final, unwrapped product in the deli case to occur if product touches contaminated surface?

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<th>Max. % Prob.</th>
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<th>Most likely % Prob.</th>
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47. How confident are you that your most likely estimate for the last question is accurate? *(Please circle the statement that best applies).*

- a. Very confident
- b. Somewhat confident
- c. Neither confident nor unconfident
- d. Somewhat unconfident
- e. Very unconfident
- f. I don’t know how confident I am

48. How likely do you think it is that *Lm* is present in a deli sink used for unwrapping product (during operation)?

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<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
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49. Assume *Lm* is in fact present in a deli sink used for unwrapping product. How likely do you think is direct transfer to the hands or gloves of an associate to occur?

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<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
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50. How confident are you that your most likely estimate for the last question is accurate? *(Please circle the statement that best applies).*

- a. Very confident
- b. Somewhat confident
- c. Neither confident nor unconfident
- d. Somewhat unconfident
- e. Very unconfident
- f. I don’t know how confident I am

51. Assume again that *Lm* is indeed present in a deli sink used for unwrapping product (during operation). How can *Lm* be transferred from the sink to product? *(Please circle all that apply.)*

- a. Direct contact between food and sink
- b. Contaminated hands/ gloves
- c. Re-splashing of water
- d. Contamination from sink to food contact surface to product
- e. Cleaning supplies
- f. Other (Specify _________________)
- g. A direct contamination of the final product from a sink used for unwrapping product is impossible

52. Assume again *Lm* is in fact present in a deli sink used for unwrapping product (during operation). How likely do you think is direct transfer from the sink to product to occur?

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<th>Max. % Prob.</th>
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53. How confident are you that your most likely estimate for the last question is accurate? *(Please circle the statement that best applies).*

- a. Very confident
- b. Somewhat confident
- c. Neither confident nor unconfident
- d. Somewhat unconfident
- e. Very unconfident
- f. I don’t know how confident I am
54. How likely do you think it is that \( Lm \) is present in a deli sink that is \textbf{not} used for unwrapping product (during operation)?

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<th>Max. % Prob.</th>
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55. Assume \( Lm \) is in fact present in a deli sink \textbf{not} used for unwrapping product. How likely do you think is direct transfer to the hands or gloves of an associate to occur?

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<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
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56. How confident are you that your most likely estimate for the last question is accurate? \textit{(Please circle the statement that best applies).}

a. Very confident  
b. Somewhat confident  
c. Neither confident nor unconfident  
d. Somewhat unconfident  
e. Very unconfident  
f. I don’t know how confident I am

57. Assume again that \( Lm \) is indeed present in a deli sink \textbf{not} used for unwrapping product. How can \( Lm \) be transferred from the sink to product? \textit{(Please circle all that apply.)}

a. Contaminated hands/ gloves  
b. Re-splashing of water  
c. Contamination from sink to food contact surface to product  
d. Cleaning supplies  
e. Other (Specify ________________)  
f. A direct contamination of the final product from a sink \textbf{not} used for unwrapping product is impossible

58. Assume again \( Lm \) is in fact present in a deli sink \textbf{not} used for unwrapping product (during operation). How likely do you think is direct transfer from the sink to product to occur?

(Continued in next page ➔ )

59. How confident are you that your most likely estimate for the last question is accurate? \textit{(Please circle the statement that best applies).}

a. Very confident  
b. Somewhat confident  
c. Neither confident nor unconfident  
d. Somewhat unconfident  
e. Very unconfident  
f. I don’t know how confident I am

60. How likely do you think it is that \( Lm \) is present on a food preparation table (during operation)?

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<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
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61. Assume \( Lm \) is in fact present on a food preparation table. How likely do you think is direct transfer to the hands or gloves of an associate to occur?

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<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
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62. How confident are you that your most likely estimate for the last question is accurate? \textit{(Please circle the statement that best applies).}

a. Very confident  
b. Somewhat confident  
c. Neither confident nor unconfident  
d. Somewhat unconfident  
e. Very unconfident  
f. I don’t know how confident I am
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63. Assume *Lm* is in fact present on a food preparation table. How likely do you think is direct transfer from the table to product prepared or wrapped on the table to occur?

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<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
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64. How confident are you that your most likely estimate for the last question is accurate? *(Please circle the statement that best applies).*

a. Very confident  
b. Somewhat confident  
c. Neither confident nor unconfident  
d. Somewhat unconfident  
e. Very unconfident  
f. I don’t know how confident I am

65. How likely do you think it is that *Lm* is present in a drain located under a sink used to unwrap product in the deli area?

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<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
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66. Assume *Lm* is in fact present in the drain under the sink in the retail operation. How can *Lm* be directly transferred from the drain under the sink to a food contact surface? *(Please circle all that apply.)*

a. Direct contact between food contact surface and drain  
b. Contaminated hands/ gloves  
c. Cleaning supplies  
d. Re-splashing of water  
e. Other (Specify _________________)  
f. A contamination of a food contact surface from the drain under the sink is impossible

67. Assume *Lm* is in fact present in the drain under the sink in the retail area. How likely do you think is direct transfer from the drain to a food contact surface to occur?

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<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
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68. How confident are you that your most likely estimate for the last question is accurate? *(Please circle the statement that best applies).*

a. Very confident  
b. Somewhat confident  
c. Neither confident nor unconfident  
d. Somewhat unconfident  
e. Very unconfident  
f. I don’t know how confident I am

69. How likely do you think it is that *Lm* is present in a center floor drain in the deli area?

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<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
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70. Assume *Lm* is in fact present in a center floor drain in the retail area. How can *Lm* be directly transferred from the center floor drain to a food contact surface? *(Please circle all that apply.)*

a. Direct contact between food contact surface and drain  
b. Contaminated hands/ gloves  
c. Cleaning supplies  
d. Re-splashing of water  
e. Other (Specify _________________)  
f. A contamination of a food contact surface from the floor drain is impossible

71. Assume *Lm* is in fact present in the central floor drain. How likely do you think is direct transfer from the drain to a food contact surface to occur?

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<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
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72. How confident are you that your most likely estimate for the last question is accurate? *(Please circle the statement that best applies).*

a. Very confident  
b. Somewhat confident  
c. Neither confident nor unconfident  
d. Somewhat unconfident  
e. Very unconfident  
f. I don’t know how confident I am

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Deli floor drain
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73. Assume again *Lm* is in fact present in the center floor drain in the retail deli operation. How can *Lm* be transferred from the center floor drain to the product? *(Please circle all that apply.)*
   a. Direct contact between foods and drain
   b. Contaminated hands/ gloves
   c. Contaminated utensils
   d. Cleaning supplies
   e. Re-splashing of water
   f. Other (Specify _________________)
   g. A direct contamination of food from the retail area drain is impossible

74. Assume *Lm* is in fact present in the center floor drain in a retail operation. How likely do you think is direct transfer from the drain to final product to occur?

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<tr>
<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
</tr>
</thead>
</table>

75. How confident are you that your most likely estimate for the last question is accurate? *(Please circle the statement that best applies.)*
   a. Very confident
   b. Somewhat confident
   c. Neither confident nor unconfident
   d. Somewhat unconfident
   e. Very unconfident
   f. I don’t know how confident I am

76. How likely do you think it is that *Lm* is present on the walk-in cooler door handle?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
</tr>
</thead>
</table>

77. Assume *Lm* is in fact present on the walk-in cooler door handle. How likely do you think is direct transfer to the hands or gloves of an associate to occur?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
</tr>
</thead>
</table>

78. How confident are you that your most likely estimate for the last question is accurate? *(Please circle the statement that best applies.)*
   a. Very confident
   b. Somewhat confident
   c. Neither confident nor unconfident
   d. Somewhat unconfident
   e. Very unconfident
   f. I don’t know how confident I am

79. How likely do you think it is that *Lm* is present on cleaning supplies (e.g., squeegees, floor brushes, hoses, brooms, cleaning water, buckets etc.) in the retail deli operation?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
</tr>
</thead>
</table>

80. Assume *Lm* is in fact present on cleaning supplies in the retail area. How can *Lm* be transferred from the cleaning supplies to a food contact surface? *(Please circle all that apply.)*
   a. Direct contact between food contact surface and cleaning supply
   b. Contaminated hands/ gloves
   c. Re-splashing of water
   d. Contact with non-food contact surface
   e. Other (Specify _________________)
   f. A contamination of a food contact surface from the cleaning supplies is impossible

81. Assume *Lm* is in fact present on cleaning containers or supplies (e.g., hoses, cleaning buckets, floor brushes, etc.) in the retail deli operation. How likely do you think is direct transfer to a food contact surface to occur?

| Max. % Prob. | Min. % Prob. | Most likely % Prob. |
82. How confident are you that your most likely estimate for the last question is accurate? (Please circle the statement that best applies).
   a. Very confident
   b. Somewhat confident
   c. Neither confident nor unconfident
   d. Somewhat unconfident
   e. Very unconfident
   f. I don’t know how confident I am

83. Assume again Lm is in fact present on cleaning containers or supplies (such as hose, cleaning buckets, floor brushes) in the deli operation. How can Lm be transferred from the cleaning containers to the final product? (Please circle all that apply.)
   a. Direct contact between food and cleaning supply
   b. Contaminated hands/ gloves
   c. Contaminated utensils
   d. Re-splashing of water
   e. Contact with non-food contact surface
   f. Other (Specify _________________)
   g. A contamination of from the cleaning supplies is impossible

84. Assume Lm is in fact present on cleaning containers or supplies in the retail deli operation. How likely do you think is direct transfer to a food product to occur?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min.% Prob.</th>
<th>Most likely % Prob.</th>
</tr>
</thead>
</table>

85. How confident are you that your most likely estimate for the last question is accurate? (Please circle the statement that best applies).
   a. Very confident
   b. Somewhat confident
   c. Neither confident nor unconfident
   d. Somewhat unconfident
   e. Very unconfident
   f. I don’t know how confident I am

86. How likely do you think it is that Lm is present on milk crates in the retail deli operation?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min.% Prob.</th>
<th>Most likely % Prob.</th>
</tr>
</thead>
</table>

87. Assume Lm is in fact present on milk crates in the deli area. How can Lm be transferred from the milk crate to a food contact surface? (Please circle all that apply.)
   a. Direct contact between food contact surface and milk crate
   b. Contaminated hands/ gloves
   c. Cleaning supplies
   d. Re-splashing of water
   e. Other (Specify _________________)
   f. A contamination of a food contact surface from contact with milk crates is impossible

88. Assume Lm is in fact present on milk crates in the retail deli operation. How likely do you think is direct transfer to a food contact surface to occur?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min.% Prob.</th>
<th>Most likely % Prob.</th>
</tr>
</thead>
</table>

89. How confident are you that your most likely estimate for the last question is accurate? (Please circle the statement that best applies).
   a. Very confident
   b. Somewhat confident
   c. Neither confident nor unconfident
   d. Somewhat unconfident
   e. Very unconfident
   f. I don’t know how confident I am

90. How likely do you think it is that Lm is present on wheels of shopping carts used in the retail deli operation?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min.% Prob.</th>
<th>Most likely % Prob.</th>
</tr>
</thead>
</table>
91. Assume \( L_m \) is in fact present on one or more wheels of a shopping cart used in the retail area. How can \( L_m \) be transferred from the shopping cart wheel(s) to a food contact surface? (Please circle all that apply.)

a. Direct contact between food contact surface and shopping cart wheel
b. Contaminated hands/ gloves
c. Cleaning supplies
d. Contact with non-food contact surface
e. Other (Specify _________________)
f. A contamination of a food contact surface from shopping cart wheels is impossible

92. Assume \( L_m \) is in fact present on one or more wheels of a shopping cart used in the retail deli operation. How likely do you think is direct transfer to a food contact surface to occur?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min.% Prob.</th>
<th>Most likely % Prob.</th>
</tr>
</thead>
</table>

93. How confident are you that your most likely estimate for the last question is accurate? (Please circle the statement that best applies).

a. Very confident
b. Somewhat confident
c. Neither confident nor unconfident
d. Somewhat unconfident
e. Very unconfident
f. I don’t know how confident I am

94. How likely do you think it is that \( L_m \) is present on wheels of other carts (e.g., high boys, birdies, cabinets) used in the retail deli operation?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min.% Prob.</th>
<th>Most likely % Prob.</th>
</tr>
</thead>
</table>

95. Assume \( L_m \) is in fact present on one or more wheels of such a cart used in the retail area. How can \( L_m \) be transferred from the cart wheel(s) to a food contact surface? (Please circle all that apply.)

a. Direct contact between food contact surface and cart wheel
b. Contaminated hands/ gloves
c. Cleaning supplies
d. Contact with non-food contact surface
e. Other (Specify _________________)
f. A contamination of a food contact surface from the wheels of such carts is impossible

96. Assume \( L_m \) is in fact present on one or more wheels of such a cart used in the retail deli operation. How likely do you think is direct transfer to a food contact surface to occur?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min.% Prob.</th>
<th>Most likely % Prob.</th>
</tr>
</thead>
</table>

97. How confident are you that your most likely estimate for the last question is accurate? (Please circle the statement that best applies).

a. Very confident
b. Somewhat confident
c. Neither confident nor unconfident
d. Somewhat unconfident
e. Very unconfident
f. I don’t know how confident I am

98. How likely do you think it is that \( L_m \) is present on the walls and/or floor in the retail deli operation?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min.% Prob.</th>
<th>Most likely % Prob.</th>
</tr>
</thead>
</table>
Questionnaire – Expert opinion elicitation on *Listeria monocytogenes* in retail operations

99. Assume *Lm* is in fact present on the walls and/or floor in the retail deli operation. How can *Lm* be transferred from the walls and/or floor to a food contact surface? (*Please circle all that apply.*)

- Direct contact between food contact surface and wall/floor
- Contaminated hands/ gloves
- Cleaning supplies
- Re-splashing of water
- Condensation
- Other (Specify _________________)
- A contamination of a food contact surface from the walls and/or floor in the retail deli operation is impossible

100. Assume *Lm* is in fact present on the walls and/or floor in the retail deli operation. How likely do you think is direct transfer to a food contact surface to occur?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
</tr>
</thead>
</table>

101. How confident are you that your most likely estimate for the last question is accurate? (*Please circle the statement that best applies.*)

- Very confident
- Somewhat confident
- Neither confident nor unconfident
- Somewhat unconfident
- Very unconfident
- I don’t know how confident I am

102. How likely do you think it is that *Lm* is present on the walls, shelves and/or floor in the walk-in cooler?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
</tr>
</thead>
</table>

103. Assume *Lm* is in fact present on walls, shelves and/or floor in the walk-in cooler. How can *Lm* be transferred from the walls, shelves and/or floor in the walk-in cooler to a food contact surface? (*Please circle all that apply.*)

- Direct contact between food contact surface and walls, shelves and/or floor in the walk-in cooler
- Contaminated hands/ gloves
- Cleaning supplies
- Re-splashing of water
- Condensation
- Contact with non-food contact surface
- Other (Specify _________________)
- A contamination of a food contact surface from the walls, shelves and/or floor in the walk-in cooler is impossible

104. Assume *Lm* is in fact present on the walls, shelves and/or floor in the walk-in cooler. How likely do you think is direct transfer to a food contact surface to occur?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
</tr>
</thead>
</table>

105. How confident are you that your most likely estimate for the last question is accurate? (*Please circle the statement that best applies.*)

- Very confident
- Somewhat confident
- Neither confident nor unconfident
- Somewhat unconfident
- Very unconfident
- I don’t know how confident I am

106. How likely do you think it is that *Lm* is present on trash cans in the retail deli operation?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
</tr>
</thead>
</table>
107. Assume \( Lm \) is in fact present on trash cans in the retail area. How can \( Lm \) be transferred from the trash cans to a food contact surface? (Please circle all that apply.)
   a. Direct contact between food contact surface and trash can
   b. Contaminated hands/ gloves
   c. Cleaning supplies
   d. Re-splashing of water
   e. Other (Specify _________________)
   f. A contamination of a food contact surface from the retail operation trash cans is impossible

108. Assume \( Lm \) is in fact present on trash cans in the retail deli operation. How likely do you think is direct transfer to a food contact surface to occur?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
</tr>
</thead>
</table>

109. How confident are you that your most likely estimate for the last question is accurate? (Please circle the statement that best applies).
   a. Very confident
   b. Somewhat confident
   c. Neither confident nor unconfident
   d. Somewhat unconfident
   e. Very unconfident
   f. I don’t know how confident I am

110. How likely do you think it is that \( Lm \) is present on a knife rack in the retail deli operation?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
</tr>
</thead>
</table>

111. Assume \( Lm \) is in fact present on a knife rack in the deli area. How likely do you think is \( Lm \) transfer to the gloves or hands of an associate to occur?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
</tr>
</thead>
</table>

112. How confident are you that your most likely estimate for the last question is accurate? (Please circle the statement that best applies).
   a. Very confident
   b. Somewhat confident
   c. Neither confident nor unconfident
   d. Somewhat unconfident
   e. Very unconfident
   f. I don’t know how confident I am

113. Assume again \( Lm \) is in fact present on a knife rack in the retail area. How likely do you think is \( Lm \) transfer to a food contact surface to occur?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
</tr>
</thead>
</table>

114. How confident are you that your most likely estimate for the last question is accurate? (Please circle the statement that best applies).
   a. Very confident
   b. Somewhat confident
   c. Neither confident nor unconfident
   d. Somewhat unconfident
   e. Very unconfident
   f. I don’t know how confident I am

115. How likely do you think it is that \( Lm \) is present on clothing (e.g., uniform, work shirt etc.) of an associate working in the retail deli operation?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
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</table>

116. Assume \( Lm \) is in fact present on the clothing of an associate working in the retail area. How likely do you think it is that \( Lm \) is transferred to the gloves or hands of an associate?

| Max. % Prob. | Min. % Prob. | Most likely % Prob. |
117. How confident are you that your most likely estimate for the last question is accurate? *(Please circle the statement that best applies).*

a. Very confident  
b. Somewhat confident  
c. Neither confident nor unconfident  
d. Somewhat unconfident  
e. Very unconfident  
f. I don’t know how confident I am

118. Assume again *Lm* is in fact present on clothing of an associate working in the retail area. How can *Lm* be transferred from the clothing to a food contact surface? *(Please circle all that apply.)*

a. Direct contact between food contact surface and clothing  
b. Contaminated hands/ gloves  
c. Cleaning supplies  
d. Re-splashing of water  
e. Other (Specify _________________)  
f. A contamination of a food contact surface from the clothing of an associate is impossible

119. Assume again *Lm* is in fact present on clothing of an associate working in the retail area. How likely do you think is *Lm* transfer to a food contact surface?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
</tr>
</thead>
</table>

120. How confident are you that your most likely estimate for the last question is accurate? *(Please circle the statement that best applies).*

a. Very confident  
b. Somewhat confident  
c. Neither confident nor unconfident  
d. Somewhat unconfident  
e. Very unconfident  
f. I don’t know how confident I am

121. How likely do you think it is that *Lm* is present in the utensil drawer in the retail deli operation?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
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</table>

122. Assume *Lm* is in fact present in the utensil drawer in the retail area. How likely do you think is *Lm* transfer to the gloves or hands of an associate?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
</tr>
</thead>
</table>

123. How confident are you that your most likely estimate for the last question is accurate? *(Please circle the statement that best applies).*

a. Very confident  
b. Somewhat confident  
c. Neither confident nor unconfident  
d. Somewhat unconfident  
e. Very unconfident  
f. I don’t know how confident I am

124. How likely do you think it is that *Lm* is present on a drying rack in the retail deli operation?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
</tr>
</thead>
</table>

125. Assume *Lm* is in fact present on a drying rack in the retail operation. How likely do you think it is that *Lm* is directly transferred to a food contact surface?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
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</thead>
</table>
Questionnaire – Expert opinion elicitation on *Listeria monocytogenes* in retail operations

126. How confident are you that your most likely estimate for the last question is accurate? *(Please circle the statement that best applies).*
   a. Very confident
   b. Somewhat confident
   c. Neither confident nor unconfident
   d. Somewhat unconfident
   e. Very unconfident
   f. I don’t know how confident I am

127. How likely do you think it is that *Lm* is present on a drip pan for the deli case in the retail deli operation?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
</tr>
</thead>
</table>

128. Assume *Lm* is in fact present on a drip pan for the deli case in the retail area. How likely do you think it is that *Lm* is transferred to a food contact surface?

<table>
<thead>
<tr>
<th>Max. % Prob.</th>
<th>Min. % Prob.</th>
<th>Most likely % Prob.</th>
</tr>
</thead>
</table>

129. How confident are you that your most likely estimate for the last question is accurate? *(Please circle the statement that best applies).*
   a. Very confident
   b. Somewhat confident
   c. Neither confident nor unconfident
   d. Somewhat unconfident
   e. Very unconfident
   f. I don’t know how confident I am

**Section 2**

*Note: In this section, we will ask some general questions about *Lm* and the retail deli operation industry. We are looking for your personal estimates; please do not consult the literature or other experts to answer these questions. For each question, please again(i) think about the range of values you believe are possible, and then (ii) list the maximum and minimum value you think could ever practically occur, and finally (iii) please list the value you think would be most likely to occur. Your answers are very important to us and this will allow us to obtain the best quality data possible. Unless otherwise stated, if your answer depends on year and country, please think again about the US in 2006.*

130. When averaging over the past 5 years (2005 - 2010), what is your best estimate for the number of human deaths in the United States each year that are associated with *Lm* infection acquired through consumption of retail-sliced products sold in the US?

<table>
<thead>
<tr>
<th>Max. No.</th>
<th>Min. No</th>
<th>Most likely No.</th>
</tr>
</thead>
</table>

131. In 2006, what percentage of retail-sliced deli meats sold in the United States do you think was positive for *Lm*?

<table>
<thead>
<tr>
<th>Max. %</th>
<th>Min. %</th>
<th>Most likely %</th>
</tr>
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</table>

132. In 2006, what percentage of pre-packaged deli meats sold in the United States do you think was positive for *Lm*?

<table>
<thead>
<tr>
<th>Max. %</th>
<th>Min. %</th>
<th>Most likely %</th>
</tr>
</thead>
</table>

133. In 2006, what percentage of deli salads handled and sold in a retail deli operation do you think was positive for *Lm*?

<table>
<thead>
<tr>
<th>Max. %</th>
<th>Min. %</th>
<th>Most likely %</th>
</tr>
</thead>
</table>
Questionnaire – Expert opinion elicitation on *Listeria monocytogenes* in retail operations

134. In 2006, what percentage of households in the United States do you think stored retail-sliced products for more than 5 days?

<table>
<thead>
<tr>
<th>Max. %</th>
<th>Min. %</th>
<th>Most likely %</th>
</tr>
</thead>
</table>

135. In 2006, what percentage of cold-cuts sold in the United States do you think used growth inhibitors?

<table>
<thead>
<tr>
<th>Max. %</th>
<th>Min. %</th>
<th>Most likely %</th>
</tr>
</thead>
</table>

136. In the United States in 2006, what do you think was the average temperature (in °Farenheit) of product stored in a deli case?

<table>
<thead>
<tr>
<th>Max. °Farenheit</th>
<th>Min. °Farenheit</th>
<th>Most likely °Farenheit</th>
</tr>
</thead>
</table>

137. In what percentage of stores is raw product (e.g., chicken, pork, beef, seafood) handled in areas that are adjacent or within same storage or preparation areas as ready to eat foods?

<table>
<thead>
<tr>
<th>Max. %</th>
<th>Min. %</th>
<th>Most likely %</th>
</tr>
</thead>
</table>

Section 3

Note: In the final section of the questionnaire we would like to gather some data about you. This information will be very useful to us as we develop future studies like this one, and will help us better understand our pool of experts. If at any point you run out of space, please use the last page or the back of the respective page to continue your answer.

138. Approximately how many years total have you been working with retail deli operations (for instance while employed in the food industry, by relevant governmental organizations, involved in academic research or teaching)?

139. Please specify the core functions and responsibilities of your current position, especially as they relate to food safety (e.g., regulatory compliance, sanitation, quality control). *(Should you require more space, please use the back of this page or add pages to the end of the questionnaire).*

140. For how many years have you been working in your current position?

141. In which of the following subject areas have you gained practical work experience during your professional career *(Please circle all that apply):*

a. Agriculture, farming and/or fishing
b. Slaughter/ carcass fabrication
c. Animal feed production
d. Industrial food manufacturing
e. Food retail (e.g., retail delis)
f. Other food distribution (e.g., restaurants etc.)
g. Industrialized food preparation (e.g., cantinas, hospital kitchens etc.)
h. Regulatory compliance (while employed in food industry)
i. Regulatory compliance (while employed in government)
j. Disease surveillance (governmental)
k. Quality assurance/ self control (industry)
l. Sanitation
m. Other (specify ____________________)
n. None of the above

Total years experience with retail deli operation
142. Which of the following employers have you gained experience in retail deli operations with? (Please circle all that apply)
   a. Food industry
   b. State food safety and inspection agency
   c. Federal food safety and inspection agency
   d. Governmental food safety research agency
   e. Academic food safety research institution
   f. Other (specify_________________)
   g. None of the above

143. In which type of geographic areas have you obtained practical experience with retail deli operation? (Please circle all that apply)
   a. Major metropolitan area (> 1 Million residents)
   b. Other urban areas (50,000 – 1 Million residents)
   c. Rural areas (< 50,000 residents)
   d. I don’t remember the type of area
   e. I have no practical experience with retail deli operation

144. In which states have you obtained practical experience with retail deli operation (e.g., location of retail deli operations managed or inspected by you)?

   US States

145. In what size of retail deli operation have you worked/ have you managed/ have you conducted inspections/ have you gathered samples? (Please circle all that apply)
   a. Small establishments ( 0 – 10 full-time employees)
   b. Medium-sized establishments (10 – 50 full-time employees)
   c. Large establishments ( > 50 full-time employees)
   d. None of the above (Specify _________)

146. During the past 5 years, in approximately how many Lm-related recalls or outbreaks has your job required you to take professional action (e.g., remove product from store, trace back product, secure samples etc.)
   a. None
   b. 1 event
   c. 2-5 events
   d. 6-10 events
   e. More than 10 events
   f. I don’t remember

NOTE: If your answer to Question 146 was a. (i.e., “none”), please proceed to Question 149, otherwise please continue with Question 147.

147. During Listeria recall(s) and/or outbreaks in which you were professionally involved in, which types of actions were part of your professional responsibilities. (Please check all that apply).
   a. Remove product from circulation
   b. Handle in-store product returns
   c. Coordinate contaminated product disposal
   d. Secure samples
   e. Coordinate trace-back
   f. Test samples
   g. Interview potential cases
   h. Issue press releases
   i. Work with public relations
   j. Testify as expert witness in court
   k. Work with legal departments
   l. Other (specify_________________)
   m. I have never professionally participated in Listeria-related outbreaks or recalls

148. How long has it been since your last professional involvement in a Listeria-related outbreak or recall?
   a. Less than 1 month
   b. 1 to 6 months
   c. More than 6 but less than 12 months
   d. More than 12 months
   e. I was never involved in such an event
149. How many food safety educational conferences or workshops have you attended within the last 12 months? (Please circle the statement that best applies)
   a. None
   b. 1 event
   c. 2 – 4 events
   d. > 4 events
   e. I don’t remember

150. How long ago was your last food-safety related training (e.g., certificate program, continuing education course etc.) with focus on sanitation and/or regulatory compliance?
   a. Less than 1 month
   b. 1 to 6 months
   c. More than 6 but less than 12 months
   d. More than 12 months
   e. I don’t remember
   f. I never participated in such an event

151. Which of the following statements best describes your perspective on the effectiveness of cleaning and sanitation (abbreviated as “sanitation”) in a deli?
   a. Pre-operational & operational sanitation is always done correctly in retail deli operations, and always eliminates Lm completely.
   b. If done correctly, pre-operational & operational sanitation eliminates Lm completely, but in practice it is sometimes done incorrectly.
   c. If done correctly, pre-operational sanitation eliminates Lm completely, but even if done correctly, cleaning and sanitation during operation may not. Moreover, in practice pre-operational sanitation is sometimes done incorrectly.
   d. Even if done correctly, pre-operational and operational sanitation may be ineffective at eliminating Lm completely, and they are not always done correctly.
   e. None of the above (Please specify:
      ____________________________________________________________
      ____________________________________________________________
      ____________________________________________________________
      ____________________________________________________________
      ____________________________________________________________)
   f. I don’t have an opinion.

152. How long ago did you last hear or read about transfer coefficients for Lm cross-contamination (e.g., conference, continuing education workshops, scientific publications, trade magazines articles etc.)
   a. Less than 1 month ago
   b. 1 to 6 months ago
   c. More than 6 but less than 12 months ago
   d. More than 12 months ago
   e. I never heard or read about transfer coefficients for Lm cross-contamination

153. Which of the following statements best describes your perspective on the importance of Lm transfer coefficients for food safety?
   a. Transfer coefficients are integral to managing cross-contamination.
   b. Transfer coefficients have some importance for cross-contamination, but other factors are far more important.
   c. Transfer coefficients are unimportant as they cannot be applied meaningfully to real-world problems.
   d. I have not heard about transfer coefficients in this context.
   e. None of the above (Please Specify:
      ____________________________________________________________
      ____________________________________________________________
      ____________________________________________________________
      ____________________________________________________________
      ____________________________________________________________)
   f. I don’t have an opinion.

154. Which of the following statements best describes your perspective on the current Listeria-related Federal Food Safety legislation in the United States? (These, like all other answers you provide us, are strictly confidential)
   a. The current regulation is too strict and should be relaxed.
   b. The current regulation is very adequate and changes are not needed.
   c. The current regulation is not strict enough and should be increased.
   d. I don’t have an opinion.

155. How many people do you manage?
   ____________________________________________________________
   No. of people being managed
156. How many years of managerial experience have you gained during your career, including all positions that included managing people?

157. What academic degree(s) do you currently hold?

158. In what year did you obtain your most recent academic degree?

159. In what subject area did you achieve your most recent academic degree?

160. Have you had any formal instruction in statistics (at the high school or college level)?
   a. No
   b. Yes (Specify _________________)
   c. I don’t remember

161. Please indicate which age group best captures your current age (Please check the category that apply)
   a. 21-30 years
   b. 31-40 years
   c. 41-50 years
   d. 51-60 years
   e. 61 years or older

162. Is there anything else we did not ask but that you think would be important to add (concerning any of the three sections of this questionnaire, or something unrelated).

Additional comments

Thank you for your participation!!!!