

**Fish Products Standards
 and Methods Manual**

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**APPENDIX 2
 BACTERIOLOGICAL GUIDELINES FOR FISH AND FISH PRODUCT (end product)**

Test Organism ¹	Product Type	Number of sample units	Acceptance number (c) ²	m/g ²	M/g ²	Criteria for action
<i>Escherichia coli</i>	Cooked or ready-to-eat products	5	1	4	40	Reject if 2 or more units exceed m, or if any unit exceeds M
<i>Escherichia coli</i>	Raw molluscan shellfish	5	1	230/100 g	330/100 g	Reject if 2 or more units exceed m, or if any unit exceeds M
<i>Escherichia coli</i>	All other types	5	2	4	40	Reject if 3 or more units exceed m, or if any unit exceeds M
Coagulase-Positive Staphylo-cocci	All types	5	1	1000	10000	Reject if 2 or more units exceed m, or if any unit exceeds M
<i>Salmonella</i>	All types	5	Absent in each 25 g sample or in pooled samples of 125 g.	-	-	Reject if <i>Salmonella</i> spp is detected
<i>Vibrio cholerae</i>	Cooked or ready-to-eat products	5	Absent in each 25 g sample or in pooled samples of 125 g	-	-	Reject if <i>Vibrio cholerae</i> is detected.
<i>Vibrio parahaemolyticus</i>	Raw Oyster	5	1	100	10000	Reject if 2 or more units exceed m, or if any unit exceeds M

Listeria monocytogenes (From Health Canada's "Policy on *Listeria monocytogenes* in Ready-to-Eat Foods") available at: http://www.hc-sc.gc.ca/fn-an/legislation/pol/policy_listeria_monocytogenes_2011-eng.php

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Product Type / Category ⁱ	Laboratory method to be applied	Action Level
<p>RTE Fish products in which the growth of <i>L. monocytogenes</i> CAN occur and could exceed 100 CFU/g before the end of the stated shelf-life. Includes all products that do not fall in either above-mentioned product types. (Equivalent to Category 1 foods in the HC <i>Listeria</i> policy)*</p>	<p>Presence/absence in 125 g (MFHPB-30⁶) on 5 sample units of 25 g each</p>	<p>Detected</p>
<p>RTE Fish products in which the growth of <i>L. monocytogenes</i> CAN occur but is limited to levels no greater than 100 CFU/g over the course of their stated shelf-life. RTE products that have a refrigerated shelf-life of 5 days or less fall under this category. Other products require validation data⁴ demonstrating growth cannot exceed 100 CFU/g⁵. (Equivalent to Category 2A foods in the HC <i>Listeria</i> policy)</p>	<p>Enumeration in 50 g (MFLP-74⁶) on 5 sample units of 10 g each</p>	<p>> 100 CFU/g⁵</p>
<p>RTE Fish products in which growth of <i>L. monocytogenes</i> CANNOT occur over the course of the stated shelf-life. Products with the following characteristics fall under this category: <ul style="list-style-type: none"> ➤ products that are frozen, or ➤ have a pH<4.4 regardless of the a_w, or ➤ have an a_w<0.92 regardless of the pH, or ➤ have a pH<5.0 AND an a_w <0.94 For products that don't meet the above characteristics, validation data⁴ demonstrating the absence of growth is required. (Equivalent to Category 2B foods in the HC <i>Listeria</i> policy)</p>	<p>Enumeration in 50 g (MFLP-74⁶) on 5 sample units of 10 g each</p>	<p>> 100 CFU/g⁵</p>

Notes:

- The analysis of all fish or fishery products shall be conducted in accordance with approved methods
- m - number of bacteria per gram separating acceptable from marginally acceptable samples, c - number of samples that may exceed this number of bacteria per gram, M - no sample can exceed this number of bacteria per gram
- For further guidance on the determination of a product category, see Figure 1 of this appendix: Decision Tree -

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Determination of the ready-to-eat (RTE) product category that a fish product falls under in accordance with the 2010 Health Canada (HC) *Listeria* Policy.

4. See HC's guide on "*Listeria monocytogenes* Challenge Testing of Ready-to-Eat Refrigerated Foods" for information on challenge testing as part of validation at:
http://www.hc-sc.gc.ca/fn-an/legislation/pol/listeria_monocytogenes-eng.php
5. Counts between 5 and 100 CFU/g can be an indication of a possible loss of control and should prompt the processor to verify and/or re-evaluate their process controls.
6. Or any other method published in Health Canada's Compendium of Analytical Methods for *Listeria monocytogenes* in which the "application" section is appropriate for the intended purpose (e.g., MFHPB-methods and MFLP-methods). The compendium is available at the following internet address:
<http://www.hc-sc.gc.ca/fn-an/res-rech/analy-meth/microbio/index-eng.php>

* Health Canada's "Policy on *Listeria monocytogenese* in Ready-to-Eat Foods" will be referred to as the "HC *Listeria* Policy"
