

# CONSULTATION ON PROPOSED AMENDMENTS TO THE FOOD REGULATIONS REGARDING MICROBIOLOGICAL STANDARDS FOR READY-TO-EAT (RTE) FOOD

## Aim

1 The Agri-Food and Veterinary Authority (AVA) is seeking feedback from stakeholders on proposed amendments to the Food Regulations concerning the microbiological standards for ready-to-eat (RTE) food.

## Background

2 Regulation 35 of the Singapore Food Regulations specifies that food that is ready for consumption should not be contaminated with *Escherichia coli* exceeding prescribed limits or with any pathogenic microorganisms. The Eleventh Schedule specifies the total count and coliform count for different categories of food. Details of the current microbiological standards can be found in the ANNEX.

3 As part of efforts to align Singapore's regulations to international standards and ensure legislation is adequate to protect public health in the area of food safety, AVA, in consultation with National Environment Agency (NEA), conducted a review of the existing microbiological standards for RTE food, taking into consideration international standards, changing food production and consumption patterns, as well as the local situation.

## Proposed amendments

4 AVA proposes to adopt the following definition for RTE food, taking reference from the United Kingdom (UK) and Hong Kong (HK) guidelines for RTE food<sup>1</sup>,

“Food intended by producer or the manufacturer for direct human consumption without the need for cooking or other forms of processing effective to eliminate or reduce to an acceptable level the micro-organisms of concern”.

This definition aims to provide clarity to the food industry on the type of food products that are considered to be “ready-to-eat” and for which the microbiological standards under the Food Regulations will be applicable.

5 Total plate count (TPC) is used as an indicator of bacteria load in a sample. It depends on the method of processing of the food, as well as the duration of processing. Other factors include handling and storage of the food, as well as the microbial load in the raw ingredients used to produce the food. Hence it is not appropriate to impose the same limit for TPC for all types of RTE foods. AVA therefore

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<sup>1</sup> “Ready-to-eat food” means food intended by the producer or the manufacturer for direct human consumption without the need for cooking or other processing effective to eliminate or reduce to an acceptable level the microorganisms of concern (Source: HK Centre for Food Safety “Microbiological Guidelines for Ready-to-Eat food in General and Specific Food Items” and UK Health Protection Agency “Guidelines for Assessing the Microbiological Safety of Ready-to-Eat Foods Placed on the Market”)

proposes the following TPC limits for RTE food, which takes into consideration the intrinsic properties of the food as well as its manufacturing process:

<b>Type of Food</b>	<b>Colony forming unit/gram (cfu/g)</b>
Category 1: Shelf-stable canned, retort and ultra-high temperature processed foods subjected to sterilization or equivalent processing	<10 (liquid foods) and <10 <sup>2</sup> (solid foods)
Category 2: (a) Sweetened Condensed milk  (b) Ready-to-eat foods (not in categories 1 & 4) in which most components are cooked without intention for further processing or heating before consumption; this may include pasteurised food which are shelf stable or may require refrigeration; or non-fermented dairy products and dairy-based desserts; or sauces; or bakery and confectionery products; or powdered foods	(a) <10 <sup>3</sup>  (b) <10 <sup>5</sup>
Category 3: Ready-to-eat foods (not in categories 1, 2 & 4) that are consumed raw or that contain a significant amount of raw ingredients in the final food product	<10 <sup>6</sup>
Category 4: Fresh fruits and vegetables, fruits and vegetables juices which have not been subjected to pasteurisation or equivalent processing, fermented food products, preserved food products (including salted or pickled food products), dried foods, yoghurts, ripened cheeses, foods containing probiotics; foods containing a significant portion of these ingredients in the final food product	Not Applicable
Category 5: All other ready-to-eat foods not specified above	<10 <sup>5</sup>

6 Indicator organisms have been used to assess the microbiological status of food, and they have become important components of the microbiological testing programs of both industry and regulatory agencies. Some commonly used indicator organisms are the coliforms and *Escherichia coli*. AVA proposes to adopt the following microbiological standard for coliforms and *Escherichia coli* in RTE food. The proposed limit of 10<sup>2</sup> cfu/g for *Escherichia coli* is consistent with the limits established by Australia, Canada, Ireland, New Zealand, and the UK.

<b>Type of Food</b>	<b>Coliform count Colony forming unit/ gram (cfu/g)</b>	<b>Escherichia coli count Colony forming unit/ gram (cfu/g)</b>
Milk powder (including full-cream, half cream, skimmed milk and infant formula), buttermilk powder, pasteurized milk and ice cream	<5.0 X 10 <sup>2</sup>	<10 <sup>2</sup>
All other ready-to-eat food	<i>Not applicable</i>	<10 <sup>2</sup>

7 As the presence of foodborne pathogens in RTE food poses a significant health risk, AVA proposes to establish a zero tolerance for most pathogen species in RTE food. Exceptions to this are Coagulase-positive *Staphylococcus aureus*, *Clostridium perfringens*, *Bacillus cereus* and *Vibrio parahaemolyticus*, where low numbers in RTE products represent a low risk to healthy individuals.

<b>Pathogens</b>	<b>Colony forming unit /gram (cfu/g)</b>
Coagulase-positive <i>Staphylococcus aureus</i>	<10 <sup>2</sup>
<i>Bacillus cereus</i>	<2.0 X 10 <sup>2</sup>
<i>Clostridium perfringens</i>	<10 <sup>2</sup>
<i>Vibrio parahaemolyticus</i>	Not detected in 25g (except for raw ready-to-eat seafood where limit is <10 <sup>2</sup> )
<i>Vibrio vulnificus</i> , <i>Vibrio cholerae</i>	Not detected in 25g
<i>Salmonella</i> spp.	Not detected in 25g
<i>Shigella</i> spp.	Not detected in 25g
<i>Listeria monocytogenes</i>	Not detected in 25g
<i>Campylobacter</i> spp.	Not detected in 25g
<i>Escherichia coli</i> O157:H7	Not detected in 25g
All other pathogens not stated above, including <i>Streptococcus agalactiae</i> (serotype III)	Not detected

## **Request for comments**

AVA invites views and comments on:

- i. Whether the proposed definition of RTE food in paragraph 4 accurately describes such food. If not, please propose an alternative definition and provide supporting information in the form of authoritative references for your proposed definition.
- ii. Whether the 5 categories of RTE food under paragraph 5, accurately describe all the categories of RTE food available on the market. If not, please propose additional or alternative categories and provide supporting information in the form of authoritative references for your proposal.
- iii. Whether the RTE food products imported / manufactured by your company are able to comply with the proposed limits for total plate count, indicator organisms and pathogens.

## **Procedure and timeframe for submitting views and comments**

All submissions should be clearly and concisely written, and should provide a reasoned explanation for any proposed revisions.

Submissions should reach AVA no later than 12:00 p.m., 23 October 2017, through mail, or email, to the following addresses:

**Mail:**

Regulatory Programmes Department  
Agri-Food & Veterinary Authority of Singapore  
52 Jurong Gateway Road  
#13-01 Singapore 608550 (Attention: Ms Leong Ai Ling)

**Email:**

[leong\\_ai\\_ling@ava.gov.sg](mailto:leong_ai_ling@ava.gov.sg)

## ANNEX

### Current Microbiological Standards under the Food Regulations

#### Regulation 35:

- (1) No article of food which is ready for human consumption shall be contaminated with *Escherichia coli* exceeding 20 per gm or per ml in the case of liquid food or with any pathogenic micro-organism.
- (2) Any food specified in column 1 of the Eleventh Schedule shall comply with the microbiological standard specified in columns 2 and 3 of that Schedule.

#### Eleventh Schedule:

<i>Column 1</i>	<i>Column 2</i>	<i>Column 3</i>
<u>Type of food</u>	<u>Total Count at 37°C for 48 hours</u>	<u>Coliform Count</u>
Milk powder (including full-cream, half cream, skimmed milk and infant formula)	not more than 100,000 per gram	not more than 50 per gram
Buttermilk powder	not more than 200,000 per gram	not more than 50 per gram
Pasteurised milk	not more than 100,000 per millilitre	not more than 50 per millilitre
Ice-cream	not more than 50,000 per gram	not more than 10 per gram
Cooked crab meat, prawns and shrimps	not more than 500,000 per gram	
Molluscs, ready for consumption	not more than 500,000 per gram	
Edible gelatin	not more than 100,000 per gram	
Fish, ready for consumption	not more than 100,000 per gram	
Pastry	not more than 100,000 per gram	
Meat, ready for consumption	not more than 1 x 1 million per gram	
Any solid food ready for consumption not specified above	not more than 100,000 per gram	
Any liquid food ready for consumption not specified above	not more than 100,000 per millilitre	