



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF HEALTH
FOOD AND DRUG ADMINISTRATION
Filinvest Corporate City
Alabang, Muntinlupa City



FDA CIRCULAR
NO. 2013-010

27 February 2013

TO: ALL CONCERNED

SUBJECT: **REVISED GUIDELINES FOR THE ASSESSMENT OF
MICROBIOLOGICAL QUALITY OF PROCESSED FOODS**

As part of the mandate of the Food and Drug Administration to protect the public health and pursuant to the provisions of Republic Act No. 9711 otherwise known as the "Food and Drug Administration Act of 2009", the Bureau Circular No. 01-A s. 2004 *Guidelines for the Assessment of Microbiological Quality of Processed Food* is hereby revised with the following considerations: 1. Addition of new food category/products, 2. The need to update old references, 3. Adoption of approved CODEX Alimentarius Commission Guidelines.

This FDA Circular is hereby issued to serve as guidelines for the assessment of microbiological quality of certain processed foods; and help ensure that food manufacturers comply with Good Manufacturing Practices (GMP).

The reference criteria are prescribed in Tables 1-14. The tables contain a description of the food to which a criterion applies, the required test(s) or the microorganisms considered to be acceptable, marginally acceptable or critical, and the number of samples which should conform to the limits.

The methods used for the enumeration or detection of specified microorganisms shall be those that have been internationally established. Such methods, as well as the cited specifications were obtained from the following internationally recognized references:

1. FDA Bacteriological Analytical Manual published by the AOAC
2. Compendium of Analytical Methods of the Canadian Health Protection Branch
3. Compendium of Methods for the Microbiological Examination of Foods compiled by the American Public Health Association (APHA)
4. Specifications and Standards for Foods, Food Additives, etc., Japan External Trade Organization
5. Microorganisms in Foods by the International Commission on Microbiological Specifications for Foods (ICMSF)
6. Codex Alimentarius Commission Guidelines
7. International Standards Organization (ISO) Microbiological Methods
8. Australia New Zealand Food Authority (ANZFA)

This FDA Circular shall take effect immediately and supersede other regulations or guidelines inconsistent herewith.


KENNETH Y. HARTIGAN-GO, MD
Acting Director IV

TABLE 1. MILK AND DAIRY PRODUCTS

FOOD DESCRIPTION	TEST/MICROORGANISM Reference Criteria	n	c	m	M
Milk Powders (e.g. whole, nonfat or filled milk, buttermilk, whey & whey protein concentrate) (intended for children more than 36 months of age and adults)	<i>Salmonella</i> /25g, normal routine	10	0	0	
	for high risk population	30	0	0	
	SPC/APC, cfu/g	5	2	5x10 ³	5x10 ⁴
	Enterobacteriaceae cfu/g	5	1	10	10 ²
Sweetened Condensed Milk	¹ Coliforms, cfu/g	5	1	10	10 ²
	Yeast and Molds Count, cfu/g	5	1	10	10 ²
	SPC/APC, cfu/g	5	1	10 ³	10 ⁴
Liquid Milk (evaporated or ready to drink) & Cream (UHT/sterilized)	Commercial Sterility	6	0	Commercially sterile	
Pasteurized Milk	² Coliforms, cfu/mL	5	1	10 ²	10 ³
	<i>Salmonella</i> /25mL	5	0	0	
	<i>Listeria monocytogenes</i> /25 mL	5	0	0	
	Psychrotrophic bacteria, cfu/mL	5	1	10	10 ²
	SPC/APC, cfu/mL	5	1	5x10 ⁴	10 ⁵
	➤ for flavored milk	5	2	5x10 ⁴	10 ⁶
Pasteurized Cream	¹ Coliforms, cfu/g	5	1	10 ²	10 ³
	<i>Salmonella</i> /25g	5	0	0	
	<i>Listeria monocytogenes</i> /25g	5	0	0	
	Psychrotrophic bacteria, cfu/g	5	1	10	10 ²
	SPC/APC, cfu/g	5	1	5x10 ⁴	10 ⁵
Yogurt and other fermented milk	<i>S. aureus</i> (coagulase +), cfu/mL	5	2	10	10 ²
	¹ Coliforms, cfu/mL	5	2	10	10 ²
	<i>Salmonella</i> /25mL	5	0	0	
	Lactic Acid, cfu/mL				
	(required minimum level: ≥10 ⁶)	-	-	-	-

¹ Coliforms must be negative for *E. coli*

Legend: n – number of sample units selected from a lot of food to be examined
m – acceptable level of microorganism determined by a specified method; the values are generally based on levels that are achievable under GMP
M – level which when exceeded in one or more samples would cause the lot to be rejected as this indicates potential health hazard or imminent spoilage
c – maximum allowable number of defective or marginally acceptable units

TABLE 1. MILK AND DAIRY PRODUCTS cont.

FOOD DESCRIPTION	TEST/MICROORGANISM Reference Criteria	n	c	m	M
Cheese and Cheese Products; e.g. Cottage Cheese; Soft and Semi-soft cheese (moisture ≥39%, pH > 5)	<i>S. aureus</i> (coagulase +), cfu/g	5	2	10 ²	10 ³
	<i>E.coli</i> , MPN/g	5	1	11	110
	Coliforms, MPN/g	5	1	11	10 ³
	Psychrotrophic bacteria, cfu/g	5	2	10 ²	10 ³
	<i>Salmonella</i> /25g	5	0	0	
	<i>Listeria monocytogenes</i> /25g	5	0	0	
Processed Cheese Spread	¹ Coliforms, cfu/g	5	1	10	10 ²
	<i>S. aureus</i> (coagulase +), cfu/g	5	1	10	10 ²
	SPC/APC, cfu/g	5	2	10 ⁴	5x10 ⁴
All Raw Milk Cheese; Raw Milk Un-ripened cheese w/moisture>50%, pH > 5.0	<i>Campylobacter</i> /25g	5	0	0	
	<i>Salmonella</i> /25g	5	0	0	
	<i>Listeria monocytogenes</i> /25g	5	0	0	
	<i>S. aureus</i> (coagulase +), cfu/g	5	2	10 ²	10 ³

¹ Coliforms must be negative for *E. coli*

TABLE 2. FATS, OILS AND FAT EMULSIONS

FOOD DESCRIPTION	TEST/MICROORGANISM Reference Criteria	n	c	m	M
Butter (whipped, pasteurized)	Enterococci, cfu/g	5	1	10	10 ²
	YMC, cfu/g	5	1	20	10 ²
	Proteolytic bacteria, cfu/g	5	1	10 ²	10 ³
	Coliforms, cfu/g	5	1	10	10 ²
	<i>S. aureus</i> (coagulase +), cfu/g	5	0	10 ²	
	Psychrotrophic bacteria, cfu/g	5	1	10	10 ²
	SPC/APC, cfu/mL	5	1	5x10 ⁴	10 ⁵
Butter made from unpasteurized milk or milk products	Coliforms, cfu/g	5	1	10	10 ²
	<i>E.coli</i> , MPN/g	5	1	3	11
	<i>S. aureus</i> (coagulase +), cfu/g	5	1	10	10 ²
	<i>Salmonella</i> /25g	5	0	0	
	<i>Listeria monocytogenes</i> /25g	5	0	0	
	SPC/APC, cfu/g	5	1	5x10 ⁴	10 ⁵
Margarine	<i>S. aureus</i> (coagulase +), cfu/g	5	0	10	
	Faecal Coliform, MPN/g	5	2	50	5x10 ²
	<i>Listeria monocytogenes</i> /25g	5	0	0	
	<i>Salmonella</i> /25g	5	0	0	
	SPC/APC, cfu/g	5	2	2.5x10 ⁴	2.5x10 ⁵
	YMC, cfu/g	5	2	50	5x10 ²

Legend: n – number of sample units selected from a lot of food to be examined
m – acceptable level of microorganism determined by a specified method; the values are generally based on levels that are achievable under GMP
M – level which when exceeded in one or more samples would cause the lot to be rejected as this indicates potential health hazard or imminent spoilage
c – maximum allowable number of defective or marginally acceptable units

TABLE 3. EDIBLE ICES, INCLUDING SHERBET AND SORBET

FOOD DESCRIPTION	TEST/MICROORGANISM Reference Criteria	n	c	m	M
Ice Cream & Sherbet (plain and flavored)	¹ Coliforms, cfu/g	5	1	10	10 ³
	<i>Listeria monocytogenes</i> /25g	5	0	0	
	<i>Salmonella</i> /25g	5	0	0	
	SPC/APC, cfu/g	5	2	10 ⁴	5x10 ⁴
	<i>S. aureus</i> (coagulase +), cfu/g	5	1	10	10 ²
Ice Cream with added ingredients (nuts, fruits, cocoa etc.)	¹ Coliforms, cfu/g	5	2	10	10 ³
	<i>S. aureus</i> (coagulase +), cfu/g	5	1	10	10 ²
	<i>Salmonella</i> /25g	5	0	0	
	SPC/APC, cfu/g	5	2	5x10 ⁴	2x10 ⁵
	<i>Listeria monocytogenes</i> /25g	5	0	0	
Flavored Ice (e.g. Ice candy)	SPC/APC, cfu/g	5	2	10 ²	10 ⁴
	Coliforms, MPN/g	5	0	3.0	
	YMC, cfu/g	5	0	10 ²	
	<i>Salmonella</i> /25g	5	0	0	

¹ Coliforms must be negative for *E. coli*

TABLE 4. CONFECTIONERIES

FOOD DESCRIPTION	TEST/MICROORGANISM Reference Criteria	n	c	m	M
Cocoa Powder	Molds, cfu/g	5	2	10 ²	10 ⁴
	<i>Salmonella</i> / 25g	5	0	0	
	Coliforms, MPN/g	5	2	1.8	10
	SPC/APC, cfu/g	5	2	10 ⁴	10 ⁶
Chocolate Products	Molds, cfu/g	5	2	10 ²	10 ⁴
	<i>Salmonella</i> / 25g	10	0	0	
	Coliforms, MPN/g	5	2	1.8	10 ²
	SPC/APC, cfu/g	5	2	10 ⁴	10 ⁶
Chocolate Confectionaries (chocolate bars, blocks, bonbons)	Molds, cfu/g	5	2	10 ²	10 ³
	<i>Salmonella</i> / 25g	5	0	0	
	Coliforms, MPN/g	5	2	1.8	10 ²
	SPC/APC, cfu/g	5	2	10 ³	10 ⁶
Sugar Confectionaries (Hard and soft candies, toffees, caramel, fondants, creams, nougats and pastes)	Molds, cfu/g	5	2	10	10 ²
	<i>Salmonella</i> / 25g	5	0	0	
	Coliforms, MPN/g	5	2	1.8	10 ²
	SPC/APC, cfu/g	5	2	10 ⁴	10 ⁶

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 M – level which when exceeded in one or more samples would cause the lot to be rejected as this indicates potential health hazard or imminent spoilage
 c – maximum allowable number of defective or marginally acceptable units

TABLE 5. FRUITS AND VEGETABLES, NUTS AND SEEDS

FOOD DESCRIPTION	TEST/MICROORGANISM	n	c	m	M	
Reference Criteria						
Frozen Vegetables & Fruits (pH >4.5)	<i>E.coli</i> , MPN/g	5	2	110	10 ³	
Fermented Vegetables, Ready to Eat (e.g. Kimchi)	YMC, cfu/g	5	2	10 ²	10 ⁴	
	Coliforms, MPN/g	5	0	3		
	<i>E.coli</i> , MPN/g	5	0	3		
	<i>Salmonella</i> /25g	5	0	0		
	<i>Staphylococcus aureus</i> , cfu/g	5	0	10		
Fruits & Vegetable products in Hermetically sealed containers (thermally processed)	Commercial sterility	6	0	Commercially sterile		
Dried Vegetables	<i>E. coli</i> , MPN/g	5	2	110	10 ³	
Coconut (desiccated)	Refer to PNS/BAFPS 25:2007					
Peanut Butter & other Nut Butters	<ul style="list-style-type: none"> ➤ consumed without heating or other treatment to destroy microbes ➤ used as ingredient in high moisture food 	<i>Salmonella</i> / 25g	10	0	0	
		<i>Salmonella</i> / 25g	20	0	0	
Sun Dried Fruits	Molds, cfu/g	5	2	10 ²	10 ⁴	
	Osmophilic Yeasts, cfu/g	5	2	10	10 ³	
	<i>E.coli</i> , MPN/g	5	2	3	11	

¹Coliforms must be negative for *E.coli*

TABLE 6. EGG AND EGG PRODUCTS

FOOD DESCRIPTION	TEST/MICROORGANISM	n	c	m	M
Reference Criteria					
Pasteurized Egg Products (liquid, frozen or dried)	Coliforms, cfu/g	5	2	10	10 ³
	<i>Salmonella</i> /25g	10	0	0	
	YMC, cfu/g (for dried products)	5	0	10	
	SPC/APC, cfu/g	5	0	2.5x10 ⁴	10 ⁵

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 M – level which when exceeded in one or more samples would cause the lot to be rejected as this indicates potential health hazard or imminent spoilage
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TABLE 7. CEREALS AND CEREAL PRODUCTS

FOOD DESCRIPTION	TEST/MICROORGANISM Reference Criteria	n	c	m	M
Breakfast Cereals	Molds, cfu/g	5	2	10	10 ³
	Yeast & Yeastlike fungi, cfu/g	5	2	10	10 ²
	Coliform, cfu/g	5	2	10	10 ²
	SPC/APC, cfu/g	5	2	10 ³	10 ⁴
Cereals/Cereal Grains	YMC, cfu/g	5	2	10 ²	10 ⁴
	SPC/APC, cfu/g	5	2	10 ²	10 ⁶
	Coliform, cfu/g	5	2	10 ²	10 ⁴
	<i>E.coli</i> , MPN/g	5	2	10 ²	10 ⁴
Cultured seeds and grains (e.g. bean sprouts, alfalfa etc.)	<i>E. coli</i> , MPN/g	5	2	10	10 ²
	Coliforms, cfu/g	5	2	10 ²	10 ⁴
	<i>Salmonella</i> /25g	5	0	0	
Soya Flours, Concentrates and Isolates	Molds, cfu/g	5	2	10 ³	10 ⁵
	<i>Salmonella</i> /25g	5	0	0	
Flour, Corn meal, Corn grits, Semolina	Molds, cfu/g	5	2	10 ²	10 ⁴
	Yeast & Yeastlike fungi, cfu/g	5	2	10	10 ²
	Coliform, cfu/g	5	2	10	10 ²
	<i>Bacillus subtilis</i> , cfu/g	5	2	10	10 ²
	“rope spores”	5	2	10	10 ²
Frozen entrees containing Rice or Corn Flour as main ingredient	<i>B. cereus</i> , cfu/g	5	1	10 ²	10 ⁴
Soy Protein	Coliforms, cfu/g	5	2	10 ²	10 ³
	<i>E. coli</i> , MPN/g	5	1	10	10 ²
	Psychrotrophic bacteria, cfu/g	5	2	10 ²	10 ⁴
	<i>Clostridium perfringens</i> , cfu/g	5	2	10	10 ²
	YMC, cfu/g	5	2	10	10 ²
	<i>Salmonella</i> / 25g	5	0	0	
	SPC/APC, cfu/g	5	2	10 ²	10 ⁵
Tofu	<i>B. cereus</i> , cfu/g	5	2	10 ²	10 ³
	<i>E. coli</i> , MPN/g	5	0	1.8	
	<i>S. aureus</i> (coagulase +), cfu/g	5	2	10 ²	10 ³
Pasta Products and Noodles Uncooked (wet & dry)	Coliforms, cfu/g	5	2	10	10 ³
	YMC, cfu/g	5	2	10 ²	10 ⁵
	<i>S. aureus</i> (coagulase +), cfu/g	5	1	10 ²	10 ⁴
	<i>Salmonella</i> / 25g	5	0	0	
	SPC/APC, cfu/g	5	2	10 ³	10 ⁵
Starch	Coliforms, cfu/g	5	2	10	10 ²
	YMC, cfu/g	5	2	10 ²	10 ³
	<i>Salmonella</i> /25g	5	0	0	
	SPC/APC, cfu/g	5	2	10 ³	5x10 ⁴

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TABLE 8. BAKERY PRODUCTS

FOOD DESCRIPTION	TEST/MICROORGANISM Reference Criteria	n	c	m	M
Frozen Bakery products (ready to eat) with low-acid or high a_w fillings or toppings	<i>S. aureus</i> (coagulase +), cfu/g	5	1	10 ²	10 ⁴
	<i>Salmonella</i> / 25g	5	0	0	
Frozen Bakery Products (to be cooked) with low-acid or high a_w fillings or toppings (e.g. meat pies, pizzas)	<i>S. aureus</i> (coagulase +), cfu/g	5	1	10 ²	10 ⁴
	<i>Salmonella</i> / 25g	5	0	0	
Frozen and Refrigerated Doughs (Chemically leavened)	Molds, cfu/g	5	2	10 ²	10 ⁴
	Yeasts & Yeastlike Fungi, cfu/g	5	2	10 ⁵	10 ⁶
	Coliforms, cfu/g	5	2	10	10 ²
	Psychrotrophic bacteria, cfu/g	5	2	10	10 ³
	SPC/APC, cfu/g	5	2	10 ²	10 ⁷
	<i>Salmonella</i> / 25g	5	0	0	
	<i>S. aureus</i> (coagulase +) , cfu/g	5	2	10 ²	10 ⁴
	<i>E. coli</i> , MPN/g	5	0	3.0	
Frozen & Refrigerated Doughs	Molds, cfu/g	5	2	10 ²	10 ⁴
	Yeasts & Yeastlike Fungi, cfu/g	5	2	10 ⁵	10 ⁶
	Coliforms, cfu/g	5	2	10	10 ²
	Psychrotrophic bacteria, cfu/g	5	2	10	10 ³
	SPC/APC, cfu/g	5	2	10 ³	10 ⁶
Baked Goods (microbiologically sensitive types e.g containing eggs & dairy products)	<i>S. aureus</i> (coagulase +), cfu/g	5	2	10 ²	10 ⁴
	MYC, cfu/g	5	2	10 ²	10 ⁴
	SPC/APC, cfu/g	5	2	10 ⁴	10 ⁶
	Coliforms, cfu/g	5	2	50	10 ³
Coated or Filled, Dried Shelf-Stable Biscuits	¹ <i>Coliforms</i> , MPN/g	5	2	3	20
	<i>Salmonella</i> /25g	10	0	0	

¹Coliforms must be negative for *E.coli*

TABLE 9. READY TO EAT SAVOURIES

FOOD DESCRIPTION	TEST/MICROORGANISM Reference Criteria	n	c	m	M
Snack Foods	Molds, cfu/g	5	2	10	10 ³
	Yeast & Yeastlike fungi, cfu/g	5	2	10	10 ²
	Coliform, cfu/g	5	2	10	10 ²
	SPC/APC, cfu/g	5	2	10 ³	10 ⁴

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TABLE 10. MEAT AND MEAT PRODUCTS**

FOOD DESCRIPTION	TEST/MICROORGANISM Reference Criteria	n	c	m	M
Dried Animal Products	<i>S. aureus</i> (coagulase +), cfu/g	5	1	10 ²	10 ⁴
	<i>Clostridium perfringens</i> , cfu/g	5	1	10 ²	10 ⁴
	<i>Salmonella</i> /25g	10	0	0	
Meat Paste & Paté (heat treated)	<i>Salmonella</i> /25g	5	0	0	
	<i>Clostridium perfringens</i> , cfu/g	5	2	10 ²	10 ³
	<i>S. aureus</i> (coagulase +), cfu/g	5	2	10 ²	10 ³
	¹ Coliforms, cfu/g	5	2	10	10 ²
	SPC/APC, cfu/g	5	2	10 ⁴	10 ⁵
Cold Cuts, Frozen & Chilled Hot Dogs, Corned Beef, Luncheon Meat	<i>E.coli</i> , MPN/g	5	0	1.8	
	<i>Salmonella</i> /25g	10	0	0	
	<i>S. aureus</i> (coagulase +), cfu/g	5	2	10 ²	10 ³
	SPC/APC, cfu/g	5	2	10 ⁵	10 ⁶
Packaged cooked cured/salted meat (ham, bacon)	<i>S. aureus</i> (coagulase +), cfu/g	5	2	10 ²	10 ³
	<i>Salmonella</i> /25g	5	0	0	
	<i>Listeria monocytogenes</i> /25g	5	0	0	
Fermented, comminuted meat, not cooked (dry & semi-dry fermented sausages)	<i>E.coli</i> , MPN/g	5	0	1.8	
	<i>S. aureus</i> (coagulase +), cfu/g	5	1	10 ³	10 ⁴
	<i>Salmonella</i> /25g	5	0	0	
Cooked Poultry Meat, Frozen to be reheated before eating (e.g. prepared frozen meals)	<i>S. aureus</i> (coagulase +), cfu/g	5	1	10 ³	10 ⁴
	<i>Salmonella</i> /25g	5	0	0	
Cured/Smoked Poultry Meat	<i>S. aureus</i> (coagulase +), cfu/g	10	1	10 ³	10 ⁴
	<i>Salmonella</i> /25g	10	0	0	
Dehydrated Poultry Products	<i>Salmonella</i> / 25g	10	0	0	
Fresh/Frozen Raw Chicken (during processing)	SPC/APC, cfu/g (at 20°C)	5	3	5x10 ⁵	10 ⁷
Meat Products in hermetically sealed containers	Commercial sterility	6	0	Commercially sterile	

¹Coliforms must be negative for *E.coli*

** Effective 16 February 2010, all meat and meat products are being handled and regulated by the National Meat Inspection Service (NMIS) of the Department of Agriculture as mandated by RA 9296 "Meat Inspection Code of the Philippines and DA-DOH joint Administrative Order No.1 s 2009". Any guidelines set by the NMIS shall supersede the specifications herein stated once it is made available.

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M – level which when exceeded in one or more samples would cause the lot to be rejected as this indicates potential health hazard or imminent spoilage
c – maximum allowable number of defective or marginally acceptable units

TABLE 11. FISH AND FISH PRODUCTS

FOOD DESCRIPTION	TEST/MICROORGANISM	n	c	m	M
Fresh Frozen Fish^a and Cold-Smoked^b	<i>E. coli</i> , MPN/g	5	3	11	500
	<i>S. aureus</i> (coagulase +), cfu/g	5	2	10 ³	10 ⁴
	<i>V. parahaemolyticus</i> , cfu/g	5	2	10 ²	10 ³
	<i>Salmonella</i> /25g	5	0	0	
	SPC/APC, cfu/g	5	3	5x10 ⁵	10 ⁷
Pre-Cooked Breaded Fish	<i>E. coli</i> , MPN/g	5	2	11	500
	<i>S. aureus</i> (coagulase +), cfu/g	5	1	10 ³	10 ⁴
	SPC/APC, cfu/g	5	2	5x10 ⁵	10 ⁷
Frozen Raw Crustaceans^c	<i>E. coli</i> , MPN/g	5	3	11	500
	<i>S. aureus</i> (coagulase +), cfu/g	5	2	10 ³	10 ⁴
	<i>Salmonella</i> /25g	5	0	0	
	<i>V. parahaemolyticus</i> , cfu/g	5	1	10 ²	10 ³
	SPC/APC, cfu/g	5	3	10 ⁶	10 ⁷
Frozen Cooked Crustaceans	<i>E. coli</i> , MPN/g	5	2	11	500
	<i>S. aureus</i> (coagulase +), cfu/g	5	0	10 ²	
	<i>Salmonella</i> /25g	20	0	0	
	<i>V. parahaemolyticus</i> , cfu/g	10	1	10 ²	10 ³
	SPC/APC, cfu/g	5	2	5x10 ⁵	5x10 ⁶
Cooked, Chilled & Frozen Crabmeat^d	<i>E. coli</i> , MPN/g	5	1	11	500
	<i>S. aureus</i> (coagulase +), cfu/g	5	0	10 ³	
	<i>V. parahaemolyticus</i> , cfu/g	10	1	10 ²	10 ³
	SPC/APC, cfu/g	5	2	10 ⁵	10 ⁶
Fresh & Frozen Bivalve Molluscs^e	<i>E. coli</i> , MPN/g	5	0	16	
	<i>Salmonella</i> /25g	20	0	0	
	<i>V. parahaemolyticus</i> , cfu/g	10	1	10 ²	10 ³
	SPC/APC, cfu/g	5	0	5x10 ⁵	
Fish & Shellfish products in hermetically sealed containers (thermally processed)	Commercial Sterility	6	0	Commercially sterile	

^a For fish derived from inshore/inland waters of doubtful bacteriological quality, particularly warm areas or harvested during summer. Tests for *Salmonella* and *V. parahaemolyticus* recommended if fish is to be eaten raw.

^b Test for *S. aureus* recommended for smoked fish.

^c Test for *S. aureus* recommended for breaded products. *Salmonella* and *V. parahaemolyticus* applied to products from waters or harvested during summer.

^d SPC/APC for frozen products only

^e Criteria to be used only for molluscs from approved harvesting areas where waters are free from enteric bacteria or virus contamination and no significant contamination by toxic metals or chemicals may be accumulated by animals
Tests for *Salmonella* and *V. parahaemolyticus* recommended for molluscs from endemic areas or harvested from warm waters during summer.

Legend: n – number of sample units selected from a lot of food to be examined
m – acceptable level of microorganism determined by a specified method; the values are generally based on levels that are achievable under GMP
M – level which when exceeded in one or more samples would cause the lot to be rejected as this indicates potential health hazard or imminent spoilage
c – maximum allowable number of defective or marginally acceptable units

TABLE 12. SPICES, SOUPS, SAUCES, SALADS AND PROTEIN PRODUCTS

FOOD DESCRIPTION	TEST/MICROORGANISM Reference Criteria	n	c	m	M
Dry Mixes for Soup and Sauces	<i>Clostridium perfringens</i> , cfu/g	5	2	10 ²	10 ³
	YMC, cfu/g	5	3	10 ²	10 ⁴
	Coliforms, cfu/g	5	3	10	10 ³
	SPC/APC, cfu/g	5	2	10 ⁴	10 ⁶
	<i>Salmonella</i> /25g	5	0	0	
Yeast	<i>Salmonella</i> /25g	20	0	0	
Spices	Molds, cfu/g	5	2	10 ²	10 ⁴
	SPC/APC, cfu/g	5	2	10 ⁴	10 ⁶
Spices (ready to eat)	¹ Coliforms, cfu/g	5	2	10 ²	10 ³
	<i>S. aureus</i> (coagulase +), cfu/g	5	2	10 ²	10 ⁴
	<i>Salmonella</i> / 25g	5	0	0	
	Molds, cfu/g	5	2	10 ²	10 ⁴
	SPC/APC, cfu/g	5	2	10 ⁴	10 ⁶
Salad Dressing, pH ≤ 4.6 (e.g. Mayonnaise, Thousand Island, Ranch, French)	SPC/APC, cfu/g	5	2	10	10 ²
	YMC, cfu/g	5	2	10	10 ²
	<i>Salmonella</i> /25g	5	0	0	
	<i>Listeria monocytogenes</i> /25g	5	0	0	

¹Coliforms must be negative for *E.coli*

TABLE 13. BEVERAGES

FOOD DESCRIPTION	TEST/MICROORGANISM Reference Criteria	n	c	m	M
Non Alcoholic Beverages (e.g. Ready to drink, softdrinks, iced tea, energy drinks)	YMC, cfu/mL	5	0	1	
	Coliforms, cfu/mL	5	0	1	
	SPC/APC, cfu/mL	5	1	10	10 ²
Frozen Juice Concentrate	SPC/APC, cfu/mL	5	2	10 ²	10 ⁵
	YMC, cfu/mL	5	1	10	50
Powdered Beverages (e.g. iced tea, powdered juices/mixes)	SPC/APC, cfu/g	5	0	3x10 ³	
	Coliforms, cfu/g	5	0	10	

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 m – acceptable level of microorganism determined by a specified method; the values are generally based on levels that are achievable under GMP
 M – level which when exceeded in one or more samples would cause the lot to be rejected as this indicates potential health hazard or imminent spoilage
 c – maximum allowable number of defective or marginally acceptable units

TABLE 14. FOOD FOR INFANTS AND YOUNG CHILDREN

FOOD DESCRIPTION	TEST/MICROORGANISM	n	c	m	M
Powdered Infant Formula with or without added Lactic acid producing cultures (intended for 0 to 6 months old)	Routine analysis: <i>Cronobacter spp.</i> / 10g	30	0	0	
	* <i>Salmonella</i> / 25 g	60	0	0	
	For complaint investigation (additional to routine analysis): ¹ Coliforms, MPN/g	5	2	3	11
	<i>E. coli</i> , MPN/g	10	1	1.8	10
	² Process Hygiene Indicators: SPC/APC, cfu/g	5	2	5x10 ²	5x10 ³
	Enterobacteriaceae/ 10g	10	2	0	³ NA
Follow-up Formula/Milk Supplement (intended for infants 6 months on and for young children 12-36 months of age)	Routine analysis: * <i>Salmonella</i> / 25 g	60	0	0	
	For complaint investigation (additional to routine analysis): ¹ Coliforms, MPN/g	5	2	3	11
	<i>E. coli</i> , MPN/g	10	1	1.8	10
	² Process Hygiene Indicators: SPC/APC, cfu/g	5	2	5x10 ²	5x10 ³
	Enterobacteriaceae/ 10g	10	2	0	³ NA
Infant Formula - liquid (UHT/sterilized)	Commercial Sterility	6	0	Commercially Sterile	
Baby foods in hermetically sealed containers	Commercial Sterility	6	0	Commercially Sterile	
Dried and Instant products requiring reconstitution	¹ Coliforms, MPN/g	5	1	3	20
	SPC/APC, cfu/g	5	2	10 ³	10 ⁴
	* <i>Salmonella</i> /25g	60	0	0	
	<i>Listeria monocytogenes</i> /25g	5	0	0	
Dried products requiring reconstitution and boiling before consumption	¹ Coliforms, cfu/g	5	2	10	10 ²
	<i>Salmonella</i> /25g	5	0	0	
	SPC/APC, cfu/g	5	3	10 ⁴	10 ⁵
Cereal based foods for infants	<i>Bacillus cereus</i> , cfu/g	10	1	10 ²	10 ⁴
	<i>Clostridium perfringens</i> , cfu/g	5	1	10	10 ²
	SPC/APC, cfu/g	5	2	10 ³	10 ⁴
	<i>Salmonella</i> /25 g	10	0	0	
	Coliforms, MPN/g	5	2	3	20

¹ Coliforms must be negative for *E. coli*

*25g sample units may be composited to a quantity not to exceed 400g

n = 60 → 4 x 15 (25g) composite units

² Process hygiene criteria to be applied to the finished product (powder form) or at any other previous point that provides the information necessary for the purpose of verification. The criteria is intended to be used by the manufacturer as a means of ongoing assessment of their hygiene programs. (CAC/RCP 66-2008)

³ NA = not applicable

Legend: n – number of sample units selected from a lot of food to be examined

m – acceptable level of microorganism determined by a specified method; the values are generally based on levels that are achievable under GMP

M – level which when exceeded in one or more samples would cause the lot to be rejected as this indicates potential health hazard or imminent spoilage

c – maximum allowable number of defective or marginally acceptable units