



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF HEALTH
BUREAU OF FOOD AND DRUGS

Filinvest Corporate City
Alabang, Muntinlupa City



MALAYA AT MALUSOG
KA PAMAYANAN

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BUREAU CIRCULAR

No. 01-A s. 2004

TO: ALL CONCERNED

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

In order to protect the public health, the BFAD is mandated to ensure food manufacturers comply with Good Manufacturing Practices (GMP). One of the food safety measures being implemented is the reduction of microbial contamination in processed foods through the application of Hazard Analysis Critical Control Point (HACCP).

This Bureau Circular is hereby issued to serve as guidelines for the assessment of microbiological quality of certain processed foods.

The reference criteria is prescribed in Tables 1-6. The Tables contain a description of the food to which a criterion applies, the required test(s) or the microorganism(s) of concern, the number of samples to be tested, the level of 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 are obtained from the following 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. Microorganisms in Foods by the International Commission on Microbiological Specifications for Foods (ICMSF)

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


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Director IV

TABLE 1. MILK AND DAIRY PRODUCTS

ANNEX A

FOOD DESCRIPTION	TEST / MICROORGANISM Reference Criteria	n	c	m	M
Milk Powders (whole, nonfat or filled milk, buttermilk, whey & whey protein concentrate)	<i>Bacillus cereus</i> , cfu/g	5	1	10 ²	10 ³
	<i>S. aureus</i> (coagulase +), cfu/g	5	2	10	10 ²
	¹ Coliforms, cfu/g	5	1	10	10 ²
	<i>Salmonella</i> / 25g normal routine for high risk population	5 15	0 0	0 0	
	SPC/APC, cfu/g	5	2	5 x 10 ⁴	2 x 10 ⁵
Sweetened Condensed Milk	¹ Coliforms, cfu/g	5	1	10	10 ²
	YMC, cfu/g	5	1	10	10 ²
	SPC/APC, cfu/g	5	1	10 ³	10 ⁴
Liquid Milk (evaporated or ready to drink) and Cream Ultra Heat Treated / Sterilized	Commercial Sterility	6			
Pasteurized Milk	¹ Coliforms, cfu/ml	5	1	10 ²	10 ³
	<i>Salmonella</i> / 25 ml	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	5 x 10 ⁴	10 ⁵
	➔ for flavored milk	5	2	5 x 10 ⁴	10 ⁶
Pasteurized Cream	¹ Coliforms, cfu/ml	5	1	10 ²	10 ³
	<i>Salmonella</i> / 25 ml	5	0	0	
	<i>Listeria monocytogenes</i> / 25 ml	5	0	0	
	SPC/APC, cfu/ml	5	1	5 x 10 ⁴	10 ⁵
	Psychrotrophic bacteria, cfu/ml	5	1	10	10 ²
Yoghurt & other fermented Milk	<i>S. aureus</i> (coagulase +), cfu/g	5	2	10	10 ²
	¹ Coliforms, cfu/g	5	2	10	10 ²
	<i>Salmonella</i> / 25g	5	0	0	
Butter & Whipped Butter	<i>Enterococci</i> , 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
Butter made from unpasteurized milk and/or milk products	<i>Coliforms</i> , 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	0	5x10 ⁴	10 ⁵

¹ Coliforms must be negative for *E. coli*

Legend:

- n** - the number of sample units selected from a lot of food to be examined
- m** - the acceptable level of microorganism determined by a specified method; the values are generally based on levels that are achievable under GMP
- M** - the 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** - the maximum allowable number of defective or marginally acceptable units

TABLE 1. MILK AND DAIRY PRODUCTS

ANNEX.

FOOD DESCRIPTION	TEST / MICROORGANISM Reference Criteria	n	c	m	M
All Cheese made from pasteurized milk	<i>S. aureus</i> (coagulase+), cfu/g	5	2	10 ²	10 ³
	<i>E. coli</i> , MPN/g	5	1	<11	<110
Cottage Cheese	Coliforms, MPN/g	5	1	<11	10 ³
	Psychrotrophic bacteria, cfu/g	5	2	10 ²	10 ³
Soft & Semi-soft cheese (moisture ≥39%, pH > 5)	<i>Salmonella</i> / 25g	5	0	0	
	<i>Listeria monocytogenes</i> / 25g	5	0	0	
All Raw Milk cheese	<i>Listeria monocytogenes</i> / 25g	5	0	0	
	<i>Salmonella</i> / 25g	5	0	0	
Raw Milk Unripened Cheese with moisture >50%, pH >5.0	<i>Campylobacter</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
Ice Cream & Sherbet plain & flavored	¹ Coliforms, cfu/g	5	1	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	10 ⁴	5x10 ⁴
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	2 x 10

¹ Coliforms must be negative for *E. coli*

Legend:

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- m - the acceptable level of microorganism determined by a specified method; the values are generally based on levels that are achievable under GMP
- M - the 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 - the maximum allowable number of defective or marginally acceptable units

FOOD DESCRIPTION	TEST / MICROORGANISM Reference Criteria	n	c	m	M
Powdered Infant Formula with or without added Lactic acid producing cultures	<i>Bacillus cereus</i> , cfu/g	5	2	10	10 ²
	<i>S. aureus</i> (coagulase +), cfu/g	5	1	0	10
	Coliforms, MPN/g	5	2	<3	11
	<i>E. coli</i> , MPN/g	10	1	<1.8	10
	Salmonella / 25 g	10	0	0	
	SPC/APC, cfu/g (prior to addition of lactic acid producing cultures)	5	2	10 ³	10 ⁴
	For complaint investigation <i>Cl. perfringens</i> , cfu/g	5	1	<1	10
	<i>Listeria monocytogenes</i> / 25g	5	0	0	
	Infant formula (liquid) UHT/sterilized	Commercial Sterility	6		
Baby foods in hermetically sealed containers (thermally processed)	Commercial Sterility	6			
Dried & instant products requiring reconstitution	¹ Coliforms, MPN/g	5	1	<3	20
	Salmonella /25g	60*	0	0	
	SPC/APC, cfu/g	5	2	10 ³	10 ⁴
Instant Infant Cereal	<i>Bacillus cereus</i> , cfu/g	10	1	10 ²	10 ⁴
	<i>Cl. perfringens</i> , cfu/g	10	1	10 ²	10 ³
Dried products requiring reconstitution and boiling before consumption	Coliforms, cfu/g	5	2	10	10 ²
	Salmonella /25g	5	0	0	
	SPC/APC, cfu/g	5	3	10 ⁴	10 ⁵
Infant Formula (liquid) UHT/sterilized	Commercial Sterility	6			
Coated or Filled, Dried Shelf-Stable Biscuits	¹ Coliforms, MPN/g	5	2	<3	20
	Salmonella / 25g	10	0	0	

¹ Coliforms must be negative for *E. coli*

* 25 g sample units may be composited to a quantity not to exceed 400 g
n = 60 = 4 x 15 (25g) composite units

Legend:

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

M - the 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 - the maximum allowable number of defective or marginally acceptable units

TABLE 3. MEAT AND POULTRY PRODUCTS

ANNEX A

FOOD DESCRIPTION	TEST / MICROORGANISM Reference Criteria	n	c	m	M
Dried Animal Products (blood, plasma, gelatin)	<i>S. aureus</i> (coagulase +), cfu/g	5	1	10 ²	10 ⁴
	<i>Cl. 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	<i>E. coli</i> , MPN/g	5	0	<1.8	
	<i>Salmonella</i> / 25g	10	0	0	
Hot Dogs, Corned Beef, Luncheon Meat	<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 and semi-dry fermented sausages)	<i>S. aureus</i> (coagulase +), cfu/g	5	1	10 ³	10 ⁴
	<i>E. coli</i> , MPN/g	5	0	<1.8	
	<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	
Cooked Poultry Meat, Frozen, Ready-to-Eat (e.g., Turkey rolls)	<i>S. aureus</i> (coagulase +), cfu/g	5	1	10 ³	10 ⁴
	<i>Salmonella</i> / 25g	10	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 (thermally processed)	Commercial Sterility	6			
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 product)	5	0	10	
	SPC/APC, cfu/g	5	0	2.5x10 ⁴	10 ⁵

¹ Coliforms must be negative for *E. coli*

Legend:

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- M** - the 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** - the maximum allowable number of defective or marginally acceptable units

TABLE 4. FISH AND SHELLFISH PRODUCTS

ANNEX 1

FOOD DESCRIPTION	TEST / MICROORGANISM Reference Criteria	n	c	m	M
Fresh Frozen Fish ^a and Cold-Smoked ^b	<i>E. coli</i> , MPN/g	5	3	11	<500
	<i>Salmonella</i> / 25g	5	0	0	
	<i>V. parahaemolyticus</i> , cfu/g	5	2	10 ²	10 ³
	<i>S. aureus</i> (coagulase +), cfu/g	5	2	10 ³	10 ⁴
	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			

^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 warm 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 or during summer.

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M - the 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 - the maximum allowable number of defective or marginally acceptable units

TABLE 5. FRUITS, VEGETABLES AND NUTS

ANNEX

FOOD DESCRIPTION	TEST / MICROORGANISM Reference Criteria	n	c	m	M
Frozen Vegetables & Fruits (pH > 4.5)	<i>E. coli</i> , MPN/g	5	2	<110	10 ³
Fruit & Vegetable products in Hermetically sealed containers (thermally processed)	Commercial Sterility	6			
Dried Vegetables	<i>E. coli</i> , MPN/g	5	2	<110	10 ³
Coconut (desiccated)	<i>Salmonella</i> / 25g	10	0	0	
Yeast	<i>Salmonella</i> / 25g	20	0	0	
Peanut Butter & other Nut Butters → consumed without heating or other treatment to destroy microbes → used as ingredient in high moisture food	<i>Salmonella</i> / 25g <i>Salmonella</i> / 25g	10 20	0 0	0 0	
Sun Dried Fruits	Molds, cfu/g Osmophilic Yeasts, cfu/g <i>E. coli</i> , MPN/g	5 5 5	2 2 2	10 ² 10 <3	10 ⁴ 10 ³ 11
Spices	Molds, cfu/g SPC/APC, cfu/g	5 5	2 2	10 ² 10 ⁴	10 ⁴ 10 ⁶
Spices (ready to eat)	¹ Coliforms, cfu/g <i>S. aureus</i> (coagulase +), cfu/g <i>Salmonella</i> / 25g Molds, cfu/g SPC/APC, cfu/g	5 5 5 5	2 2 0 2	10 ² 10 ² 0 10 ²	10 ³ 10 ⁴ 10 ⁴
Cocoa Powder	Molds, cfu/g <i>Salmonella</i> / 25g Coliforms, MPN/g SPC/APC, cfu/g	5 5 5 5	2 0 2 2	10 ² 0 <1.8 10 ⁴	10 ⁴ 10 10 ⁶
Chocolate Products	Molds, cfu/g <i>Salmonella</i> / 25g Coliforms, MPN/g SPC/APC, cfu/g	5 10 5 5	2 0 2 2	10 ² 0 <1.8 10 ⁴	10 ⁴ 10 ² 10 ⁶

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- M** - the 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 6. CEREAL AND CEREAL/LEGUME-BASED PRODUCTS

FOOD DESCRIPTION	TEST / MICROORGANISM Reference Criteria	n	c	m	M
Cereals/Cereal Grains	Molds, cfu/g	5	2	10 ³	10 ⁵
Cultured seeds and grains (bean sprouts, alfalfa, etc.)	E. coli, cfu/g	5	2	10	10 ²
	Coliforms, cfu/g	5	2	10 ²	10 ⁴
Breakfast Cereals and Snack Foods	Molds, cfu/g	5	2	10	10 ³
	Yeasts & Yeastlike Fungi, cfu/g	5	2	10	10 ²
	Coliform, cfu/g	5	2	10	10 ²
	SPC/APC, cfu/g	5	2	10	10 ²
Soya Flours, Concentrates and Isolates	Molds, cfu/g	5	2	10 ³	10 ⁵
	Salmonella, / 25g	5	0	0	
Flour, Corn meal, Corn grits, Semolina	Molds, cfu/g	5	2	10 ²	10 ⁴
	Yeasts & 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"				
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
	Salmonella / 25g	5	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
	Salmonella / 25g	5	0	0	
Frozen Entrees containing Rice or Corn Flour as main ingredient	<i>B. cereus</i> , cfu/g	5	1	10 ²	10 ⁴
Frozen & Refrigerated Doughs	Molds, cfu/g	5	2	10 ²	10 ⁴
	Yeasts & Yeastlike Fungi, cfu/g	5	2	10 ⁵	10 ⁶
	Coliform, 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

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TABLE 6. CEREAL AND CEREAL/LEGUME-BASED PRODUCTS

ANNEX

FOOD DESCRIPTION	TEST / MICROORGANISM Reference Criteria	n	c	m	M
Soy Protein	Coliforms, cfu/g	5	2	10 ²	10 ³
	<i>E. coli</i> , cfu/g	5	1	10	10 ²
	Psychrotrophic bacteria, cfu/g	5	2	10 ²	10 ⁴
	<i>Cl. perfringens</i> , cfu/g	5	2	<10	10 ²
	Molds, 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>S. aureus</i> (coagulase +), cfu/g	5	2	10 ²	10 ³
	<i>E. coli</i> , MPN/g	5	0	<1.8	
Pasta Products	Coliforms, cfu/g	5	2	10	10 ³
	YMC	5	1	10	10 ⁵
	<i>Salmonella</i>	5	0	0	
	<i>S. aureus</i> (coagulase +), cfu/g	5	1	10 ²	10 ⁴
	SPC/APC	5	2	10 ³	10 ⁵
Dry Mixes for Soups and Sauces	<i>Cl. 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	5	2	10 ⁴	10 ⁵
Starch	Coliforms, cfu/g	5	2	10	10 ²
	YMC, cfu/g	5	2	10 ²	10 ³
	<i>Salmonella</i>	5	0	0	
	SPC/APC, cfu/g	5	2	10 ³	5 x 10

Legend:

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m - the acceptable level of microorganism determined by a specified method; the values are generally based on levels that are achievable under GMP
M - the 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 - the maximum allowable number of defective or marginally acceptable units