

USDA Foreign Agricultural Service

GAIN Report

Global Agricultural Information Network

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POLICY

Voluntary Public

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Morocco

Post: Rabat

Microbiological Standards for Food of Animal Origin

Report Categories:

Livestock and Products

Poultry and Products

Dairy and Products

Fishery Products

Sanitary/Phytosanitary/Food Safety

FAIRS Subject Report

SP2 - Prevent or Resolve Barriers to Trade that Hinder

U.S. Food and Agricultural Exports

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Report Highlights:

This report contains an unofficial translation of Morocco's microbiological standards for food of animal origin, as established in 2004. This measure was previously notified to the WTO as G/SPS/N/MAR/20.

General Information: This report contains an unofficial translation of Morocco's microbiological standards for food of animal origin, as established in 2004. This measure was previously notified to the WTO as [G/SPS/N/MAR/20](#).

Joint Decree of the Minister of Agriculture and Rural Development, the Minister of Health and the Minister of Industry, Trade and Telecommunications No. 624-04 of 17 Safar 1425 (08 April 2004) on microbiological standards to be met by animal foodstuffs or foodstuffs of animal origin.

(Official Gazette No. 5214 of 05/20/2004, p. 727).

THE MINISTER OF AGRICULTURE AND RURAL DEVELOPMENT,

THE MINISTER OF HEALTH,

THE MINISTER OF INDUSTRY, TRADE AND TELECOMMUNICATIONS,

Having regard to the Royal Decree (“*Dahir*”) establishing Law No. 1-75-291 of 24 Chaoual 1397 (08 October 1977) enacting measures relating to the sanitary and qualitative inspection of live animals and animal foodstuffs or foodstuffs of animal origin;

Having regard to Decree No. 2-98-617 of 17 Ramadan 1419 (5 January 1999), related to the enforcement of the Royal Decree (“*Dahir*”) establishing the aforementioned Law No. 1-75-291 of 24 Chaoual 1397 (08 October 1977), in particular Article 15 thereof,

DECIDE:

ARTICLE ONE. - In order to be recognized as fit for consumption, animal foodstuffs or foodstuffs of animal origin must comply with the microbiological standards set out in the tables annexed to this Decree. They must, moreover, be free from microorganisms or dangerous toxins relevant to public health.

ART. 2. - This Decree shall be published in the Official Gazette.

Done at Rabat on 17 Safar 1425 (08 April 2004)

The Minister of Agriculture and Rural Development, Mohand LAENSER

The Minister of Health, Dr Mohamed Cheikh BIADILLAH

The Minister of Industry, Trade and Telecommunications, Rachid TALBI ELALAMI

ANNEX I
Microbiological standards to be met by animal or foodstuffs of animal origin

1° - The microbiological standards relating to butcher's meat are as follows:

| DESIGNATION | | Aerobic microorganisms 30°/gr. | Coliforms 30°/gr. | Fecal coliforms 44°/gr. | Staphylococcus aureus / gr. | Sulphite-reducing anaerobes 46°C/gr. | Salmonella / 25 gr. | Listeria monocytogenes 25 gr. (3) |
|---|---|--------------------------------|-------------------|-------------------------|-----------------------------|--------------------------------------|---------------------|-----------------------------------|
| Carcasses or retail-wholesale cuts, chilled or frozen (1) | m | | - | - | - | 2 | Absence | Absence |
| | M | | - | - | - | 20 | Absence | Absence |
| | | | | | | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| Vacuum-wrapped cuts, chilled or frozen (1) | m | | | 10 ² | | 2 | Absence | Absence |
| | M | | | 10 ³ | | 20 | Absence | Absence |
| | | | | n=5, c=2 | | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| Chilled or frozen packaged unit portions and chilled or frozen retail unit portions (2) | m | | - | 3. 10 ² | 10 ² | 10 | Absence | Absence |
| | M | | - | 3.10 ³ | 10 ³ | 10 ² | Absence | Absence |
| | | | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |

(1) = The sampling is carried out in depth after cauterization of the surface.

(2) = Sampling concerns the depth and surface without cauterization.

(3) = The search is carried out only if required by the requesting inspection service.

m = All equal or lower results are considered satisfactory.

M = Acceptability threshold, beyond which the results are no longer considered satisfactory, but the product is not considered to be toxic.

The values of M are set at:

M = 10 m when enumerated in a solid medium;

M = 30 m when enumerated in a liquid medium;

n = number of units in the sample;

c = number of units in the sample giving values between m and M.

2° -The microbiological standards for minced meat, cooked meat, mechanically separated meat, deli meat, cooked dishes and dehydrated soups are as follows:

| DESIGNATION | | Aerobic microorganisms 30°/ gr. | Coliforms 30°/gr. | Fecal Coliforms 44°/gr. | Staphylococcus aureus /gr. | Sulphite-reducing anaerobes 46°C/gr. | Salmonella in 25 gr. | Listeria monocytogenes in 25 gr. (2) |
|---|---|---------------------------------|-------------------|-------------------------|----------------------------|--------------------------------------|----------------------|--------------------------------------|
| - Meat minced in advance or on request - Meat preparations and pieces of less than 100 g | m | 5.10 ⁵ | - | 100 (E.coli) | 100 | 10 | Absence/10gr | Absence/10gr |
| | M | 5.10 ⁶ | - | 5.10 ² | 5.10 ² | 10 ² | Absence | Absence |
| | | n=5, c=2 | | n=5, c=2 | n=5, c=1 | n=5, c=1 | n=5, c=2 | n=5, c=2 |
| - Pre-cooked prepared dishes in advance - Cooked pieces of sliced meat, minced or not. | m | 3.10 ⁴ | 10 ³ | 10 (E.coli) | 10 | 30 | Absence | Absence |
| | M | 3.10 ⁵ | 10 ⁴ | 10 ² | 10 ² | 3.10 ² | Absence | Absence |
| | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| - Cooked or pre-cooked culinary preparations after adding cheese | m | 3.10 ⁵ | 10 ³ | 10 | 10 ² | 30 | Absence | Absence |
| | M | 3.10 ⁶ | 10 ⁴ | 10 ² | 10 ³ | 3.10 ² | Absence | Absence |
| | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| - Frozen or unfrozen culinary preparations with superficial adding of raw cheese: pizzas, | m | 3.10 ⁵ | 10 ³ | 10 | 10 ² | 30 | Absence | Absence |
| | M | 3.10 ⁶ | 10 ⁴ | 10 ² | 10 ³ | 3.10 ² | Absence | Absence |
| | | n=5, c=2 (1) | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |

| | | | | | | | | |
|--|-------|----------------|----------|----------------|----------------|----------------|------------------------|------------------------|
| wraps, | | | | | | | | |
| Deli meats, raw, minced, subject to desiccation and consumption as such. | m | - | - | 10^2 | $5 \cdot 10^2$ | 50 | Absence | Absence |
| | M | - | - | 10^3 | $5 \cdot 10^3$ | $5 \cdot 10^2$ | Absence | Absence |
| | | | | | | | | |
| Raw cured products, salted and/or dried, whether sliced or not. | m | - | - | 10^3 | $5 \cdot 10^2$ | 50 | Absence | Absence |
| | M | - | - | 10^4 | $5 \cdot 10^3$ | $5 \cdot 10^2$ | Absence | Absence |
| | | | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| Cooked deli meats, whether sliced or not, dumplings. | M (1) | $3 \cdot 10^5$ | 10^3 | 10 | 10^2 | 30 | Absence | Absence |
| | M | $3 \cdot 10^6$ | 10^4 | 10^2 | 10^3 | $3 \cdot 10^2$ | Absence | Absence |
| | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| Whole cooked ham | m | 10^4 | 10^2 | Absence | Absence | Absence | Absence | Absence |
| | M | 10^4 | 10^2 | Absence | Absence | Absence | Absence | Absence |
| | | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 | n=5, c=0 | n=5, c=0 | n=5, c=0 |
| Dry soups. | m | $3 \cdot 10^5$ | 10^3 | 10 | 10^2 | 30 | Absence | Absence |
| | M | $3 \cdot 10^6$ | 10^4 | 10^2 | 10^3 | $3 \cdot 10^2$ | Absence | Absence |
| | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| Mechanically separately meat from bovine and porcine animals | m | 10^6 | - | $5 \cdot 10^3$ | 10^3 | 10^2 | Absence | Absence |
| | M | 10^7 | - | $5 \cdot 10^4$ | 10^3 | $3 \cdot 10^2$ | Absence | Absence |
| | | n=5, c=2 | | n=5, c=2 | n=5, c=2 | n=5, c=2 | Pork: /1gh n=5, c=0 | Pork: /1gr n=5, c=0 |

(1): It should be ascertained whether the excess of the mesophilic flora in relation to the defined criterion is not explained by a high level of the lactic flora.

For vacuum packaged or plastic film packaged deli products, the criterion for aerobic microorganisms at 30°C ($3 \cdot 10^5$) per gram applies only at the manufacturing (plant) stage.

(2) = The search is carried out only if required by the requesting inspection service.

3°-The microbiological standards for poultry meat are as follows:

| | | | | | | | |
|------------|--|---------|----------|-------|----------------|-----------|------------|
| DESIGNATIO | | Aerobic | Coliform | Fecal | Staphylococcus | Sulphite- | Salmonella |
|------------|--|---------|----------|-------|----------------|-----------|------------|

| N | | microorganism s 30°/gr. | s 30°/gr. | coliform s 44°/gr. | s aureus /gr. | reducing anaerobe s 46°C/gr. | in 25 gr. |
|---|---|----------------------------|-----------|-----------------------|---------------|---------------------------------------|-------------------------------|
| Chilled, frozen or deep-frozen whole poultry | m | - | - | - | - | - | Absence (chest muscles) |
| | M | - | - | - | - | - | Absence |
| | | | | | | | n=5, c=0 |
| Raw roasts, cutlets and raw paupiettes, breaded or not | m | 5.10^5 | - | 10^3 | 5.10^2 | 30 | Absence/1g r |
| | M | 5.10^6 | - | 10^4 | 5.10^3 | 3.10^2 | Absence/1g r |
| | | n=5, c=2 | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 |
| Whole or sliced cooked roasts and cooked or pre-cooked paupiettes | m | 10^6 | - | 5.10^3 | 10^3 | 10^2 | Absence/1g r |
| | M | 10^7 | - | 5.10^4 | 10^4 | 10^3 | Absence |
| | | n=5, c=2 | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 |
| Mechanically separated raw meat | m | 3.10^5 | - | 10 | 10^2 | 30 | Absence |
| | M | 3.10^6 | - | 10^2 | 10^3 | 3.10^2 | Absence |
| | | n=5, c=2 | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 |
| Mechanically separated cooked meat | m | 3.10^5 | - | 10 | 10^2 | 30 | Absence |
| | M | 3.10^6 | - | 10^2 | 10^3 | 3.10^2 | Absence |
| | | n=5, c=2 | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 |
| Duck or goose- based raw foie gras, vacuum packed or not | m | 5.10^4 | - | 5.10^2 | 10^2 | 10 | Absence |
| | M | 5.10^5 | - | 5.10^3 | 10^3 | 10^2 | Absence |
| | | n=5, c=2 | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 |
| Uncooked cuts of packed or unpacked meat (1) | m | 5.10^5 | - | 10^3 | 10^2 | 30 | Absence/1g r |
| | M | 5.10^6 | - | 10^4 | 10^3 | 3.10^2 | Absence/1g r |
| | | n=5, c=2 | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 |
| Raw poultry offal other than foie gras, whether or not packed | m | 5.10^6 | - | 10^3 | 5.10^2 | 30 | Absence/1g r |
| | M | 5.10^7 | - | 10^4 | 5.10^3 | 3.10^2 | Absence/1g r |
| | | n=5, c=2 | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 |
| Smoked or salted poultry cuts, vacuum packed or not, to be consumed as it is (2) | m | 10^6 | - | 10 | 10^2 | 10 | Absence |
| | M | 10^7 | - | 10^2 | 10^3 | 10^2 | Absence |
| | | n=5, c=2 | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 |

(1): These criteria concern meat on the surface (skin if the cutting part includes it) and in depth (muscle).

(2): These criteria concern meat on the surface (skin if the cutting part includes it) and depth (muscle).

Moreover for these products: Aw lower than 0,9.

4 ° -The microbiological standards for snails and frogs' legs are as follows:

| DESIGNATION | | Aerobic microorganisms 30°C (/gr) | Coliforms 30°C/g r. | Fecal Coliforms 44°C (/gr) | Staphylococcus aureus (/gr) | Sulphite-reducing anaerobes 46°C (/gr) | Salmonella in 25 gr. | Listeria monocytogenes in (25 gr) |
|--|---|-----------------------------------|---------------------|----------------------------|-----------------------------|--|----------------------|-----------------------------------|
| Frozen or deep-frozen shelled snails | m | - | - | - | - | 10 ³ (1) | Absence | Absence |
| | M | - | - | - | - | 3.10 ³ | Absence | Absence |
| | | | | | | n=5, c=0 | n=5, c=0 | n=5, c=0 |
| Prepared snails (cooked) | m | 3.10 ⁵ | 10 ³ | 10 | 10 ² | 30 | Absence n=5, c=0 | - |
| | M | 3.10 ⁶ | 10 ⁴ | 10 ² | 10 ³ | 3.10 ² | Absence | - |
| | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 | |
| Fresh, frozen or deep-frozen frog's legs | m | 5.10 ⁵ | | 10 ² | 10 ² (1) | | Absence | Absence |
| | M | 5.10 ⁶ | - | 10 ³ | 3.10 ² | - | Absence | Absence |
| | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=2 | - | n=5, c=0 | n=5, c=0 |

(1) Only analytical tolerances are accepted (two-class plan).

5° - The microbiological standards for fishery products are as follows:

| DESIGNATION | | Aerobic microorganisms 30°C (/gr) | Coliforms 30°C/g r. | Fecal Coliforms 44°C (/gr) | Staphylococcus aureus (/gr) | Sulphite-reducing anaerobes 46°C (/gr) | Salmonella in 25 gr. | Listeria monocytogenes in (25 gr) |
|---|---|-----------------------------------|---------------------|----------------------------|-----------------------------|--|----------------------|-----------------------------------|
| - All crustaceans including whole raw, frozen or deep-frozen prawns | m | 10 ³ | - | 1 | | 2 | Absence | Absence |
| | M | 10 ⁴ | - | 10 | | 20 | Absence | Absence |
| | | n=5, c=2 | | n=5, c=2 | | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| - Cooked peeled shrimp, chilled, frozen or deep-frozen | m | 10 ⁵ | - | 10 | 10 ² | 10 | Absence | Absence |
| | M | 10 ⁶ | - | 10 ² | 10 ³ | 10 ² | Absence | Absence |
| | | n=5, c=2 | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| Bivalve molluscs | m | - | - | NPP=3. 10 ² | - | - | Absence | Absence |

| | | | | | | | | |
|--|---|-------------------|---|-----------------------|---------------------|-----------------|-------------|-------------|
| and sea urchins presented alive (1) (+ Vibrio: absence in 25 gr) | | | | E.coli:230 | | | | |
| | M | - | - | NPP=300 E.coli:230 | - | - | Absence | Absence |
| | | | | | | | n=5, c=0 | n=5, c=0 |
| Fish, sliced, breaded or not, fresh or chilled fish fillets | m | 10 ⁵ | - | 10 | 10 ² (3) | 10 | Absence | Absence |
| | M | 10 ⁶ | - | 10 ² | 3.10 ² | 10 ² | Absence | Absence |
| | | n=5, c=2 | | n=5, c=2 | n=5, c=0 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| Sliced Fish, breaded or not, fresh or chilled fish fillets | m | 5.10 ⁴ | - | 10 | 10 ² | 2 | Absence | Absence |
| | M | 5.10 ⁵ | - | 10 ² | 10 ³ | 20 | Absence | Absence |
| | | n=5, c=2 | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| Preparations of raw chopped fish flesh, breaded or not | m | 5.10 ⁵ | - | 10 ² | 10 ² | 10 | Absence | Absence |
| | M | 5.10 ⁶ | - | 10 ³ | 10 ³ | 10 ² | Absence | Absence |
| | | n=5, c=2 | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| -Fresh or frozen fish - Cold smoked fish | m | 5.10 ⁵ | - | E.coli = m=10 | - | - | Absence | Absence |
| | M | 10 ⁷ | - | 5.10 ² | - | - | Absence (4) | Absence (4) |
| | | n=5, c=3 | | n=5, c=3 | - | - | n=5, c=0 | n=5, c=0 |

- (1): In 100 ml of mixture of molluscs flesh and intervalve liquid.
(2): NPP = Most likely number, 5 tubes and 3 dilutions.
(3): Only analytical tolerances are accepted (two-class plan).
(4): Absence in each sample of 50 grams or in all 5 samples of 250 grams.

| | | | | | | | | |
|--|---|-------------------|-----------------|---|-----------------|---|---------------------|---------------------|
| Refrigerated and frozen fresh cephalopods | m | 10 ⁵ | 10 | - | 10 ² | - | Absence n=5, c=0 | Absence n=5, c=0 |
| | M | 10 ⁶ | 10 ² | - | 10 ³ | - | Absence | Absence |
| | | n=5, c=2 | n=5, c=2 | | n=5, c=2 | | n=5, c=0 | n=5, c=0 |
| - Cooked crustaceans and molluscs: Hulled products, except crabmeat | m | 5.10 ⁴ | 10 (4) | - | 10 ² | - | Absence n=5, c=0 | Absence n=5, c=0 |
| | M | 5.10 ⁵ | 10 ² | - | 10 ³ | - | Absence | Absence |

| | | | | | | | | |
|--|---|-------------------|-----------------|---|-----------------|-------------------|------------------------|------------------------|
| | | n=5, c=2 | n=5, c=2 | - | n=5, c=2 | | n=5, c=0 | n=5, c=0 |
| - Cooked crustaceans and molluscs Crabmeat | m | 10 ⁵ | 10 (4) | - | 10 ² | - | Absence n=5, c=0 | Absence n=5, c=0 |
| | M | 10 ⁶ | 10 | - | 10 ² | 30 | Absence | Absence |
| | | n=5, c=2 | n=5, c=2 | | n=5, c=2 | | n=5, c=0 | n=5, c=0 |
| Pre-cooked scallops and mussels | m | 10 ⁶ | 10 | - | 10 ² | 30 | Absence n=5, c=0 | Absence n=5, c=0 |
| | M | 10 ⁷ | 10 ² | - | 10 ³ | 3.10 ² | Absence | Absence |
| | | n=5, c=2 | n=5, c=2 | | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| Surimi - Minced fish meat and surimi base | m | 10 ⁵ | 10 | - | 10 ² | 10 | Absence | Absence |
| | M | 10 ⁶ | 10 ⁷ | - | 10 ³ | 3.10 ² | Absence | Absence |
| | | n=5, c=2 | n=5, c=2 | | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| - Surimi-based derived products AC (5) | m | 10 ³ | 10 | - | 10 ² | 30 | Absence | Absence |
| | M | 3.10 ³ | 10 ² | - | 10 ³ | 3.10 ² | Absence | Absence |
| | | n=5, c=2 | n=5, c=2 | | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| DLC (6) | m | 10 ⁵ | 10 | - | 10 ² | 30 | Absence | Absence |
| | M | 10 ⁶ | 10 ² | - | 10 ³ | 3.10 ² | Absence | Absence |
| | | n=5, c=2 | n=5, c=2 | | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| Dried salted fish | m | - | 10 | - | 10 ² | 10 | Absence | Absence |
| | M | - | 10 ² | - | 10 ³ | 10 ² | Absence | Absence |
| | | | n=5, c=2 | | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| Marinades and Brines - acids | m | - | 10 | - | 10 ² | 10 | Absence | Absence |
| | M | - | 10 ² | - | 10 ³ | 10 ² | Absence | Absence |
| | | | n=5, c=2 | | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| Cooked crustaceans shellfish whole products | m | 10 ⁴ | E .coli 10 | - | 10 ² | - | Absence | Absence |
| | M | 10 ⁵ | 10 ² | - | 10 ³ | - | Absence | Absence |
| | | n=5, c=2 | n=5, c=2 | | n=5, c=2 | | n=5, c=0 | n=5, c=0 |

| DESIGNATION | | | Aerobic microorganisms 30°C (/gr) | Fecal coliforms 44°C/gr | Staphylococcus aureus (/gr) | Sulphite-reducing anaerobes 46°C (/gr) | Salmonella in 25 gr. | Listeria monocytogenes in (25 gr) |
|---------------------------|--------|---|-----------------------------------|-------------------------|-----------------------------|--|----------------------|-----------------------------------|
| Fish cooked after packing | AC (5) | m | 10 ³ | 10 | 10 ² | 30 | | Absence |
| | | M | 10 ³ | 10 ² | 10 ³ | 3.10 ² | Absence | Absence |

| | | | | | | | | |
|--|-----|---|----------------|----------|----------|----------------|----------|----------|
| | | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| | DL | m | 10^5 | 10 | 10^2 | 30 | Absence | Absence |
| | C | M | 10^6 | 10^2 | 10^3 | $3 \cdot 10^2$ | Absence | Absence |
| | (6) | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| Fish cooked before packing | AC | m | 10^3 | 10 | 10^2 | 30 | Absence | Absence |
| | (5) | | | | | | | |
| | AC | M | 10^4 | 10^2 | 10^3 | $3 \cdot 10^2$ | Absence | Absence |
| | | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| | DL | m | $5 \cdot 10^6$ | 10 | 10^2 | 30 | Absence | Absence |
| Unpasteurized cooked fish | DL | M | $5 \cdot 10^6$ | 10^2 | 10^3 | $3 \cdot 10^2$ | Absence | Absence |
| | C | | n=5, c=0 | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| | (6) | | | | | | | |
| - Cooked or precooked fish-based prepared foods - Precooked breaded fish - Cooked or precooked fish-based prepared foods - Precooked breaded fish | AC | m | $5 \cdot 10^3$ | 10 | 10^2 | 30 | Absence | Absence |
| | (5) | | | | | | | |
| | DL | M | $5 \cdot 10^4$ | 10^2 | 10^3 | $3 \cdot 10^2$ | Absence | Absence |
| | C | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| | AC | m | $5 \cdot 10^6$ | 10 | 10^2 | 30 | Absence | Absence |
| | (5) | | | | | | | |
| | DL | m | $5 \cdot 10^6$ | 10^2 | 10^3 | $3 \cdot 10^2$ | Absence | Absence |
| | DL | M | $5 \cdot 10^6$ | 10^2 | 10^3 | $3 \cdot 10^2$ | Absence | Absence |
| | C | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| | DL | M | $3 \cdot 10^5$ | 10 | 10^3 | 30 | Absence | Absence |
| | C | | $3 \cdot 10^6$ | 10^2 | 10^3 | $3 \cdot 10^2$ | Absence | Absence |
| | | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |

(4) ie E. coli (on a solid medium): n = 5, c = 1

(5): AC: Before storage

(6): DLC: On the expiry date

6. The microbiological standards for animal fats are as follows:

| | | | | | | | | |
|-----------------|--|---|------------------------------|---------------------------------------|--------------------------------------|---|-----------------------------|---------------------------------------|
| DESIGNATI ON | | Aerobic microorgani sms 30°C (/gr.) | Colifor ms 30°C (/gr.) | Fecal colifor ms 44°C (/gr.) | Staphylococ cus aureus (/ gr.) | Sulphit e- reducin g anaerob es 46°C | Salmone lla in 25 gr. | Listeria monocytoge nes in 25 g |
|-----------------|--|---|------------------------------|---------------------------------------|--------------------------------------|---|-----------------------------|---------------------------------------|

| | | | | | | | | | |
|--|-----------------------------|---|--------------|----------|----------|----------|----------|-------------|----------|
| Raw cow's milk intended for consumption as such (positive phosphatase) (1) | | m | 300000 | - | 10^2 | - | Absence | Absence (2) | - |
| | | M | 3000000 | - | 10^3 | - | Absence | Absence | - |
| | | | n=5, c=2 | | n=5, c=2 | | n=5, c=0 | n=5, c=0 | |
| Pasteurized milk (2) negative phosphatase (4) | Up to D + 4 | m | 3.10^4 (3) | 10 (3) | Absence | 10 | Absence | - | Absence |
| | | M | 3.10^5 | 10^2 | Absence | 10 | Absence | - | Absence |
| | | | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 | n=5, c=0 | - | n=5, c=0 |
| | Expiry date for consumption | m | | 10 (5) | Absence | 10 | Absence | - | Absence |
| | | M | | 10^2 | Absence | 10 | Absence | - | Absence |
| | | | | n=5, c=2 | n=5, c=0 | n=5, c=0 | n=5, c=0 | - | n=5, c=0 |

(1) = In addition, pathogenic micro-organisms and their toxins must not be present in quantities affecting the health of consumers.

(2) = are selected as beta haemolytic streptococci, those belonging to groups A, B, C, G and L of lancefield.

(3) = in the event that results considered unsatisfactory are obtained for the following criteria:

-aerobic microorganisms at 30 degrees Celsius (30°C).

- Coliforms at 30°C.

- phosphatase

All the criteria should be checked on additional samples.

(4) = also the boiling stability and acidity between 1.4 and 1.8 g of lactic acid/liter

B- Sterilized milks and creams / UHT creams and milks

| | |
|--|---|
| Sterilized milk or cream on the best-before date | Must remain stable after incubation for 15 days at 30°C and 7 days at 55 ° C The organoleptic control of the products must be normal after incubation |
| UHT milk or cream on the "best-before date" | Must not have a pH change > 0.2 units due to incubation Must not contain a number of aerobic microorganisms at 30°C and 55°C greater than 10 per 0.1 ml after incubation |

C- Other milk-based products

| DESIGNATION | | Aerobic | Coliforms | Fecal coliform | Staphylococcus | Sulphite - | Salmonella in | Listeria monocytogenes |
|-------------|--|---------|-----------|----------------|----------------|------------|---------------|------------------------|
|-------------|--|---------|-----------|----------------|----------------|------------|---------------|------------------------|

| | | micro-organisms 30°C/g r. | 30°C/g r | ms 44°C/ gr. | aureus /gr. | reducing anaerobes 46°C / gr. | 25 gr. | enes in 25 gr. |
|---|----------|------------------------------|-----------------|--------------------|-----------------|----------------------------------|-------------|----------------|
| Milk powder | m | - | 0 | - | 10 | - | Absence | - |
| | M | - | 10 | - | 10 ² | - | Absence | - |
| | | | n=5, c=2 | | n=5, c=2 | | n=5, c=0 | |
| Other milk-based powder products | m | | 0 | - | - | - | Absence 25g | Absence 1g |
| | M | | 10 | - | - | - | Absence 25g | Absence 1g |
| | | | n=5, c=2 | | | | n=5, c=0 | |
| Liquid milk-based products heat-treated and unfermented (sweetened condensed milk: add yeasts + molds: Absence in 1 gram) | m | 5.10 ⁴ | 0 | - | - | - | Absence 25g | Absence 1g |
| | M | 10 ⁵ | 0 | - | - | - | Absence | Absence 1g |
| | | n=5, c=2 | n=5, c=2 | | | | n=5, c=0 | |
| Liquid milk-based products heat-treated and fermented | m | - | 0 | - | - | - | Absence | Absence 1g |
| | M | - | 5 | - | - | - | Absence | Absence 1g |
| | | | n=5, c=2 | | | | n=5, c=0 | |
| Creams for consumption | | | | | | | | |
| Raw cream (positive phosphatase) | m | - | - | 10 ² | 10 ² | - | Absence | - |
| | M | - | - | 10 ³ | 10 ³ | | Absence | - |
| | | | | n=5, c=2 | n=5, c=2 | | n=5, c=0 | |
| Pasteurized cream (lactic acidity <2.5 negative phosphatase unit) | | - | - | - | - | - | - | - |
| - Prepackaged | m | 3. 10 ⁴ | 10 ² | 1 | 10 | | Absence | |
| | M | 3. 10 ⁵ | 10 ² | 10 | 10 ² | | Absence | |
| | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=2 | | n=5, c=0 | |
| - Bulk | m | 3. 10 ⁴ | 10 ² | 1 | 10 | | Absence | |
| | M | 3. 10 ⁵ | 10 ³ | 10 | 10 ² | | Absence | |
| | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=2 | | n=5, c=0 | |
| Cured | Prepacka | m | - | 10 | 1 | 10 | Absence | |

| | | | | | | | | | |
|--|------|---|----------|-----------------|----------|-----------------|----------|----------|---|
| cream (Negative phosphatase and lactic acidity > 4) (*) | ged | M | - | 10 ¹ | 1 | 10 ² | | e | |
| | | | | n=5, c=2 | n=5, c=2 | n=5, c=2 | | Absence | - |
| | | | | n=5, c=2 | n=5, c=2 | n=5, c=2 | | n=5, c=0 | |
| | Bulk | m | - | 10 ² | 1 | 10 | - | Absence | - |
| | | M | - | 10 ³ | 10 | 10 ² | | Absence | - |
| | - | | n=5, c=2 | n=5, c=2 | n=5, c=2 | | n=5, c=0 | | |

(*) Cured cream is the pasteurized cream sowed by a specific lactic flora consisting of one of the following species or a mixture of several of these species: *Streptococcus lactis*, *Streptococcus cremoris*, *Streptococcus diacetylacus*, *Streptococcus thermophilus*, *Lenconstoccremoris* (synonyms : *Lenconstoccitrovurum*, *Betacoccus cremoris*)

D - Other milk-based products (cont'd)

| DESIGNATION | | Aerobic microorganisms 30 degrees Celsius (30°C.) per gram | Coliforms 30°C per gram | Fecal coliforms 44°C per gram | Staphylococcus aureus per gram | Sulphite-reducing anaerobes 46 degrees Celsius per gram | Salmonella in 25 grams | Listeria monocytogenes in 25 grams |
|---|----------|--|-------------------------|-------------------------------|--------------------------------|---|------------------------|------------------------------------|
| - Non-heat-treated milk-based liquid products | m | - | 0 | - | - | - | Absence | Absence 1g |
| | M | - | 5 | - | - | - | Absence | Absence 1g |
| | | | n=5, c=2 | | | | n=5, c=0 | |
| - Milk-based ice-cream products | m | 10 ⁵ | 10 | - | 10 | - | Absence | Absence 1g |
| | M | 5. 10 ⁵ | 10 ² | - | 10 ² | - | Absence | Absence 1g |
| | n=5, c=2 | n=5, c=2 | | n=5, c=2 | | n=5, c=0 | | |

E - Cheese

| DESIGNATION | | Coliforms 30°C per gram | E. COLI 44°C per gram | Staphylococcus aureus per gram | Salmonella in 25 grams | Listeria monocytogenes in 25 gr |
|---|---|-------------------------|-----------------------|--------------------------------|------------------------|---------------------------------|
| Heat-treated hard cheese made from milk | m | - | - | - | Absence | Absence 1g |
| | M | - | - | - | Absence | Absence |
| | | | | | n=5, c=0 | n=5, c=0 |
| Hard cheese made | m | - | 10 ⁴ | 10 ³ | Absence | Absence 1g |

| | | | | | | |
|--|---|----------|----------|----------|----------|----------|
| from raw milk and heat-treated milk | M | - | 10^5 | 10^4 | Absence | Absence |
| | | | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| Soft cheese made from raw milk and heat-treated milk | m | - | 10^4 | 10^3 | Absence | Absence |
| | M | - | 10^5 | 10^4 | Absence | Absence |
| | | | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| Heat-treated soft cheese made from milk | m | 10^4 | 10^2 | 10^2 | Absence | Absence |
| | M | 10^5 | 10^3 | 10^3 | Absence | Absence |
| | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| Parsley cheese made from raw milk and heat-treated | m | - | 10^4 | 10^3 | Absence | Absence |
| | M | - | 10^5 | 10^4 | Absence | Absence |
| | | | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| Heat-treated parsley cheese made from milk | m | - | - | 10 | Absence | Absence |
| | M | - | - | 10^2 | Absence | Absence |
| | | | | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| Heat-treated unripened cheese made from raw milk | m | - | 10^4 | 10^3 | Absence | Absence |
| | M | - | 10^5 | 10^4 | Absence | Absence |
| | | | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| Unripened cheese made from raw milk or heat-treated | m | - | - | 10 | Absence | Absence |
| | M | - | - | 10^2 | Absence | Absence |
| | | | | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| Fresh whey cheese | m | - | - | - | Absence | Absence |
| | M | - | - | - | Absence | Absence |
| | | | | | n=5, c=0 | n=5, c=0 |
| Dry whey cheese | m | - | - | - | Absence | Absence |
| | M | - | - | - | Absence | Absence |
| | | | | | n=5, c=0 | n=5, c=0 |
| Other heat-treated cheeses made from milk | m | - | 10^4 | 10^3 | Absence | Absence |
| | M | - | 10^5 | 10^4 | Absence | Absence |
| | | | n=5, c=2 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| Other cheeses made from raw milk and heat-treated | m | | | | | |
| | M | | | | | |
| | | | | | | |

8 ° - The microbiological standards for egg products and pastry creams are as follows:

| DESIGNATION | | Aerobic micro-organisms 30°C/gr | Coliforms 30°C/gr | Enterobacteria | Staphylococcus aureus / gr | Sulphite-reducing anaerobes 46 ° C / gr | Salmonella in 25 g |
|--------------------------|---|---------------------------------|-------------------|--------------------|----------------------------|---|---------------------|
| Pasteurized egg products | m | 10^5 (1) | - | 10 | 10^2 Absence | - | Absence |
| | M | $3 \cdot 10^5$ n=5, c=0 | - | 10^2 n=5, c=2 | $3 \cdot 10^2$ n=5, c=2 | - | Absence n=5, c=0 |
| Egg whites | - | - | - | - | - | - | - |
| Unpasteurized egg whites | m | - | - | - | - | - | - |
| | M | - | - | - | - | - | Absence n=5, c=0 |
| Pastries, pastry creams | m | $3 \cdot 10^5$ | 10^3 | 10 | 10^2 | 10 | Absence |
| | M | $3 \cdot 10^6$ | 10^4 | 10 | 10^3 | 10^2 | Absence |

| | | | | | | | |
|--|--|----------|----------|----------|----------|----------|----------|
| | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 |
|--|--|----------|----------|----------|----------|----------|----------|

(1) = Only analytical tolerances are accepted (two-class plan)

9 ° - The microbiological standards for semi-preserves that are made of animal foodstuffs and foodstuffs of animal origin are as follows:

| DESIGNATION | | Aerobic microorganisms 30°C/gr | Coliforms 30°C/gr | Fecal coliforms 44°C/gr | Staphylococcus aureus/gr | Sulphite-reducing anaerobes 46°C/gr | Salmonella in 25 grs |
|--|---|--------------------------------|-------------------|-------------------------|--------------------------|-------------------------------------|----------------------|
| Semi-preserves: Pasteurized (1) | m | 10 ⁴ | Absence | Absence | Absence | Absence | Absence |
| | M | 10 ⁵ | Absence | Absence | Absence | Absence | Absence |
| | | n=5, c=2 | n=5, c=0 | n=5, c=0 | n=5, c=0 | n=5, c=0 | n=5, c=0 |
| S.C non-pasteurized (1) - Rollmops, buckling, salt anchovy or oil anchovies prepared from salted anchovies | m | 10 ⁵ | Absence | Absence | Absence | Absence (2) | Absence |
| | M | 10 ⁶ | Absence | Absence | Absence | 10 ² | Absence |
| | | n=5, c=2 | n=5, c=0 | n=5, c=0 | n=5, c=0 | n=5, c=2 | n=5, c=0 |
| Smoked salmon, haddock and other slightly salted and smoked fish | m | 10 ⁶ (3) | Absence | Absence | 1 | Absence | Absence |
| | M | 10 ⁷ | Absence | Absence | 10 | Absence | Absence |
| | | n=5, c=2 | n=5, c=0 | n=5, c=0 | n=5, c=2 | n=5, c=0 | n=5, c=0 |
| Sliced smoked salmon vacuum packed | m | 10 ⁶ (3) | - | 1 | 10 | 1 | |
| | M | 10 ⁷ | | 10 | 10 ² | 10 | Absence |
| | | n=5, c=2 | | n=5, c=2 | n=5, c=2 | n=5, c=2 | n=5, c=0 |

(1) Revivification of the initial suspension for 2 hours at laboratory temperature for the semi-preserves and for 30/45 minutes for the unpasteurized semi-preserves.

(2) Particular case of anchovies in brine: sulphite-reducing anaerobic at 46°C: less than 10 per gram.

(3) enumeration in a medium with seawater or, failing that, with 3.5% salinity water and an incubation temperature of 20°C. for 5 days.

10- The microbiological standards for other miscellaneous foods are as follows:

| DESIGNATION | | Aerobic microorganisms 30°C/gr. | Coliforms 30°C/gram | Fecal coliforms 44°C/gr. | Staphylococcus aureus/gram. | Sulphite-reducing anaerobes 46°C/gr. | Salmonella in 25 gram. |
|------------------------|---|---------------------------------|---------------------|--------------------------|-----------------------------|--------------------------------------|------------------------|
| Gelatin for food usage | m | 5.10 ³ | 10 | Absence | 10 ² | 10 ² | Absence |
| | M | 10 ⁵ | 10 ³ | Absence | 10 ⁴ | 10 ⁴ | Absence |

| | | =5, c=2 | n5, c=2 | =5, c=0 | =5, c=2 | =5, c=2 | =5, c=0 |
|---------------------|---|---------|----------------|---------|---------|----------------|---------|
| Hydrolyzed whey | m | - | 30 (1) | - | - | - | Absence |
| | M | - | 90 | - | - | - | Absence |
| | | | n5, c=0 | | | | n5, c=0 |
| Enzyme preparations | m | - | 30 | - | Absence | 30 | Absence |
| | M | - | $3 \cdot 10^2$ | - | Absence | $3 \cdot 10^2$ | Absence |
| | | | n5, c=2 | | n5, c=0 | n5, c=2 | n5, c=0 |

(1) = Only analytical tolerances are accepted (two-class plan).

ANNEX II

Interpretation of results from microbiological analyzes

I - Interpretation of the results according to the principle of two or three classes

The value of microbial enumeration methods is not absolute, whatever the nature of the culture medium used. It is generally accepted that the variability can reach $\frac{1}{2}$ log. with solid medium and 1 log. with liquid medium.

1- Three-Class Plan

Principle:

Knowing that:

m = the criterion set in this decree. All equal or lower results are considered satisfactory.

M = Acceptability threshold, beyond which the results are no longer considered satisfactory, but the product is not considered to be toxic.

The **M** values are set at:

M = 10 m when enumerated in a solid medium;

M = 30 m when enumerated in liquid medium;

The three-class plan is so designated because the results of the examinations interpreted on this basis make it possible to set three classes of contamination:

- the one less than or equal to criterion **m**;
- that between the criterion **m** and the threshold **M**;
- the one above the threshold **M**.

Practical application taking into account the variations related to the microbiological technique:

The quality of the lot is considered to be satisfactory or acceptable in application of Article 1 of this decree where no result exceeds M:

A) The observed values are (satisfactory quality):

- less than or equal to 3 m when using a solid medium;
- less than or equal to 10 m when using a liquid medium;

B) The observed values are included (acceptable quality):

- between 3m and 10m (= **M**) in a solid medium
- between 10m and 30m (= **M**) in a liquid medium;

And c/n is less than or equal to $2/5$ with the plan $n=5$ and $c=2$.

The results are considered unsatisfactory:

- a) When c/n is greater than $2/5$;
- b) In all cases where values greater than M are observed.

However, the overrun threshold for aerobic microorganisms at $+ 30^{\circ} \text{C}$, while other criteria are met, must be interpreted, in particular for meat, poultry and raw products.

When the values are greater than M , the results are considered unsatisfactory. But it is quite evident that, beyond a certain order of magnitude, the notion of toxicity is becoming more and more important; In any event, the product must be considered as toxic or corrupt when the contamination reaches the microbial limit value S that is set generally at $m \cdot 10^3$. For *Staphylococcus aureus*, this S value should never exceed $5 \cdot 10^4$. Technical tolerances are not applicable to M and S .

2- Two-class plan:

Principle:

This plan is so designated because the results of the examinations interpreted on this basis make it possible to determine only two classes of contamination.

This type of plan, which accepts no tolerance, even of an analytical nature, corresponds most often to the expressions:

"Absence in": the result is considered satisfactory;

"Presence in": the result is considered unsatisfactory; The product is declared unfit for consumption.

In addition, in certain special cases referred to in points 2 and 5 of Annex I, the two-class plan shall be applied with analytical tolerance.

Note: This plan is particularly applicable to *Salmonella* contamination. However, for poultry, in the case of surface contamination, the lot is considered satisfactory when the ratio $d/n = 1/5$.

Knowing that :

d = number of units in the sample with positive results.

3- Special case of canned food:

When canned animal foodstuffs or canned foodstuffs of animal origin do not comply with the stability tests, the transposition of the original lot may take place only to the extent that a previously defined sampling plan has been implemented.

II - Use of different plans and interpretation of results:

The results, showing that the results of the bacteriological analyzes do not have the same precision as the chemical and physical analyzes. It therefore seemed useful to take into account two different concepts:

- statistical variability (consumer risk, producer risk);
- analytical variability (relative reproducibility of analyzes).

The two-class and three-class plans are reviewed using examples from the body of the decree. It is obviously the "three-class plan" type that really allows to qualify the results obtained and to avoid that erroneous conclusions are drawn from the examination of too few samples.

Example:

Pieces of meat that are vacuum-wrapped or not, chilled or frozen (In Table 1 of Annex I).

Reminder of the criteria:

Microorganism at 30 ° C (/gr) $5 \cdot 10^4$ (1)
 Fecal coliforms (/ gr) 10^2
 Sulphite-reducing anaerobes 2
 Salmonella (in 25 grams) absence

Comments:

1°- Microorganisms at 30°C. (enumeration on solid medium):

$m = 5 \cdot 10^4$ (50,000) } Results
 $3 m = 3 \times 5 \cdot 10^4$ (150 000) } Satisfactory.
 $> 3 m$ Unsatisfactory results.

In this case, any sample giving a result greater than 3 m (considered to have the same materiality as m) does not meet the criteria and gives rise to an intervention by the inspection services as to the fate of the lot from which it originates.

There are therefore only two classes to define the samples: $\leq 3 m$ or $> 3 m$.

If the reference (1) was not in the text, then we would have a three-class plan and the interpretation would be as follows:

$m = 5 \cdot 10^4$ (50 000).

$3 m = 3 \times 5 \cdot 10^4$ (150 000).

(1) Only analytical tolerances are accepted, two-class plan.

$M = 10 \times 5 \cdot 10^4 = 5 \cdot 10^5$ (500 000).

$n = 5$ (number of samples).

$c = 2$ (number of samples that can be between 3 m and M).

If all samples give values of $\leq 3 m$ ($1.5 \times 10^5 = 150\ 000$), the result is considered satisfactory.

If one or two samples give values $> 1.5 \times 10^5$ (150 000) but $\leq 5 \times 10^5$ (500 000) (ie > 3 m but $\leq M$) and the others are ≤ 3 m ($1.5 \cdot 10^5$), the result is considered acceptable.

If three or more samples have values between $1.5 \cdot 10^5$ (1) and $5 \cdot 10^5$ (M), or if only one sample exceeds $M = 1.5 \cdot 10^5$, the result is considered unsatisfactory.

Note. - It is recalled that the results considered to be unsatisfactory do not imply any automatic conclusion as regards the toxicity of the product and that in particular in the case of the enumeration of the aerobic flora growing at 30 degrees Celsius, these may be subject to an interpretation provided that the other criteria are met.

2 ° -*Fecal coliforms* (criterion: $m = 10^2$):

2.1 Enumeration in solid medium (deoxycholate lactose agar). The analytical tolerance is set to 3 m, ie $3 \cdot 10^2 = 300$.

Enumeration in liquid medium (technique of the most probable number). The analytical tolerance is set to 10 m, i.e. $10 \times 10^2 = 1000$.

This means that results of ≤ 300 in solid medium and ≤ 1000 in liquid medium are considered satisfactory.

2.2 $M = 10$ m = 1000 in solid medium, $M = 30$ m = 300 in liquid medium.

For solid medium: if one or two samples out of the five examined have values between 300 (> 3 m) and 1000 ($\leq M$) and the others are ≤ 300 (≤ 3 m), the results are considered acceptable.

For liquid medium, the same reasoning applies for values between 1000 (> 10 m) and 3000 ($\leq M$).

(1) Only analytical tolerances are accepted, two-class plan.

2.3 When three or more samples indicate values between (> 3 m) and 1000 ($\leq M$) (solid medium), between 1000 (> 10 m) and 3000 ($\leq M$) (liquid medium) or when a sample (or more) indicates values greater than 1000 (solid medium) or 3000 (liquid medium), the results are considered unsatisfactory.

3 ° *Clostridium sulfito-reducing agents* at 46 degrees Celsius (criterion: $m = 2$).

The analytical tolerance = 3 m, i.e. $3 \times 2 = 6$.

3.1 When the results of all samples are ≤ 6 , these are considered satisfactory.

3.2 When one or two samples are graded > 6 (> 3 m) and ≤ 20

($M = 10$ m) and the others are ≤ 6 , the overall result is considered acceptable.

3.3 When three (or more) of the five samples tested show values > 6 and ≤ 20 or when only one sample (or more) is above M (> 20), the overall result is considered unsatisfactory.

4. *Salmonella* (criterion = absence in 25 grams).

It is essentially for this type of pathogenic germs that the two-class plans are used. They are translated in terms of "presence" or "absence" ($m = 0$). It is a search and not an enumeration. However, let us recall (cf. 1°) that two-class plans may also involve enumerations, but the expression is no longer in terms of "presence" or "absence".

Where no particular indication is given, the search for salmonella in the prescribed sample mass must be negative for the five samples analyzed. i.e. $m = 0$, $n = 5$, $c = 0$.

Note: In certain special cases, such as the search for salmonella on the surface of poultry carcasses, it can be tolerated if this requirement is not fully met. The data of the plan then become $m = 0$, $n = 5$, $C = 1$ (a sample may be considered positive).

It should also be pointed out that the very heterogeneous distribution of salmonella in food products removes part of their value from the enumeration, and it is conventional to find small volumes of positive inoculum for salmonella search, while larger masses of the same product are found to be negative.

III- General Comment:

1. The three-class plan system, as set out in the text referred to, necessarily includes, for the interpretation of the results, the determination of the values **m, 3m and M**. It is therefore necessary, in each individual case, to determine the dilutions allowing a valid verification of the respect or non-respect of these criteria. This often results in inoculum inoculation from several successive dilutions, which has the additional advantage of reinforcing the value of the results observed.

2. One of the points that would benefit from attention is how to control the criteria for which very low values (<10 essentially) have been indicated.

The technique to be used then requires the inoculation of 1 gram of product, which, for solid products, can be difficult or delicate.

Some examples are given below:

Example 1: Sulfito-reducing anaerobes at 46 degrees Celsius.

In particular, points 2, 3 and 5 of Annex I contain strict criteria in this respect. The seeding of one of the selective medium can be carried out from a 1/5 initial suspension. 2.5 ml are then inoculated into two tubes used for identification ($2.5 \text{ ml} \times 2 = 5 \text{ ml} = 1 \text{ g}$).

We can then realize a 1/10 suspension required for the other seeding by adding 5 ml of diluent to 5 ml of 1/5 initial suspension.

Example 2: Fecal Coliforms:

Points 5, 6 and 7 of Annex I have for this type of germs values equal to 1, which may be surprising and deserving of explanation.

In fact, the text retained the notion of fecal coliforms and not the one of Escherichia Coli (whose research presupposes precise identification by means of several bacteriological tests), fecal coliforms being defined as

enterobacteria fermenting lactose at high temperatures. This notion of fecal coliforms, a bacterial group not defined in taxonomic terms, is therefore less precise than the one of *Escherichia Coli* and should be taken into account by retaining a numerical value allowing the three-class system to be used.

The enumeration of fecal coliforms in this particular case can be carried out in liquid medium by the most probable number technique