

**JOINT FAO/WHO FOOD STANDARDS PROGRAMME**  
**CODEX COMMITTEE ON FOOD HYGIENE**  
**Forty-fourth Session**

**New Orleans, United States of America,**

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**Comments on the**

**PROPOSED DRAFT REVISION OF THE CODE OF HYGIENIC PRACTICE FOR SPICES AND  
DRIED AROMATIC PLANTS (CAC/RCP 42-1995) (At Step 3)**

**Comments submitted by:**

**Colombia, Costa Rica, Japan, Mauritius, Philippines and the United States of America**

**COLOMBIA**

Colombia is pleased to present the following comments to the "Proposed Draft Revision on the Code of Hygienic Practice for Spices and Dried Aromatic Plants (CAC/RCP 42-1995)" at Step 3, sent by the Codex Alimentarius Commission Secretariat.

In the following, we will use CX/RVDF, 12/44/8 Spanish version as the reference document.

**I. GENERAL COMMENTS**

Colombia proposes to suspend the work developed by the Codex Committee on Food Hygiene related to the Proposed Draft Revision under discussion for now, and resume the work once the "Code of Hygienic Practice for Low-Moisture Foods" has been developed.

The above due to the fact that the Codex Committee on Food Hygiene should examine further if this proposed draft revision should be included as an Annex to the Code of Hygienic Practice for Low-Moisture Foods.

**COSTA RICA**

Costa Rica supports the "PROPOSED DRAFT REVISION OF THE CODE OF HYGIENIC PRACTICE FOR SPICES AND DRIED AROMATIC". However, would like to request this Committee to work on limit for mycotoxins in these products.

In addition, Costa Rica propose to reference in the document the GENERAL STANDARD FOR CONTAMINANTS AND TOXINS IN FOODS CODEX STAN 193-1995 (Rev. 1-1997).

**JAPAN**

Japan wishes to thank the United States of America for leading the electronic working group and preparing the document. We are pleased to offer the following comments:

**General Comments**

With regard to the scope of this Code, Japan suggests that we should consider the criteria for inclusion of items in this Code before discussing inclusion or exclusion of specific items to be covered by this Code.

## Specific comments

### INTRODUCTION

#### Paragraph 4, 2<sup>nd</sup> sentence

For example, source plants for dried spices and dried aromatic plants are grown in a wide range of countries and on many types of farms, e.g., from very small farms (~~less than two acres~~) to large farms spanning hundreds of acres.

<Rational> *The size of very small farm could be different in different areas of the world.*

### SECTION V – CONTROL OF OPERATION

#### 5.1 Control of Food Hazards

##### Paragraph 52, 1<sup>st</sup> sentence

Measures should be taken at each step in the supply food chain to minimize the potential for contamination of dried spices and dried aromatic plants by microbial pathogens, mycotoxin-producing molds, excreta, rodent hair, insect fragments and other foreign materials.

<Rational> *editorial*

##### 5.2.2.3 Microbial Reduction Treatments

##### Paragraph 66, 67 and 68, 1<sup>st</sup> sentence

Factors that should be ~~considered~~ controlled when using.....

<Rational> *These factors should be “controlled” to achieve intended microbial reduction. We think just “considered” is not good enough.*

##### Paragraph 69, last sentence

Once the lethality of the process is validated by scientific data, the establishment should verify that the process continues to meet the critical limits during operation, and the Process Criteria achieve intended microcidal effects in the establishment.

<Rational> *In case, the process is validated by scientific data, the establishment should verify that the Process Criteria also achieve intended microcidal effects in the specific establishment.*

##### 5.2.3 Microbiological and other specifications

##### Paragraph 71

This paragraph should be deleted.

<Rational>

In this section, we think that it is enough to refer to the *General Principles of Food Hygiene* and the *Principles for the Establishment and Application of Microbiological Criteria for Foods* (CAC/GL 21-1997). The similar codes of practice which were recently developed in CCFH did not contain such kind of general specifications and this code should be consistent with them.

##### Paragraph 73

We propose to delete square bracket and keep the sentences as they are.

<Rational> *Japan thinks that this paragraph is a good guidance so should be kept in this document.*

##### Paragraph 74 and Annex I

The 2<sup>nd</sup> sentence in the paragraph 74 and Annex I should be deleted.

<Rational> *Japan is of the view that it is not clear whether there is a need for criteria for Salmonella, especially taking into account the guidance for the development of criteria given in the Principles for the Establishment and Application of Microbiological Criteria for Food (CAC/GL21-1997) which stated that criteria should be developed only when there is a need for such criteria and that such criteria are meaningful for consumer protection. If this Annex is included in this document, it is necessary to request FAO and WHO to estimate the risk mitigation for Salmonella in ready-to-eat spices when different sampling*

plans and microbiological criteria are applied.

### **Paragraph 75, 1<sup>st</sup> sentence**

Effective measures should be taken to ~~prevent~~**minimize** contamination of uncontaminated dried spices and dried aromatic plants by direct or indirect contact with material at earlier stages of the processing.

<Rational> editorial and for consistency

### **Paragraph 89**

We propose to delete square bracket and keep the sentences as they are.

<Rational> Japan thinks that this paragraph is a good guidance so should be kept in this document.

## **MAURITIUS**

Comments on CX/FH 12/44/8- Proposed draft revision of the code of hygienic practice for spices and dried aromatic plants (CAC/RCP 42-1995)

1. Page 4, Section II-scope, use and definition: is there any evidence of the use of teas as seasonings?
2. Page 5, Section 3.2.1.1: third bullet point-is it only the grower's responsibility to assess if microbial and chemical testing should be done? Would it not be more appropriate to include the authorities in such an exercise?
3. Page 13, section 5.4, packaging, the word 'chili' wrongly spelt (chilli)
4. Page 14, section 6.5, monitoring effectiveness: We could also include a requirement to monitor the mould count of the premises, as part of an environmental monitoring plan.

## **PHILIPPINES**

### **General Comments:**

The Philippines would like to provide general comments on the list of issues posed by the EWG:

1. Whether to use the term "dried spices" or "spices" throughout the document:

**We propose to retain the term "dried spices" throughout the document.**

Rationale: Dried spices constitute the bulk of traded and used spices.

2. Whether to include teas, including herbal teas and dried vegetables used as seasonings in the scope (section 2.1, paragraph 6)

**We propose not to include herbal teas and dried vegetables in the scope**

Rationale: Herbal teas (including those that are indigenous) and dried vegetables, with varying intended use, are under classifications different from spices in the Philippines. Spices require more controlled handling conditions. Primary production considerations for spices are also generally different from that of common dried vegetables. Furthermore, the current Code of Hygienic Practice for Dehydrated Vegetables including Edible Fungi (CAC/RCP 5-1971) already address dried vegetables.

3. Whether to include a provision for the protection of source plants when domestic animals are used during ~~the growth or~~ harvest stages of production (section 3.1.2, paragraph 17)

**We can agree to include the provision indicated in paragraph 17 in square brackets, specifically "Where domestic animals are used in the harvest of source plants for dried spices and dried aromatic plants, the source plants should be protected from microbial contamination by animal feces."**

Rationale: The terms "to the extent possible" and "where necessary" in the statement provides for enough flexibility

4. Whether to include the recommendation to avoid sprinkler irrigation and flood irrigation in production (section 3.2.1.1 paragraph 21)

**We can agree to include the recommendation to avoid sprinkler irrigation and flood irrigation in production**

**Rationale:** Farms do not use these types of irrigation method for spices as these are not practical for small-scale production.

5. Whether to include a provision to deter any casual visitors and, to the extent possible, children to the harvest area (section 3.2.3, paragraph 25)

**We can agree to include the recommendation to deter any casual visitors and, to the extent possible, children to the harvest area**

**Rationale:** The provision allows enough flexibility.

6. Whether to include specifications listed in paragraph 71 (section 5.2.3)

**We agree to include specifications listed in paragraph 71**

**Rationale:** The provisions stated in paragraph 71 are necessary to reduce the risk of foodborne illness due to spice consumption.

7. Decide on specific wording to be used with respect to verification activities such as microbiological testing of product and the environment (section 5.2.3, paragraphs 73 and 74)

We propose the following revisions to the current wordings of paragraph 74 as follows:

**Paragraph 73, 1st sentence**

From	To
Microbiological testing can be a useful tool to evaluate and verify the effectiveness of safety and sanitation practices...	Microbiological testing can be a useful tool to evaluate and verify the effectiveness of food safety and sanitation practices...

**Paragraph 73, 3<sup>rd</sup> sentence**

From	To
Test methods should be selected that are validated for the intended use.	<b>Validated</b> T(t)est methods <b>for the intended use</b> should be selected <del>that are validated for the intended use.</del>

**We agree to the current wordings of paragraph 74**

8. Whether to include the recommendations regarding record keeping (section 5.7, paragraph 89)

**We can agree to include the recommendations regarding record keeping.**

**Rationale:** The provision is necessary for traceability and recall systems of the establishment and is currently being followed by manufacturers.

9. Whether to include the microbial criterion for *Salmonella* for dried spices and dried aromatic plants and, if so, what the value of n should be (Annex I, paragraphs 104-107)

**We agree to include a microbial criterion for Salmonella but propose that the value of n should be 5 instead of 10.**

**Rationale:** The Philippines follows a regulation with n= 5 for *Salmonella* in spices and spices (ready-to-eat). In addition, the regulation specifies the following:

Food Description	Test/Microorganism Reference Criteria	n	c	m	M
Spices	Molds, cfu/g	5	2	10 <sup>2</sup>	10 <sup>4</sup>
	SPC/APC, cfu/g	5	2	10 <sup>4</sup>	10 <sup>6</sup>
Spices (ready to eat)	Coliforms, cfu/g	5	2	10 <sup>2</sup>	10 <sup>3</sup>
	<i>S. aureus</i> (coagulase +), cfu/g	5	2	10 <sup>2</sup>	10 <sup>4</sup>
	<i>Salmonella</i> /25 g	5	0	0	
	Molds, cfu/g	5	2	10 <sup>2</sup>	10 <sup>4</sup>
	SPC/APC, cfu/g	5	2	10 <sup>4</sup>	10 <sup>6</sup>

**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 value 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 unit

Reference: Bureau Circular 01-A series 2004 Food & Drug Administration-Department of Health

**UNITED STATES OF AMERICA****GENERAL COMMENTS**

The U.S. believes that the electronic working group has made significant progress in updating the *Code of Hygienic Practice for Spices and Dried Aromatic Plants* (CAC/RCP 42-1995). However, a number of issues remain to be resolved before this Code can advance. In particular, the scope needs to be clarified and the need for a microbiological criterion must be resolved. Moreover, additional consideration should be given to ensure the Code addresses diversity of source plants and production practices used for spices and dried aromatic plants, which can impact the practicality and applicability of some of the hygienic practices recommended.

**SPECIFIC COMMENTS**

In the comments below, text to be removed is indicated by strike outs and text to be added is underlined.

**Title and throughout the document**

**Comment:** The U.S. supports the use of term “spices” rather than “dried spices,” but can accept either term. (We have made this change where “dried spices” appears in our comments but we do not point out all places it appears in the draft revised Code.)

**Rationale:** The introduction and scope sections of the draft code make it clear that the products covered are dried and, where referring to the undried commodity, uses the term “source plant.”

**INTRODUCTION****Paragraphs 1-4**

**Comment:** We recommend the following reorganization and minor revisions to the introductory paragraphs 1-4.

1. Dried, fragrant, aromatic or pungent, edible vegetable or plant substances, in the whole, broken or ground or blended form, e.g., ~~dried~~ spices and dried aromatic plants, impart flavor when added to food. ~~Dried~~ Spices and dried aromatic plants may include many parts of the plant, such as berries, flowers, leaves, roots, and seeds.

2. The production, processing, and packing of ~~dried~~ spices and dried aromatic plants is very complex. For example, source plants for ~~dried~~ spices and dried aromatic plants are grown in a wide range of countries and on many types of farms, e.g., from very small farms (less than two acres) to large farms spanning hundreds of acres. Some may be harvested from the wild. Agricultural practices for growing source plants for ~~dried~~ spices and dried aromatic plants also vary tremendously from virtually no mechanization to highly mechanized practices. Drying of source plants may be performed actively (e.g., in mechanical dryers for rapid drying) or passively (e.g., under the sun for several days). The distribution and processing chain for ~~dried~~ spices and dried aromatic plants is also highly complex and can span long periods of time and include a wide range of establishments. For example, ~~dried~~ spices and dried aromatic plants grown on small farms may pass through multiple stages of collection and consolidation before reaching a spice processor and packer or a food manufacturer. Dried product processing generally involves cleaning (e.g., culling and sorting to remove debris), sorting, sometimes soaking, slicing, drying, and on occasion grinding/cracking. Some ~~dried~~ spices and dried aromatic plants are also treated to ~~inactivate the non-sporeformers~~ mitigate microbiological contamination, typically by gas treatment (e.g., ethylene oxide), irradiation or steam

treatment. Processing and packing/repacking may also take place in multiple locations across long periods of time, since ~~dried~~ spices and dried aromatic plants are prepared for different purposes.

3. The safety of ~~dried~~ spices and dried aromatic plant products depends on maintaining good hygienic practices along the food chain during primary production, processing, packing, retail, and at the point of consumption. Sporeforming bacteria, including pathogens such as *Bacillus cereus*, *Clostridium perfringens*, and *Clostridium botulinum*, as well as non-sporeforming vegetative cells such as *Escherichia coli* and *Salmonella*, have been found in ~~dried~~ spices and dried aromatic plants. There have been a number of outbreaks of illness associated with spice and seasoning consumption, with most being caused by *Salmonella* spp., that have raised concerns regarding the safety of ~~dried~~ spices and dried aromatic plants. The complex supply chain for ~~dried~~ spices and dried aromatic plants makes it difficult to identify the point in the food chain where contamination occurs, but evidence has demonstrated that contamination can occur throughout the food chain if proper practices are not followed.

4. The safety of ~~dried~~ spices and dried aromatic plants can also be affected by mycotoxin-producing mold (e.g., those producing aflatoxin and ochratoxin) throughout the entire food chain. Chemical hazards such as heavy metals and pesticides, as well as physical contaminants such as stones, glass, wire, stems, and sticks, may also be present in ~~dried~~ spices and dried aromatic plants.

**Rationale:** The reorganization and minor revisions improve the clarity and logical progression of the introduction.

## SECTION II - SCOPE, USE AND DEFINITION

### Paragraph 6

**Comment:** The U.S. believes additional discussion of scope is needed and that the decisions made for this section may have significant implications for the remaining sections. CCFH must decide whether spices or dried aromatic plants used in capacities other than seasoning food, e.g., flavoring herbal tea, will be covered by this Code. The group must decide whether commodities that are sometimes used for seasoning but more often are used as a major ingredient in prepared foods (e.g., dehydrated vegetables, such as onion powder used as a seasoning or larger onion particles, which are used as a fresh onion replacement), will be included in this Code, noting that Codex has a *Code of Hygienic Practices for Dehydrated Fruits and Vegetables* including Edible Fungi (CAC/RCP 5-1971) and a *Code of Hygienic Practice for Dried Fruits* (CAC/RCP 3-1969). We recommend modifying the sentence in square brackets as follows:

~~[This Code includes teas, including herbal teas, and dried vegetables uses as seasonings, e.g., dehydrated onion and garlic, broccoli powder.]~~

**Rationale:** ~~The ingredients in herbal teas are spices and dried aromatic plants, and the supply chains for these products are generally the same as for spices and dried aromatic plants.~~ Clarification of the scope The U.S. does not support the inclusion of teas, which are consumed as extracts derived by heating the dried tea leaves in water. Herbs used in herbal teas are generally used in other foods and would be covered, but the teas themselves should not covered.

### Paragraph 9

**Comment:** Eliminate “Dried” in “Dried Spices” and Delete the parenthetical statement

**Dried Spices and Dried Aromatic Plants** – natural dried components or mixtures of dried plants used in foods ~~(including dried herbs and teas)~~ for flavoring, seasoning and imparting aroma, including whole, broken, ground and blended forms.

**Rationale:** Teas should be outside the scope of the document; dried herbs are dried plants used in foods for flavoring, so it is not necessary to state that they are included.

## SECTION III - PRIMARY PRODUCTION

### Paragraph 17

**Comment:** Revise the second bullet in square brackets as below.

- ~~[Where domestic animals are used in the production and/or harvest of source plants for ~~dried~~ spices and dried aromatic plants, care should be taken to ensure that the animals do not become a source of~~

~~contamination, e.g. the source plants should be protected from microbial contamination by animal feces.}~~

**Rationale:** Domestic animals are used in the agricultural production as well as the harvest of source plants for spices and/or dried aromatic plants by some producers, e.g., where mechanical equipment such as tractors are not practical. This clarifies the recommendation is to prevent contamination from animals.

### Paragraph 21

**Comment:** Revise the list of source waters as follows:

Source plants for ~~dried~~ spices and dried aromatic plants should not be grown or produced in areas where the water used for irrigation might contaminate plants. Growers should identify the sources of water used on the farm (e.g., ~~municipality~~ municipal water, well water (deep vs. shallow), surface water (e.g., rivers, reservoirs, farm ponds, lakes, open canals), re-used irrigation water, reclaimed wastewater, discharge water from aquaculture) ~~well, open canal, reservoir, rivers, lakes, farm ponds~~).

**Rationale:** Clarification – groups similar types of waters.

**Comment:** Revise the second bullet as follows:

- Identify and implement corrective actions to prevent or minimize contamination. Possible corrective actions may include fencing growing areas to prevent large animal contact, ~~proper maintenance~~ properly maintaining wells, filtering water, not stirring the sediment when drawing water, building settling or holding ponds; or water treatment facilities. Settling or holding ponds that are used for subsequent irrigation may be microbiologically safe, but may attract animals or in other ways increase the microbial risks associated with water for irrigating plants. If water treatment is needed, consult with water safety experts.

**Rationale:** Editorial.

**Comment:** Replace the last bullet in square brackets with the indicated text:

- ~~[Sprinkler irrigation should be avoided in order to minimize the potential for growth of mycotoxin-producing mold. Because of the risk of contamination, flood irrigation should not be used.]~~
- The type of irrigation should be suitable for the specific crop and should not constitute a source of contamination.

**Rationale:** As written the paragraph in brackets severely limits the types of irrigation systems that can be used and may not be practical or needed for all source plants for spices and dried aromatic plants.

### Paragraph 24

**Comment:** In the second bullet, separate the points addressing soil fungicides from those for the plant, creating one additional bullet point as indicated below.

- The use of soil fungicides (on seedbeds or fields) reduces the amount of spores of mycotoxin-producing molds.
- If appropriate, for preventive purposes, fungicides should be used on source plants, e.g., fruits, to avoid the introduction and development of mold through wounds or fissures.

**Rationale:** Improves clarity and better highlights recommendation regarding fungicides application to source plants.

### Paragraph 25

**Comment:** The U.S. supports deletion of the text in square brackets with respect to of casual visitors and children to the harvest area. We recommend adding a new sentence to recognize that restricting persons is not always practical. We recommend the following changes:

Proposed instead: Non-essential persons ~~{casual visitors and, to the extent possible, children,}~~ should be deterred from entering the harvest area, as they may present an increased risk of contamination. When such persons are present, care should be taken to ensure they do not become a source of contamination.

**Rationale:** While we agree that it is important to keep non-essential persons, including casual visitors and

children, from entering the harvest area because the presence of these visitors could lead to contamination of the source plants or growing area, we believe that the term “non-essential persons” includes casual visitors and children. Moreover, restricting non-essential persons from the harvest area is not always practical. However, it is critical that these persons do not become a source of contamination.

### Paragraph 26

**Comment:** Replace “field” with “growing/harvesting areas” so paragraph reads:

Growers should consider providing areas away from the ~~field~~ growing/harvesting areas for agricultural workers to take breaks and eat. For worker convenience, these areas should provide access to toilet and hand-washing facilities so agricultural workers can practice proper hygiene.

**Rationale:** All source plants for spices and dried aromatic plants may not be produced in fields.

### Paragraph 27

**Comment:** Modify the wording in the paragraph and first bullet as shown below:

27. As far as possible, sanitary facilities should be ~~located close to the field and~~ readily accessible to the work area.

- Sanitary facilities should be located in a manner to encourage their use and reduce the likelihood that agricultural workers will relieve themselves in the ~~field~~ growing/harvesting areas

**Rationale:** Suggesting that sanitary facilities be located close to the field may be inconsistent with paragraph 26 that says that certain activities take place away from the growing/harvesting areas. Having sanitary facilities readily accessible accomplishes the intended purpose. As noted for paragraph 26, all source plants for spices and dried aromatic plants may not be produced in fields.

### Paragraph 31

**Comment:** Add “where appropriate to the first bullet as follows:

- Where appropriate, ~~the~~ soil under the plant should be covered with a clean sheet of plastic during picking/harvest to avoid contamination by dirt or plant matter that has fallen prior to harvesting

**Rationale:** Not all crops that are harvested in a manner such that this would be necessary.

## SECTION IV - ESTABLISHMENT: DESIGN AND FACILITIES

### Paragraph 40

**Comment:** Separate the first sentence into two as follows:

The application of appropriate hygienic design standards to building design and layout is essential to ensure that contaminants are not introduced into the product, ~~and~~ Hygienic design should ensure that if a pathogen such as *Salmonella* is introduced, it remains a transient strain and does not become established in specific areas that can serve as a source of contamination of the product.

**Rationale:** Improve clarity.

### Following paragraph 51:

**Comment:** Create a new section 4.4.8 Storage and move paragraph 56 with minor modifications there.

#### 4.4.8 Storage

51. ~~bis~~ Dried spices and dried aromatic plants are susceptible to mold growth if storage conditions are not appropriate. ~~Dried s~~Spices and dried aromatic plants should be stored in an environment with humidity that does not result in at a product moisture low enough so that the product that can be held under normal storage conditions without development support the growth of mold.

**Rationale:** The paragraph was under the section on Time and Temperature Control, but it did not address time or temperature.

## SECTION V - CONTROL OF OPERATION

### Paragraph 52

**Comment:** Add “chemical contaminants” to the list:

Measures should be taken at each step in the supply chain to minimize the potential for contamination of ~~dried~~ spices and dried aromatic plants by microbial pathogens, mycotoxin-producing molds, chemical contaminants, excreta, rodent hair, insect fragments and other foreign materials.

**Rationale:** Consistent with the scope of the Code.

### Paragraph 56

**Comment:** Delete the paragraph:

~~Dried spices and dried aromatic plants are susceptible to mold growth if storage conditions are not appropriate. Dried spices and dried aromatic plants should be stored at a moisture low enough so that the product can be held under normal storage conditions without development of mold.~~

**Rationale:** The paragraph does not address time or temperature.

### Paragraph 57

**Comment:** Modify wording as shown below:

Plants or parts of plants used for the preparation of ~~dried~~ spices and dried aromatic plants may be dried passively (naturally, e.g., air dried) or actively (mechanically, e.g., forced air drying), provided adequate measures are taken to prevent contamination of the raw material during the process. To prevent the growth of microorganisms, especially mycotoxin-producing mold, a safe moisture level should be achieved.

**Rationale:** Improve clarity.

### Paragraph 58

**Comment:** Modify wording as shown below:

If dried naturally, plants or part of plants should be dried on clean, elevated racks, concrete floors, or clean mats or tarps and not on the bare ground or in direct contact with the soil. Pathways should be made in the drying area to prevent anyone from walking on the crop. The drying plant material should be raked/turned frequently to limit mold growth.

**Rationale:** Improve clarity.

### Paragraph 60

**Comment:** Modify wording as shown below:

If possible, use active (mechanical) drying methods versus passive (open air) drying to limit exposure of ~~dried~~ spices and dried aromatic plants to environmental contaminants and to prevent growth of mold. If hot air drying is used, the air should be free of contaminants and precautions should be made to prevent combustion gases from contacting the plant material or stored plant material in the area.

**Rationale:** Improve clarity.

### Paragraph 61

**Comment:** Modify wording as shown below:

Drying time should be reduced as much as possible by using optimal drying conditions to avoid fungal growth and toxin production. For both passive (natural) and active (mechanical) drying, the thickness layer of the drying source plant material should be considered in order to consistently achieve a safe moisture level.

**Rationale:** Improve clarity.

### Paragraph 65

**Comment:** We recommend changing “whenever feasible” to “when necessary to reduce risk” in the second sentence.

~~Whenever feasible~~ necessary to reduce risk, ~~dried~~ spices and dried aromatic plants should be treated with a

validated microbial reduction treatment prior to reaching the consumer in order to inactivate pathogens such as *Salmonella*.

**Rationale:** We believe that risk of illness should be the criterion for determining the need for a validated microbial reduction treatment, not whether it is feasible to treat the spice or dried aromatic plant.

### Paragraph 68

**Comment:** Modify wording as shown below:

Factors that should be considered when using ethylene oxide or propylene oxide include chemical concentration, exposure time, vacuum and/or pressure, density of the product, and penetrability permeability of the packaging material. The process should ensure that all product is directly exposed to the gas for the full length of time required.

**Rationale:** Improve clarity.

### Paragraph 69

**Comments:** Insert “periodically” in the last sentence:

Once the lethality of the process is validated by scientific data, the establishment should periodically verify that the process continues to meet the critical limits during operation.

**Rationale:** Improve clarity.

### Paragraph 71

**Comment:** We recommend deletion of the text

~~{71. When tested by appropriate methods of sampling and examination, the products:~~

- ~~(a) should be free from pathogenic and toxigenic microorganisms in levels that may represent a hazard to health; and~~
- ~~(b) should not contain any substances originating from microorganisms, particularly mycotoxins, in amounts that exceed the tolerances or criteria established by the Codex Alimentarius Commission or, where these do not exist, by the official agency having jurisdiction;~~
- ~~(c) should not contain levels of insect, bird or rodent contamination that indicate that dried spices or dried aromatic plants have been prepared, packed or held under unsanitary conditions;~~
- ~~(d) should not contain chemical residues resulting from the treatment of dried spices or dried aromatic plants in excess of levels established by the Codex Alimentarius Commission or, where these do not exist, by the official agency having jurisdiction;~~
- ~~(e) should comply with the provisions for food additives, contaminants, and with maximum levels for pesticide residues established by the Codex Alimentarius Commission or, where these do not exist, by the official agency having jurisdiction.}~~

**Rationale:** The General Principles of Food Hygiene provides adequate guidance in that it specifies “Where microbiological, chemical or physical specifications are used in any food control system, such specifications should be based on sound scientific principles and state, where appropriate, monitoring procedures, analytical methods and action limits.”

### Paragraphs 73 and 74

**Comment:** We support inclusion of these paragraphs with the deletion referring to the microbiological criterion in the annex.

{73. Microbiological testing can be a useful tool to evaluate and verify the effectiveness of safety and sanitation practices, provide information about an environment, a process, and even a specific product lot, when sampling plans and methodology are properly designed and performed. The intended use of information obtained (e.g., evaluating the effectiveness of a sanitation practice, evaluating the risk posed by a particular hazard, etc.) can aid in determining what microorganisms are most appropriate to test for. Test methods should be selected that are validated for the intended use. Consideration should be given to ensure proper design of a microbiological testing program. Trend analysis of testing data should be undertaken to evaluate the effectiveness of food safety control systems.

74. Verification activities may include, as necessary, appropriate environmental and/or product testing. A ~~microbiological criterion for Salmonella in ready-to-eat dried spices and dried aromatic plants is provided in Annex I.~~ When monitoring control measures and verification results demonstrate deviations, appropriate corrective action should be taken and the finished product should not be released until it is shown that it complies with appropriate specifications.}

**Rationale:** We think that these paragraphs provide useful information in establishing verification activities and provide flexibility to apply verification activities appropriate to the specific spice or dried aromatic plant. The paragraphs provide additional information on types of verification other than auditing (given as an example at the end of paragraph 72). It further emphasizes the use of environmental monitoring (see section 6.5 Monitoring Effectiveness) for verification of sanitation. We recommend deletion of the statement about the microbiological criterion (MC) in the annex, since this base code may proceed without the MC until agreement has been reached on the need for an MC and the sample size and number.

### Paragraph 89

**Comment:** We support keeping this section on documentation and records with the following modifications.

~~{Where necessary, records should identify the source (or lot number) of the source/lot identification of incoming raw materials and the link to the source lot identification of to outgoing product identification products should be kept to facilitate the identification of the source of contamination/traceability/product tracing. Reference should also be made to *Principles for Traceability/Product Tracing as a Tool within a Food Inspection and Certification System* (CAC/GL 60-2006).}~~

**Rationale:** We have seen in our spice contamination/outbreak situations the importance of lot identification records in being able to identify the source of the contaminated ingredient in order to remove it from the market.

### SECTION X - TRAINING

**Comment:** Change the section number for the title:

SECTION ~~X~~ - TRAINING

**Rationale:** Editorial

### ANNEX I: MICROBIOLOGICAL CRITERIA FOR DRIED SPICES AND DRIED AROMATIC PLANTS

**Comment:** Eliminate “Dried” from “Dried Spices” in the title of the Annex.

ANNEX I: MICROBIOLOGICAL CRITERIA FOR ~~DRIED~~ SPICES AND DRIED AROMATIC PLANTS

**Rationale:** Editorial, for consistency elsewhere.

### Paragraphs 104 – 107.

**Comment:** The value of this criterion has been questioned by some members of the electronic Working Group, and in order to determine whether to retain this criterion we recommend that the Annex be put in square brackets and that FAO/WHO be requested to undertake a risk assessment to determine whether there is a significant public health risk from *Salmonella* associated with consumption of spices and dry aromatic plants and to evaluate whether criteria for *Salmonella* are meaningful to ensure adequate consumer health protection. Questions FAO/WHO could address include:

Is there a significant risk associated with *Salmonella* in spices and dried aromatic plants? If so, do particular spices and dried aromatic plants present a greater risk than others?

Is the criterion and the associated sampling plan in the draft annex meaningful for public health protection?

Would an alternative MC provide meaningful public health protection?

What would be the impact on public health of microbial reduction treatments of different levels, e.g., 2-5 log reduction of *Salmonella* provided to spices and dried aromatic plants?

**Rationale:** We do not believe that there are sufficient data to establish a single microbiological criterion for all spices at this time, nor is it clear for which spices an MC would be appropriate. Data collected by the United States on the prevalence and levels of *Salmonella* in spice shipments offered for import into the

United States indicates that for many spices, a significant fraction of the shipments are contaminated and that the mean levels of contamination across shipments for capsicum and sesame seeds shipments (the spices for which we have level data) vary widely. Assuming a Poisson-log normal distribution, the sampling plan in the draft code will provide 95% probability that a lot of food containing a geometric mean concentration of 0.011 cfu/g (-1.97 log cfu/g) and a standard deviation of 0.25 log cfu/g will be detected and rejected if any of the 10 analytical units are positive for *Salmonella*. The arithmetic mean concentration of such a lot is 0.013 cfu/g. However, data collected by the United States on shipments of capsicum and sesame seeds offered for import suggest that most of these spice shipments have mean concentrations much lower than 0.013 cfu/g. Using the model for *Salmonella* contamination across- and within-capsicum shipments developed from the U.S. data, we estimate, assuming a shipment size of 40,000 lbs, that only 35% of contaminated shipments would be detected with the sampling plan in the draft code. These estimates are based on limited data on capsicum and sesame seed imported into the U.S. We believe that CCFH can make a more informed decision if FAO/WHO puts out a call for data on illnesses from and contamination (prevalence and level) of spices and dried aromatic plants and conducts an analysis similar to that done with respect to the MC for *Salmonella* in raw bivalve molluscs. If CCFH agrees to new work on low-moisture foods, it is likely that we would call on FAO/WHO for expert advice and the risk assessment related to spices and dried aromatic plants can be addressed as part of that effort.