



**Food and Agriculture
Organization of
the United Nations**



**World Health
Organization**

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REP15/FH

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX ALIMENTARIUS COMMISSION
Thirty-eighth Session
Geneva, Switzerland, 6-11 July 2015

**REPORT OF THE FORTY-SIXTH SESSION OF THE
CODEX COMMITTEE ON FOOD HYGIENE**
Lima, Peru, 17 – 21 November 2014

NOTE: This report includes Codex Circular Letter CL 2014/32-FH

CODEX ALIMENTARIUS COMMISSION **E**



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CX 4/20.2

CL 2014/32-FH

TO: Codex Contact Points
Interested International Organizations

FROM: The Secretariat
Codex Alimentarius Commission
Joint FAO/WHO Food Standards Programme
FAO, Viale delle Terme di Caracalla, 00153 Rome, Italy

SUBJECT: Distribution of the Report of the Forty-sixth Session of the Codex Committee on Food Hygiene (REP15/FH)

The report of the Forty-sixth Session of the Codex Committee on Food Hygiene (CCFH) is attached. It will be considered by the Thirty-eighth Session of the Codex Alimentarius Commission (Geneva, Switzerland, 6-11 July 2015).

MATTERS FOR ADOPTION BY THE CODEX ALIMENTARIUS COMMISSION:

Proposed Draft and Draft Standards and Related Texts at Steps 8 and 5/8 (with omission of Steps 6 and 7) of the Procedure

1. Draft Guidelines for the Control of *Trichinella* spp. in Meat of Suidae at Step 8 (REP15/FH para. 33 and Appendix IV); and
2. Proposed Draft Code of Hygienic Practice for Low-Moisture Foods at Step 5/8 (REP15/FH para. 44 and Appendix V).

Other texts for adoption

3. Amendments to Meat Commodity Standards (REP15/FH para. 12 and Appendix III).

Governments and interested international organizations are invited to comment on the above texts and should do so in writing, by e-mail to the Secretariat, Codex Alimentarius Commission, Joint FAO/WHO Food Standards Programme, Viale delle Terme di Caracalla, 00153 Rome, Italy : codex@fao.org, **before 31 March 2015.**

TABLE OF CONTENTS

	Page
Summary and Conclusions	iv
Report of the 46 th Session	1
Summary Status of Work	11
	Paragraphs
Introduction	1
Opening of the Session	2 - 5
Adoption of the Agenda	6
Matters Referred by the Codex Alimentarius Commission and/or Other Codex Committees to the Food Hygiene Committee (Item 2)	7 - 12
Matters Arising from the Work of FAO, WHO and Other International Organizations: Progress Report on the Joint FAO/WHO Expert Meetings on Microbiological Risk Assessment (JEMRA) and Related Matters (Agenda Item 3a)	13 - 17
Information from the World Organisation for Animal Health (OIE) (Agenda Item 3b)	18 - 21
Draft Guidelines for Control of Specific Zoonotic Parasites in Meat: <i>Trichinella</i> spp. (Agenda Item 4)	22 - 33
Proposed Draft Annex on Statistical and Mathematical Considerations to the <i>Principles and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods</i> (Agenda Item 5)	34 - 37
Proposed Draft Code of Practice for Low-Moisture Foods (Agenda Item 6)	38 – 44
Proposed Draft Guidelines for the Control of Nontyphoidal <i>Salmonella</i> spp. in Beef and Pork Meat (Agenda Item 7)	45 – 59
Proposed Draft Guidelines on the Application of General Principles of Food Hygiene to the Control of Foodborne Parasites (Agenda Item 8)	60 – 67
Discussion Paper on the Need to Revise the <i>Code of Hygienic Practice for Fresh Fruits and Vegetables</i> (CAC/RCP 53-2003) (Agenda Item 9)	68 - 73
Other Business and Future Work (Agenda Item 10):	
(a) New Work	74 - 82
(b) Forward Workplan and Process by which the CCFH will undertake its work	83 - 84
Date and place of the next session (Agenda Item 11)	85

LIST OF APPENDICES

Appendix I	List of Participants	page 12
Appendix II	Replies of CCFH46 to the Strategic Plan implementation	page 27
Appendix III	Amendments to the meat commodity standards	page 31
Appendix IV	Draft Guidelines for Control of <i>Trichinella</i> spp. in Meat of Suidae	page 32
Appendix V	Proposed Draft Code of Hygienic Practice for Low-Moisture Foods	page 37
Appendix VI	CCFH Forward Workplan	page 47

SUMMARY AND CONCLUSIONS

The Forty-sixth Session of the Committee on Food Hygiene reached the following conclusions:

MATTERS FOR ADOPTION BY THE 38TH SESSION OF THE CODEX ALIMENTARIUS COMMISSION:

The Committee agreed to forward:

- amendments to the hygiene sections of five meat commodity standards for adoption (para. 12 and Appendix III); the draft Guidelines for the Control of *Trichinella* spp. in Meat of Suidae; and the proposed draft Code of Hygienic Practice for Low-Moisture Foods for adoption at Steps 8 and 5/8, respectively (para. 33 and Appendix IV and para. 44 and Appendix V).

MATTERS OF INTEREST TO THE COMMISSION

The Committee:

- provided replies concerning the monitoring of the implementation of the Codex Strategic Plan 2014 – 2019 as to those activities relevant to the work of CCFH (para. 9 and Appendix II);
- agreed to make available on the Codex website the “*Process by which the Codex Committee on Food Hygiene (CCFH) will Undertake its Work*” as an information document (para. 10);
- discontinued work on the annex on statistical and mathematical considerations to the *Principles and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods* and inserted a footnote to the FAO/WHO “*Risk Managers Guide to the Statistical Aspects of Microbiological Criteria Related to Foods*” in sections 4.5, 4.8 and 4.9 of the aforementioned Guidelines (paras 36 – 37);
- returned the proposed draft Guidelines for Control of Nontyphoidal *Salmonella* spp. in Beef and Pork Meat; and on the Application of General Principles of Food Hygiene to the Control of Foodborne Parasites to Step 2 for redrafting, circulation for comments at Step 3 and consideration at its next session (para. 59 and para. 67);
- agreed to continue work on the need to revise the *Code of Hygienic Practice for Fresh Fruits and Vegetables* (CAC/RCP 53-2003) (paras 72-73); and to consider a discussion paper on the revision of the *General Principles of Food Hygiene* (CAC/RCP 1-1969) and its HACCP annex (para. 80);
- agreed that a proposal for a Standard for Frozen and Chilled Meat was not within the mandate of CCFH (para. 76); and that a discussion paper on verotoxigenic *E. coli* in beef should be submitted in response to the Circular Letter requesting new work proposals (para. 82); and
- maintained the “Forward Workplan for CCFH” unchanged (para. 83 and Appendix VI).

REQUEST TO FAO/WHO

The Committee requested FAO/WHO to:

- conduct a systematic literature review to ensure that any relevant measures for control of *Salmonella* in beef and pork are identified (paras 58a); and
- convene an Expert Meeting to review the technical basis of mitigation/intervention measures for control of *Salmonella* in beef and pork (para. 58b).

MATTERS OF INTEREST TO OTHER COMMITTEES

CCFFP

The Committee:

- agreed to inform CCFFP of the ongoing work on the proposed draft Guidelines on the Application of General Principles of Food Hygiene to the Control of Foodborne Parasites (para. 64).

INTRODUCTION

1. The Codex Committee on Food Hygiene (CCFH) held its Forty-sixth Session in Lima, Peru, from 17-21 November 2014, at the kind invitation of the Governments of the United States of America and Peru. Mr Emilio Esteban of the United States of America Department of Agriculture, chaired the Session and Ms Monica Saavedra Chumbe, Chairperson of the National Codex Committee of Peru, served as co-Chair. The Session was attended by delegates representing 57 member countries, one member organization and 11 international organizations including FAO and WHO. A complete list of participants, including the Secretariats, is attached as Appendix I.

OPENING OF THE SESSION¹

2. His Excellency Mr Anibal Velasquez Valdivia, Minister of Health of Peru, opened the Session. In his opening remarks the Minister extended his warmest welcome to all the participants and underscored the importance of the mandate of Codex to protect the health of consumers and ensure fair practice in food trade.
3. Mr Brian A. Nichols, the United States Ambassador to Peru and Ms Mary Frances Lowe, Codex Alimentarius Manager for the United States of America also addressed the delegates. Opening remarks and other speeches are presented in CRD18.
4. The Committee observed one minute's silence in memory of the late Mr David Henry Byron, who formerly served as Codex Secretariat of various Committees including CCFH.

Division of Competence²

5. The Committee noted the division of competence between the European Union and its Member States, according to paragraph 5, Rule II of the Procedure of the Codex Alimentarius Commission, as presented in [CRD 1](#).

ADOPTION OF THE AGENDA (Agenda Item 1)³

6. The Committee adopted the Provisional Agenda as its Agenda for the Session.

MATTERS REFERRED BY THE CODEX ALIMENTARIUS COMMISSION AND/OR OTHER CODEX COMMITTEES TO THE FOOD HYGIENE COMMITTEE (Agenda Item 2)⁴

7. The Committee noted the information presented in [CX/FH 14/46/2](#) and that several matters would be discussed under relevant Agenda Items.

Monitoring of the Codex Strategic Plan 2014 – 2020

8. The Committee noted that the Strategic Plan 2014 – 2019 had been adopted by CAC36 and that a template for monitoring the implementation of selected activities relevant to all committees had been prepared by the Codex Secretariat (Appendix I of [CX/FH 14/46/2](#)).
9. The Committee agreed that all selected activities were relevant to CCFH. Specific replies are presented in Appendix II for consideration by CCEXEC70 and CAC38.

Guidance on information documents

10. The Committee agreed to request the Codex Secretariat to make available on the Codex website the *Process by which the Codex Committee on Food Hygiene (CCFH) will Undertake its Work* as an Information Document of CCFH.

Meat Commodity Standards

11. The Committee agreed to replace the food hygiene sections with the standardized text as proposed in Appendix II, [CX/FH 14/46/2](#). In addition, the Committee agreed to also reference the *Guidelines on the Application of General Principles of Food Hygiene to the Control of Listeria monocytogenes in Ready-to-Eat Foods* (CAC/GL 61-2007) in the Standards for *Luncheon Meat* (CODEX STAN 89-1981); *Cooked Cured Ham* (CODEX STAN 96-1981); *Cooked Cured Pork Shoulder* (CODEX STAN 97-1981); and *Cooked Cured Chopped Meat* (CODEX STAN 98-1981).

¹ Opening remark and other speeches (CRD18).

² Division of Competence of EU and its Members States ([CRD1](#)).

³ [CX/FH 14/46/1](#).

⁴ [CX/FH 14/46/2](#); Comments of Nigeria ([CRD16](#)).

Conclusion

12. The Committee agreed to forward the amendments to the five meat commodity standards to CAC38 for adoption (Appendix III).

MATTERS ARISING FROM THE WORK OF FAO, WHO AND OTHER INTERNATIONAL INTERGOVERNMENTAL ORGANIZATIONS

PROGRESS REPORT ON THE JOINT FAO/WHO EXPERT MEETINGS ON MICROBIOLOGICAL RISK ASSESSMENT (JEMRA) AND RELATED MATTERS (Agenda Item 3a)⁵

13. The Representatives of FAO and WHO made reference to the information available in [CX/FH 14/46/3](#) on the scientific advice to the request of previous sessions of the Committee on: *Trichinella*; statistical aspects of microbiological criteria; ranking of low-moisture foods; and ranking of spices and dried aromatic herbs and the performance of proposed microbiological criteria (MC). The relevant reports are available on the Codex ftp server. They expressed appreciation to all the experts that had participated in this work and also to those Members that had provided resources to support the work of JEMRA.
14. The Committee was informed that four of the practical examples for the establishment and implementation of microbiological criteria had been published in the peer reviewed journal Food Control and that the publication of the remaining examples was imminent. The Representative expressed appreciation for the hard work of the Group Leaders in achieving this.
15. Related areas of work, on the development of guidance for the establishment of shellfish sanitation systems, the microbiological safety of ready to use therapeutic and supplementary foods for severe and acute malnourished populations, antimicrobial resistance (AMR) and control of *Taenia solium* were also brought to the attention on the Committee. It was noted that work was ongoing to finalise the risk based model developed for *Taenia saginata* and presented to last years session.
16. In response to a question on the use of Codex documents in the context of the Global Action Plan on AMR it was clarified that consideration would be given to existing Codex texts. Several delegations noted that AMR was also relevant to fruit and vegetable products.
17. The Committee expressed appreciation to FAO and WHO for the scientific advice provided and noted its importance for the work of CCFH.

INFORMATION FROM THE WORLD ORGANISATION FOR ANIMAL HEALTH (Agenda Item 3b)⁶

18. The Observer from the World Organisation for Animal Health (OIE) welcomed the opportunity to address CCFH on relevant OIE activities. The Observer noted that OIE recognises the importance of regular participation in each other's standards setting work, and also the need for coordination between OIE and Codex delegations at the national level, which together will ensure that official standards developed by the two organisations effectively cover the whole food production continuum, where relevant.
19. The Observer referring to [CX/FH 14/46/4](#), provided information on OIE work on:
 - Chapter 8.15. 'Infection with *Trichinella* spp.' of the Terrestrial Animal Health Code, which had a few minor amendments adopted in May 2014.
 - The development of chapters on the prevention and control of *Salmonella* in pigs and cattle.
20. The Observer noted that OIE would continue to address relevant food safety-related issues as a high priority in its standard-setting work and will continue to work closely with CAC and its relevant Committees in order to ensure the safe production of foods of animal origin.
21. The Committee thanked the Observer from OIE for the useful information and noted the importance and complementarity of OIE work for CCFH.

⁵ [CX/FH 14/46/3](#); Comments of Nigeria ([CRD16](#)).

⁶ [CX/FH 14/46/4](#); OIE Chapter 8.15: Infection with *Trichinella* Spp. ([CRD6](#)); OIE Draft Chapter 6.X: Prevention and Control of *Salmonella* in Pig Herds ([CRD7](#)).

DRAFT GUIDELINES FOR CONTROL OF SPECIFIC ZOOTIC PARASITES IN MEAT: *TRICHINELLA* SPP. (Agenda Item 4)⁷

22. The Committee recalled that CAC37, noting concerns and the need for clarification with regard to sections 7.3 “Selection of risk-based control measures” and 9 “Monitoring and Review”, had agreed to adopt the proposed draft Guidelines at Step 5 only with the understanding that further consideration of the Guidelines in CCFH would be focused on these sections. CAC37 further agreed that CCFH should also take into account the Report of the FAO/WHO Expert Meeting on Risk-based Examples for Control of *Trichinella* spp. and *Taenia saginata*, as well as the report of its follow-up meeting to be held in September 2014.⁸
23. The Representative of FAO, on behalf of FAO and WHO presented the conclusions of the Expert Meeting held in September 2014⁹ highlighting the risk model outcomes that described the level of consumer protection achieved with the establishment of a negligible risk compartment and related control measures. The Representative explained that the main utility of the model was to illustrate public health risks associated with different sampling scenarios when testing the carcasses of slaughter pigs for evidence of infection with *Trichinella* spp. larvae.
24. With regard to the number of pig carcasses to be sampled when the overall pig slaughter population is small (i.e. less than one million), the Representative of FAO clarified that based on the modelling approach, it was necessary to test all pigs in a compartment to demonstrate that the risk associated with the slaughter population was of one or less human cases per one million slaughtered pigs (as indicated in Table 3.5 of the Expert Meeting report).
25. The Chairperson noting that one of the major issues of concern was on Section 9, and in an attempt to reach consensus, proposed an alternative text for this Section, which included a numerical target against which sampling and testing programmes could be defined.
26. The proposal was supported by a number of delegations; however, a number of other delegations were of the view that the proposal needed further work. Some delegations also noted that before considering revision of Section 9, it was necessary to clarify in Section 7.3 the different responsibilities for the establishment of control measures and their purpose and intent.
27. The Committee considered the proposal prepared by the in-session Working Group (CRD17) and made the following changes and comments:
- Amended the introductory sentence of para. 29 to highlight that the focus was on public health; and
 - Clarified para. 30 to indicate that (a), (b) and (c) were options and not conditions and that epidemiological investigation should be conducted to the extent possible in addition to the options in para. 29.
28. The Committee considered the rest of the document and agreed:
- To delete para. 27 and the flow chart, noting that the paragraph was intended to provide an example and other paragraphs addressed the issues of derogation;
 - To update the information in para. 25 regarding the FAO/WHO Expert Meeting on a Risk-based Approach for the Control of *Trichinella* spp. in pigs; and
 - To move the entire para. 26 to a footnote in para. 25.
29. The Committee did not support a proposal to add a specific paragraph under Section 9 on the need for public health and veterinary authorities to share relevant information as Section 11 (para. 34) adequately addressed this issue.

Conclusion

30. The Committee noted that the concerns and need for clarification with regard to Sections 7.3 and 9 had been addressed. The Committee further noted that no outstanding issues remained.
31. The Observer from OIE noting the changes made to the draft Guidelines, encouraged Codex delegations to discuss with their OIE delegates any improvements they consider could be made to the OIE Chapter 8.15

⁷ REP14/FH, Appendix III, CL2014/26-FH; Comments of Brazil, Chile, Costa Rica, Colombia, El Salvador, European Union, Jamaica, Mongolia, Philippines, Paraguay, United States of America, African Union and OIE (CX/FH 14/46/5); Kenya, Norway and Vietnam (CX/FH 14/46/5-Add.1); India (CRD11); Ghana (CRD12); Peru (CRD14); Nigeria (CRD16); OIE Chapter 8.15: Infection with *Trichinella* spp. (CRD6); Report of in-session Working Group (CRD17).

⁸ REP14/CAC, paras 51-52.

⁹ Report of the FAO/WHO Expert Meeting on a Risk-based Approach for the Control of *Trichinella* spp. in pigs (http://ftp.fao.org/codex/meetings/ccfh/ccfh46/Trichinella_Mtg_Report_241014.pdf).

“Infection with *Trichinella* spp.” to ensure better alignment between the two documents and, to submit any relevant comments through their OIE delegate.

32. The Committee noted that on the recommendation of the FAO/WHO Expert Meeting on a Risk-based Approach for the Control of *Trichinella* spp. in pigs to develop a user-friendly guidance for an integrated food chain approach to control *Trichinella* in pig meat, countries could provide feedback directly to FAO and WHO. The Committee did not address the other recommendations of the FAO/WHO Expert Meeting.

Status of the Draft Guidelines for Control of Specific Zoonotic Parasites in Meat: *Trichinella* spp. (N07-2011)

33. The Committee agreed to forward the draft Guidelines to CAC38 for adoption at Step 8 (Appendix IV).

PROPOSED DRAFT ANNEX ON STATISTICAL AND MATHEMATICAL CONSIDERATIONS TO THE PRINCIPLES AND GUIDELINES FOR THE ESTABLISHMENT AND APPLICATION OF MICROBIOLOGICAL CRITERIA RELATED TO FOODS (Agenda Item 5)¹⁰

34. The Delegation of Japan, as chair of the EWG, introduced [CX/FH 14/46/6](#). He noted that the document of the FAO/WHO Technical Meeting on the Statistical and Mathematical Considerations for the Elaboration of Microbiological Criteria: *Risk Managers Guide to the Statistical Aspects of Microbiological Criteria Related to Foods*, provided all the necessary guidance to understand the statistical and mathematical considerations for MC establishment and application and that there was no need to develop a separate document on this issue. Furthermore, noting that no concrete recommendations were made in the EWG for the annex, he proposed to discontinue work on the annex and to reference the FAO/WHO document in sections 4.5, 4.8 and 4.9 of the *Principles and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods* (CAC/GL 21-1997).
35. The Representative of FAO clarified that the aforementioned document was intended to provide input to CCFH to inform discussions on development of the Annex. FAO and WHO had established an expert group which had highlighted the complexity of the subject and the challenge of adequately explaining some of the statistical concepts related to microbiological criteria without providing more comprehensive information. As a result, the document which was developed had an informal easy to read question and answer style, divided into three parts: (i) basic concepts related to microorganisms in food and sampling which was considered to be a prerequisite for understanding the remainder of the document; (ii) making decisions related to individual lots including the different types of sampling plans; and (iii) making decisions about process verification and control. It was noted that additional support materials in the form of simple Excel spread sheets and explanatory videos had also been developed to support the overall document. All materials developed had been subjected to an international peer review. The complete resource package will be published by FAO and WHO and made freely available in the public domain.

Conclusion

36. The Committee agreed to:
- Discontinue work on the annex; and
 - Insert a footnote to the FAO/WHO “*Risk Managers Guide to the Statistical Aspects of Microbiological Criteria Related to Foods*” in sections 4.5, 4.8 and 4.9 of CAC/GL 21-1997.

Status of the Proposed Draft Annex on Statistical and Mathematical Considerations to the *Principles and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods* (N06-2010)

37. The Committee agreed to discontinue work on the annex.

PROPOSED DRAFT CODE OF PRACTICE FOR LOW-MOISTURE FOODS (Agenda Item 6)¹¹

38. The Delegation of Canada, as chair of the EWG and PWG held immediately before the present session, introduced [CX/FH 14/46/7](#) and the report of the PWG ([CRD 5](#)). He highlighted the key decisions taken in the PWG in particular in relation to scope, use of potable water and definitions as well as those issues on which further discussion was needed, i.e. to examine current existing codes for low-moisture foods (LMF) to determine the need for specific annexes; how best to deal with microbiological criteria for end-product

¹⁰ [CX/FH 14/46/6](#); Comments of IDF ([CRD 8](#)), Bolivia ([CRD 13](#)).

¹¹ [CX/FH 14/46/7](#); Report of PWG ([CRD 5](#)); Comments of Argentina, Brazil, Bolivia, Colombia, Egypt, European Union, Jamaica, Japan, Thailand, United States of America, African Union, FoodDrinkEurope, IACFO, IDF, UNICEF ([CX/FH 14/46/7 Add.1](#)), Kenya and Uruguay ([CX/FH 14/4/6/7 Add.2](#)); India ([CRD11](#)); Ghana ([CRD12](#)), Peru ([CRD14](#)); Philippines ([CRD15](#)); Nigeria ([CRD16](#)).

testing; and the need for further discussion on guidance for the establishment of environmental monitoring programs for *Salmonella* and Enterobacteriaceae (EB).

39. The Committee considered the revised proposed draft Code of Practice as presented in CRD5 and agreed to the proposals. In addition to editorial corrections, the Committee made the following amendments:
- Deleted text which indicated the products covered by the Code in para.1;
 - Inserted a reference to the FAO/WHO report: *Ranking of Low-Moisture Foods in Support of Microbiological Risk Management* (Section 2.1 Scope) to provide the reader with a source of information on dry protein products;
 - Retained the reference to the current existing codes for LMF (section 2.2 Use);
 - Replaced “sanitation” with “disinfection”, where appropriate, consistent with the *General Principles of Food Hygiene* (CAC/RCP 1-1969);
 - Clarified the section on wet cleaning; and
 - Deleted Annexes I and II.
40. The Committee noted that the intent of the Code was to supersede the existing codes for LMF, but that a review would be undertaken to determine whether any specific measures should be provided in annexes to the Code.

Further considerations

41. The Committee noted that further discussion was needed on annexes for: specific commodities; examples of microbiological criteria; and guidance for the establishment of environmental monitoring programmes. The Committee agreed to establish an EWG, led by Canada and the United States of America, working in English only, with the following terms of reference:
- Review existing Codes dealing with LMF and determine if they can be incorporated into the general Code on LMF as annexes.
 - Consider the development of an annex on examples of MC for different food categories of LMF based on the FAO/WHO expert report.
 - Consider the development of an annex on guidance for the establishment of environmental monitoring programmes and to determine when and how to refer to EB or *Salmonella* alone, or to both organisms.
 - Consider the need for additional guidance regarding the application of CAC/RCP 21-1997 to various LMF, taking into account the FAO/WHO risk-ranking and spices documents, in particular.
 - Identify any additional scientific advice needed.
 - Prepare proposals for consideration by the next session of the Committee.
42. The Committee further noted that the EWG should provide a clear schedule for the development of these annexes, and that development of the annexes constituted a part of the current work on LMF, therefore a project document would not be needed.

Conclusion

43. The Committee agreed that no outstanding issues on the Code remained and it could be advanced in the Step process, while further work on annexes would be undertaken by the aforementioned EWG.

Status of the Proposed Draft Code of Practice for Low-Moisture Foods (N06-2013)

44. The Committee agreed to forward the Proposed draft Code of Practice to CAC38 for adoption at Step 5/8 (with the omission of Steps 6 and 7) (Appendix V), and to return development of annexes to Step 2/3.

PROPOSED DRAFT GUIDELINES FOR THE CONTROL OF NONTYPHOIDAL *SALMONELLA* SPP. IN BEEF AND PORK MEAT (Agenda Item 7)¹²

45. The Delegations of the United States of America and Denmark, as chairs of the EWG, introduced [CX/FH 14/46/8](#). They explained that the proposed draft Guidelines had been prepared using a similar approach to that of the *Guidelines for the Control of Campylobacter and Salmonella in Chicken Meat* (CAC/GL 78-2011) and were divided in three parts: Part 1 containing the language common to the control of *Salmonella* in beef and pork, and Parts 2 and 3 containing sections specific to beef and pork control respectively.
46. The Delegations invited the Committee to consider the three recommendations in para. 9 dealing with the process of developing the document, noting that all technical aspects would be dealt with in the next round of drafting.

Discussion

47. The Committee discussed the three recommendations as follows:

Structure and format

48. The Committee agreed to retain the current structure and to consider the need for two separate guidance documents (one for beef and another for pork) at a later stage.

Request for scientific advice

49. The Committee noted the request for FAO/WHO to conduct a systematic literature review and an Expert Meeting and that the results of the systematic review should be available in time for consideration by the PWG.
50. The Committee agreed that the literature review should cover all control measures from primary production to consumption, acknowledging that the Guidelines would cross-reference OIE relevant chapter(s) for primary production, as appropriate.
51. The Representative of FAO highlighted the need for interaction with any WG established to facilitate the design of the systematic review and noted that it would only be possible to consider publicly available information within the proposed time frame. Additional information would have to be considered subsequent to the PWG.
52. The Representative of FAO encouraged countries to identify any relevant data or studies, which might not be publicly available.
53. The Observer from OIE reiterated the need for Codex and OIE delegations at the national level to coordinate their inputs in the ongoing work of both organisations to ensure alignment of the documents.
54. The Committee noted that this work was a further example of the good cooperation between Codex and OIE.

Need for a risk profile or a web-based tool

55. The Committee agreed that a risk profile was not necessary at this point and noted that the discussion paper presented at CCFH45 had included comprehensive information regarding the nature of the problem.
56. The Committee considered it premature to request FAO/WHO to develop a web-based tool.

Conclusion

57. The Committee agreed to establish:
- A PWG, led by United States of America and Denmark, and working in English, French and Spanish, to prepare revised proposed draft Guidelines taking into account written comments submitted at the present session and the outcome of the systematic literature review conducted by FAO/WHO. The PWG is tentatively scheduled for May/June 2015;
 - An EWG, led by United States of America and Denmark, and working in English only, to develop the proposed draft Guidelines based on the proposals of the PWG for comments at Step 3; and
 - A PWG to meet immediately prior to the next Session, led by United States of America and Denmark and working in English, French and Spanish, to consider the comments submitted at Step 3, and the

¹² [CX/FH 14/46/8](#); comments of Argentina, Brazil, Chile, Colombia, Costa Rica, European Union, Japan, Norway, Philippines and Thailand ([CX/FH 14/46/8-Add.1](#)); Egypt, El Salvador, Kenya, African Union and IACFO ([CX/FH 14/46/8-Add.2](#)); OIE Chapter 8.15: Infection with *Trichinella* spp. ([CRD6](#)); OIE Draft Chapter 6.X *Prevention and Control of Salmonella in Pig Herds* ([CRD7](#)); India ([CRD11](#)); Ghana ([CRD12](#)); Peru ([CRD14](#)); Nigeria ([CRD16](#)); Republic of Korea([CRD19](#)); OIE ([CRD20](#)).

report of the FAO/WHO Expert meeting and prepare proposals for consideration by CCFH47.

58. The Committee agreed to request FAO/WHO to:
- a. Conduct a systematic literature review to ensure that any relevant measures for control of *Salmonella* in beef and pork are identified. The literature review should:
 - include, but not be limited to, a review of the publicly available literature, guidelines from competent authorities (e.g. compliance guidelines, sanitary dressing procedures) and publicly available industry practices;
 - cover mitigation/intervention measures from the primary production stage to consumption;
 - identify mitigation/intervention measures that are effective at reducing *Salmonella* and highlight those demonstrated effective in commercial settings;
 - specify the point(s) where the mitigation/intervention measures has been documented as effective; and
 - specify if the mitigation/intervention measures are hazard-based or risk-based.
 - b. Convene an Expert Meeting to review the technical basis of the mitigation/intervention measures proposed by the PWG to meet prior to CCFH47.

Status of the Proposed Draft Guidelines for the Control of Nontyphoidal *Salmonella* spp. in Beef and Pork Meat (N02-2014)

59. The Committee agreed to return the proposed draft Guidelines to Step 2 for redrafting by the PWG and EWG and circulation for comments at Step 3 and consideration at CCFH47.

PROPOSED DRAFT GUIDELINES ON THE APPLICATION OF GENERAL PRINCIPLES OF FOOD HYGIENE TO THE CONTROL OF FOODBORNE PARASITES (Agenda Item 8)¹³

60. The Delegation of Japan, as chair of the EWG and PWG, introduced [CX/FH 14/46/9](#) and the report of the PWG held immediately before the present session ([CRD4](#)). He recalled that the EWG had prepared a first draft document based on the outcome of the PWG, held in Tokyo in May 2014. The Delegation further noted that the PWG, held immediately prior to this session, had focused its discussion on the list of issues in [para. 7 of CX/FH 14/46/9](#).

Discussion:

61. The Committee agreed with the recommendations of the PWG and, in addition took the following decisions:
Issues #2 (Structure of the document) and #3 (the need to further subdivide the five food categories in Section 5)
62. The Committee agreed to:
- Consider the issue of water at a later stage;
 - Identify in each of the five categories those products which have a higher risk on the basis of the FAO/WHO Expert Meeting on Multi-criteria based ranking for risk management of foodborne parasites¹⁴; and
 - Consider the need to subdivide the food categories at a later stage on the basis of the available information and in a way to facilitate the use of the document.
63. The Committee agreed to delete measures for the control of *Trypanosoma cruzi* in fruit juices as its presence in these products was limited to unprocessed products in specific areas and was not relevant to the products traded internationally.
Issue #6 (Location of the guidance for the control of fishborne parasites)
64. The Committee noted that the scope of the Guidelines was to identify general guidance for the control of foodborne parasites in each of the five food categories. It was further noted that at this stage it was

¹³ [CX/FH 14/46/9](#); Comments of Argentina, Colombia, Costa Rica, Egypt, European Union, India, Jamaica, Japan, Nicaragua, Norway, Philippines, Thailand, United States of America, Uruguay and African Union ([CX/FH 14/46/9-Add.1](#)); El Salvador and Kenya ([CX/FH 14/46/9-Add.2](#)); Bolivia ([CRD13](#)); Peru ([CRD14](#)); Nigeria ([CRD16](#)); Report of PWG ([CRD4](#)).

¹⁴ Microbiological Risk Assessment Series 23. FAO/WHO, 2014. Available at: <http://www.fao.org/3/a-i3649e.pdf> and http://apps.who.int/iris/bitstream/10665/112672/1/9789241564700_eng.pdf?ua=1

premature to decide if it was appropriate to add a reference to this work or a specific section in the relevant commodity codes of practice. The Committee agreed to inform relevant committees of this work.

Issue #7 (Section 3.5 “Water”)

65. The Committee noted that the current draft Section 3.5 “Water” only referred to the two Codex texts on water, i.e. *Code of Hygienic Practice for Collecting, Processing and Marketing of Natural Mineral Waters* (CAC/RCP 33-1985) and the *Code of Hygienic Practice for Bottled/Packaged Drinking Waters (Other than Natural Mineral Waters)* (CAC/RCP 48-2001). Therefore, it agreed to urge Members to provide information on relevant control measures and to consider at its next session the need to retain this section on the basis of the information provided. The Committee also noted the suggestion to include a reference in Section 3.5 to the WHO *Guidelines for drinking-water quality*.

Conclusion

66. The Committee agreed to establish an EWG, led by Japan and Canada and working in English only, to prepare revised proposed draft Guidelines taking into account the above discussion, written comments submitted and the report of the PWG ([CRD4](#)), for consideration at its next Session. It further agreed to establish a PWG to meet immediately prior to the next Session, led by Japan and Canada and working in English, French and Spanish, to consider the comments submitted at Step 3 and prepare proposals for consideration by CCFH47.

Status of the Proposed Draft Guidelines on the Application of General Principles of Food Hygiene to the Control of Foodborne Parasites (N03-2014)

67. The Committee agreed to return the proposed draft Guidelines to Step 2 for redrafting by the EWG, circulation for comments at Step 3 and consideration at the next session of the Committee.

DISCUSSION PAPER ON THE NEED TO REVISE THE CODE OF HYGIENIC PRACTICE FOR FRESH FRUITS AND VEGETABLES (CAC/RCP 53-2003) (Agenda Item 9)¹⁵

68. The Delegation of Brazil introduced [CX/FH 14/46/10](#) and explained that the EWG had generally agreed on the modifications made to the revised Code and its annexes. The Delegation also explained that in revising the Code the EWG had:
- Added some references to other Codex documents;
 - moved some definitions from the annexes to the main Code;
 - added some new definitions;
 - deleted a number of redundancies;
 - merged some paragraphs dealing with the same subject;
 - moved some paragraphs from the annexes to the main Code; and
 - changed the order of several paragraphs to improve the logical flow of the document.
69. Brazil noted that some comments submitted to the EWG went beyond purely editorial amendments and therefore the Committee needed to discuss whether new work was necessary after the editorial amendments were completed.

General discussion

70. The Committee generally supported the revision of the Code and its annexes, which aimed at eliminating redundancies and duplications in the Annexes. However, a number of delegations noted that the revision of the document should have been limited to changes of editorial nature. Moving to the main Code some provisions from the annexes, which were commodity specific, might impact on other commodities and make the measures more stringent than necessary.
71. Other delegations were of the opinion that additional work was necessary to address issues such as “handling practices” and “consumer education”.

Conclusion

72. The Committee agreed that:
- Work on streamlining the text by reducing redundancies and duplications between the main Code and its annexes should continue; and

¹⁵ [CX/FH 14/46/10](#); comments of Egypt, Ghana, India, Kenya, Thailand, Uruguay and African Union ([CRD9](#)); Peru ([CRD14](#)); Nigeria ([CRD16](#)).

- Proposals for new work to address non-editorial issues should be prepared, if necessary.

73. The Committee agreed to establish an EWG, led by Brazil and France and working in English and French, to:

- Continue to remove redundancies and duplications between the main Code and its annexes, while ensuring the pure editorial nature of the amendments;
- Use the resultant amended Code as a basis for identifying additional changes of a non-editorial nature; and
- Based on the aforementioned, prepare a discussion paper that clearly outlines and scopes the work on the revision of the Code for consideration by CCFH47.

OTHER BUSINESS AND FUTURE WORK (Agenda Item 10)¹⁶

(a) New Work

74. The Delegation of the United States of America, chair of the Working Group for establishment of CCFH work priorities, which was held immediately before the present session, introduced this item and provided an overview of the discussions and recommendations of the PWG as presented in [CRD3](#).
75. The Committee considered the recommendations of the PWG and took the following the decisions.

Development of a Standard for Frozen and Chilled Meat

76. The Committee noted that the request from Egypt was to develop a commodity standard and as such was not within the mandate of CCFH. It was further noted that hygiene aspects could be addressed through the revision of the *Code of Hygienic Practice for Meat* (CAC/RCP 58-2005), which was already included in the Forward Workplan.

Conclusion

77. The Committee agreed that Egypt could:
- Consider whether the *Code of Practice for the Processing and Handling of Quick Frozen Foods* (CAC/RCP 8-1976) addressed the scope of their proposal; and
 - Submit a revised proposal to CCEXEC70 and CAC38 through the Codex Secretariat, if appropriate.

Revision of the *General Principles of Food Hygiene* (CAC/RCP 1–1969) and its HACCP Annex

78. The Committee noted that the proposed work was very important as the Code and the HACCP Annex were widely used and formed the basis of all other codes of hygienic practices. The Committee recognised that the revision should maintain the hygiene focus of the Code.
79. The Committee agreed with the recommendation of the PWG that an EWG prepare a revised discussion paper to further outline the scope of work.

Conclusion

80. The Committee agreed to establish an EWG, led by France and Thailand, working in English only with the following Terms of Reference:
- Review the *General Principles of Food Hygiene* (GPFH) and identify any need for updating (e.g. clarification on the use of potable water vs clean water);
 - Review its Annex on HACCP and recommend updates, as necessary;
 - In doing so, consideration should be given to the appropriateness and possibility of combining the GPFH and its HACCP Annex into one document;
 - In addition, to look at current food hygiene texts (e.g. the validation, micro-criteria, MRM documents) and their relationship to the above, and recommend appropriate references to relevant adopted texts; and
 - Prepare a proposal for consideration by CCFH47.
81. The EWG should take into account [CX/FH 14/46/11](#) and [CRDs 2](#) and [3](#) and discussions at CCFH46.

¹⁶ [CL 2014/22-FH](#); [CX/FH 14/46/11](#); Discussion Paper on the Need for a Revision of the *General Principles of Food Hygiene* (CAC/RCP 1-1969) and its HACCP Annex ([CRD2](#)); Report of PWG ([CRD3](#)); Comments of Ghana, India, Thailand and African Union ([CRD10](#)), Bolivia ([CRD13](#)), Peru ([CRD14](#)) and Nigeria ([CRD16](#))

Verotoxigenic *E. coli* in Beef

82. The Committee agreed with the recommendation of the PWG that Uruguay submit a discussion paper and a Project Document in response to the Circular Letter requesting new work proposals for consideration by CCFH47. The Committee noted that a Risk Profile should accompany all proposals for new work.

(b) Forward Workplan and Process by which the Committee on Food Hygiene (CCFH) will Undertake its Work

83. The Forward Workplan remained unchanged (Appendix VI).
84. In accordance with the process by which CCFH undertakes its work, the Committee also agreed to:
- Request the Secretariat to issue a Circular Letter requesting proposals for new work; and
 - Establish the Working Group on CCFH Work Priorities, which will meet the day before CCFH47 and working in English, French and Spanish, chaired by the United States of America.

DATE AND PLACE OF THE NEXT SESSION (Agenda Item 11)

85. The Committee was informed that CCFH47 was tentatively scheduled on 9 – 13 November 2015, in Boston, Massachusetts (United States of America).

SUMMARY STATUS OF WORK

Subject Matter	Step	Action by:	Reference in REP15/FH
Amendments to the Hygiene sections in meat commodity standards	-	Governments CAC38	Para. 12 and Appendix III
Draft Guidelines for the Control of <i>Trichinella</i> spp. in Meat of Suidae	8	Governments CAC38	Para. 33 and Appendix IV
Proposed Draft Code of Hygienic Practice for Low-Moisture Foods	5/8	Governments CAC38	Para. 44 and Appendix V
Proposed Draft Guidelines for the Control of Nontyphoidal <i>Salmonella</i> spp. in Beef and Pork Meat	1/2/3	Electronic Working Group / Physical Working Group (USA / Denmark) CCFH47	Para. 59
Proposed Draft Guidelines on the Application of General Principles of Food Hygiene to the Control of Foodborne Parasites	1/2/3	Electronic Working Group/ Physical Working Group (Japan / Canada) CCFH47	Para. 67
Annex on statistical and mathematical considerations to the <i>Principles and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods</i> (CAC/GL 21-1997)	Discontinued		Para. 37
New work proposals / Forward Workplan	-	Governments Physical Working Group (USA) CCFH47	Paras 83 - 84 and Appendix VI
Discussion papers			
Discussion paper on the need to revise the <i>Code of Hygienic Practice for Fresh Fruits and Vegetables</i> (CAC/RCP 53-2003)	-	Electronic Working Group (Brazil / France) CCFH47	Paras 72 and 73
Discussion paper on the revision of the <i>General Principles of Food Hygiene</i> (CAC/RCP 1-1969) and its HACCP annex	-	Electronic Working Group (France/Thailand) CCFH47	Para. 80

Appendix I

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Appendix II

REPLIES OF CCFH46 TO THE STRATEGIC PLAN IMPLEMENTATION

Replies of CCFH46 is shown in **Bold and Underlined** font.

Strategic Goal	Objective	Activity	Expected Outcome	Measurable Indicators/Outputs
1: Establish international food standards that address current and emerging food issues.	1.1: Establish new and review existing Codex standards, based on priorities of the CAC	1.1.1: Consistently apply decision-making and priority-setting criteria across Committees to ensure that the standards and work areas of highest priority are progressed in a timely manner.	New or updated standards are developed in a timely manner	- Priority setting criteria are reviewed, revised as required and applied. - # of standards revised and # of new standards developed based on these criteria.
<p>Question to the Committee: Is this activity relevant to the work of the Committee? YES/NO. <u>YES</u> Does the Committee use any specific criteria for standards development? <u>The Committee has developed a process for consideration of new work proposals The Process by Which the Codex Committee on Food Hygiene Will Undertake its Work. This document was recently revised by the Committee (CCFH45, 2013) and includes criteria for evaluating and prioritizing new work, in addition to the criteria from the Procedural Manual. It also contains a forward workplan which is updated at each session of the Committee. This procedure will be published on the Codex website as an information document of the CCFH.</u> Does the Committee intend to develop such criteria? <u>Not applicable.</u></p>				
1.2: Proactively identify emerging issues and Member needs and, where appropriate, develop relevant food standards.	1.2.1: Develop a systematic approach to promote identification of emerging issues related to food safety, nutrition, and fair practices in the food trade.	Timely Codex response to emerging issues and to the needs of Members.		- Committees implement systematic approaches for identification of emerging issues. - Regular reports on systematic approach and emerging issues made to the CCEXEC through the Codex Secretariat.
<p>Question to the Committee: Is this activity relevant to the work of the Committee? YES/NO. <u>YES</u> How does the, Committee identify emerging issues and members' needs? Is there a systematic approach? Is it necessary to develop such an approach? <u>The approach mentioned above is used – emerging issues are brought to the attention of the Committee by members in reply to the Circular Letter which is issued prior to each session in line with the abovementioned working procedures.</u></p>				
1.2.2: Develop and revise international and regional standards as needed, in response to needs identified by Members and in response to factors that affect food safety, nutrition and fair practices in the food trade.		Improved ability of Codex to develop standards relevant to the needs of its Members.		- Input from committees identifying and prioritizing needs of Members. - Report to CCEXEC from committees on how standards developed address the needs of the Members as part of critical review process.
Included in question to 1.2.				
2: Ensure the application of risk analysis principles in the development of Codex standards.	2.1: Ensure consistent use of risk analysis principles and scientific advice.	2.1.1: Use the scientific advice of the joint FAO/WHO expert bodies to the fullest extent possible in food safety and nutrition standards development based on the "Working Principles of Risk Analysis for Application in the Framework of the Codex Alimentarius".	Scientific advice consistently taken into account by all relevant committees during the standard setting process.	- # of times the need for scientific advice is: - identified, - requested and, - utilized in a timely manner.

<p>Question to the Committee: Is this activity relevant to the work of the Committee? YES/NO. YES Does the committee request scientific advice in course of its work, how often does it request such advice. Does the committee always use the scientific advice, if not, why not? <u>The Committee frequently requests scientific advice from FAO/WHO (i.e JEMRA), which forms the basis of most of the work previously undertaken by the Committee and those areas of work currently under discussion.</u> <u>Most of the requests for scientific advice are made when new work proposals are considered (and identified in the project). This work is always taken into consideration.</u></p>				
2.1.2: Encourage engagement of scientific and technical expertise of Members and their representatives in the development of Codex standards.	Increase in scientific and technical experts at the national level contributing to the development of Codex standards.			- # of scientists and technical experts as part of Member delegations. - # of scientists and technical experts providing appropriate input to country positions.
<p>Question to the Committee: Is this activity relevant to the work of the Committee? YES/NO. YES How do members make sure that the necessary scientific input is given into country positions and that the composition of the national delegation allows to adequately present and discuss this position? What guidance could be given by the Committee or FAO and WHO? <u>Prior to developing and advancing a country's position, Members typically seek and engage national scientific and technical expertise from within their government and from those outside of government.</u> <u>The mentoring approach used in the revision of the Principles and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods (CAC/GL 21-1997) is an example of a mechanism used by the Committee to engage scientific and technical expertise at national level in the work of Codex.</u></p>				
2.1.3: Ensure that all relevant factors are fully considered in exploring risk management options in the context of Codex standard development.	Enhanced identification, and documentation of all relevant factors considered by committees during the development of Codex standards.			- # of committee documents identifying all relevant factors guiding risk management recommendations. - # of committee documents clearly reflecting how those relevant factors were considered in the context of standards development.
<p>Question to the Committee: Is this activity relevant to the work of the Committee? YES/NO. YES How does the Committee ensure that all relevant factors have been taken into account when developing a standard and how are these documented? <u>The Committee considers all relevant factors according to the Procedural Manual in exploring risk management options and these are often captured in reports of the Committee or its working groups.</u></p>				
2.1.4: Communicate the risk management recommendations to all interested parties.	Risk management recommendations are effectively communicated and disseminated to all interested parties.			- # of web publication/communications relaying Codex standards. - # of media releases disseminating Codex standards.
<p>Question to the Committee: Is this activity relevant to the work of the Committee? YES/NO. YES When taking a risk management decision, does the committee give guidance to members how to communicate this decision? Would more consideration of this be helpful to members? <u>Communication of the risk management recommendations are done through standards, guidelines, and other related texts, which are posted on the Codex website.</u> <u>In developing codes of hygienic practice, the Committee often includes a section on consumer awareness and training which helps in communication of risk management measures.</u></p>				
3: Facilitate the effective participation of all Codex Members.	3.1: Increase the effective participation of developing countries in Codex.	3.1.5: To the extent possible, promote the use of the official languages of the Commission in committees and working groups.	Active participation of Members in committees and working groups.	- Report on number of committees and working groups using the languages of the Commission
<p>Question to the Committee: Is this activity relevant to the work of the Committee? YES/NO. YES Is the use of official languages in working groups of the committee sufficient? What are the factors determining the choice of languages? How could the situation be improved? <u>The use of official languages in working groups of the Committee is sufficient.</u></p>				

<p><u>The Committee determines the choice of language based primarily on the availability of resources and on the host of the working group. The Committee mainly uses English for electronic working groups, but has used French or Spanish when resources have allowed for this approach.</u></p> <p><u>All physical working groups held immediately prior to a session are held in English, French and Spanish.</u></p>				
3.2: Promote capacity development programs that assist countries in creating sustainable national Codex structures.	3.2.3: Where practical, the use of Codex meetings as a forum to effectively conduct educational and technical capacity building activities.	Enhancement of the opportunities to conduct concurrent activities to maximize use of the resources of Codex and Members.	- # of activities hosted on the margins of Codex meetings.	
<p><u>Question to the Committee:</u></p> <p>Is this activity relevant to the work of the Committee? YES/NO. <u>YES</u></p> <p>Does the Committee organize technical capacity activities or other activities in the margins of Committee sessions? If yes – how many and with which topics have been organized in the past. If no – could this be useful and what topics could be addressed?</p> <p><u>Over recent sessions, technical presentations have been arranged. Examples of such workshops include FAO/WHO presentations on web-based tools, e.g. risk assessment tool on Cronobacter in powdered infant formula, the risk management tool for Campylobacter and Salmonella in poultry.</u></p>				
4: Implement effective and efficient work management systems and practices.	4.1: Strive for an effective, efficient, transparent, and consensus based standard setting process.	4.1.4: Ensure timely distribution of all Codex working documents in the working languages of the Committee/Commission.	Codex documents distributed in a more timely manner consistent with timelines in the Procedural Manual.	<ul style="list-style-type: none"> - Baseline Ratio (%) established for documents distributed at least 2 months prior to versus less than 2 months prior to a scheduled meeting. - Factors that potentially delay the circulation of documents identified and addressed. - An increase in the ratio (%) of documents circulated 2 months or more prior to meetings.
<p><u>Question to the Committee:</u></p> <p>Is this activity relevant to the work of the Committee? YES/NO. <u>YES</u></p> <p>Does the Committee have a mechanism in place to ensure timely distribution of documents? What could be done to further improve the situation?</p> <p><u>Clear and workable timelines are agreed in advanced between the Codex secretariat, host secretariat and leads of working groups or members responsible for the development of working documents.</u></p> <p><u>The USA as host is committed to providing translation of working documents in a timely manner.</u></p> <p><u>All members are encouraged to respect deadlines.</u></p> <p><u>Challenges remain in many areas, such as when work is linked to specific requests for scientific advice, but CCFH and FAO/WHO are working on improving the schedule of work; submission of comments within deadlines.</u></p>				
4.1.5: Increase the scheduling of Work Group meetings in conjunction with Committee meetings.	Improved efficiency in use of resources by Codex committees and Members		- # of physical working group meetings in conjunction with committee meetings, where appropriate.	
<p><u>Question to the Committee:</u></p> <p>Is this activity relevant to the work of the Committee? YES/NO. <u>YES</u></p> <p>Does the Committee hold physical working groups independent of Committee sessions? If yes – why is this necessary?</p> <p><u>CCFH mainly schedules Physical Working Groups in conjunction with sessions of the Committee.</u></p> <p><u>However, PWG in between sessions are considered in only rare cases. This depends on the nature of work being undertaken.</u></p>				

<p>4.2: Enhance capacity to arrive at consensus in standards setting process.</p>	<p>4.2.1: Improve the understanding of Codex Members and delegates of the importance of and approach to consensus building of Codex work.</p>	<p>Members and delegates awareness of the importance of consensus in the Codex standard setting process improved.</p>	<ul style="list-style-type: none"> - Training material on guidance to achieve consensus developed and made available in the languages of the Commission to delegates. - Regular dissemination of existing material to Members through Codex Contact Points. - Delegate training programs held in association with Codex meetings. - Impediments to consensus being achieved in Codex identified and analyzed and additional guidance developed to address such impediments, if necessary.
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Question to the Committee:
 Is this activity relevant to the work of the Committee? YES/NO. **YES**
 Are there problems with finding consensus in the Committee? If yes – what are the impediments to consensus? What has been attempted and what more could be done?
This is not always easy, but the Committee employs several tools, such as:
In-session working groups / informal meetings prior to or in-session
Ensuring the provision of information in advance of meetings to allow sufficient time for discussion
The Committee has also used the mentoring approach – this has shown to be successfully in the Revision of the Principles and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods (CAC/GL 21-1997)
Members have increasingly shown willingness to compromise and build consensus.

AMENDMENTS TO THE MEAT COMMODITY STANDARDS**(for adoption)****Replace Section 6 “Hygiene” with the following texts in:**

Standards for *Luncheon Meat* (CODEX STAN 89-1981); *Cooked Cured Ham* (CODEX STAN 96-1981); *Cooked Cured Pork Shoulder* (CODEX STAN 97-1981); and *Cooked Cured Chopped Meat* (CODEX STAN 98-1981).

6. Hygiene

It is recommended that the products covered by the provisions of this Standard be prepared and handled in accordance with the appropriate sections of the *General Principles of Food Hygiene* (CAC/RCP 1-1969), the *Code of Hygienic Practice for Meat* (CAC/RCP 58-2005), the *Code of Hygienic Practice for Low-Acid and Acidified Low-Acid Canned Foods* (CAC/RCP 23-1979), the *Guidelines on the Application of General Principles of Food Hygiene to the Control of Listeria monocytogenes in Ready-to-Eat Foods* (CAC/GL 61-2007) and other relevant Codex texts such as Codes of Hygienic Practice and Codes of Practice.

The products should comply with any microbiological criteria established in accordance with the *Principles and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods* (CAC/GL 21-1997).

Replace section 6 “Hygiene” with the following text in:

Standard for Corned Beef (CODEX STAN 88-1981).

6. Hygiene

It is recommended that the products covered by the provisions of this Standard be prepared and handled in accordance with the appropriate sections of the *General Principles of Food Hygiene* (CAC/RCP 1-1969), the *Code of Hygienic Practice for Meat* (CAC/RCP 58-2005), the *Code of Hygienic Practice for Low-Acid and Acidified Low-Acid Canned Foods* (CAC/RCP 23-1979), and other relevant Codex texts such as Codes of Hygienic Practice and Codes of Practice.

The products should comply with any microbiological criteria established in accordance with the *Principles and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods* (CAC/GL 21-1997).

Appendix IV

DRAFT GUIDELINES FOR THE CONTROL OF *TRICHINELLA* SPP. IN MEAT OF SUIDAE**(At Step 8)****1. Introduction**

1. Trichinellosis is a parasitic disease of major public health and economic importance in some countries. Human infection occurs from the consumption of raw or undercooked meat of many species (e.g. domestic pig, horse, game) containing infective *Trichinella* spp. larvae. Meat from animals of the family of Suidae (further referred to as "Suidae") is considered to be the most important means of transmission of *Trichinella* spp. to humans. The infection status of domestic pig populations is informed by knowledge of management practices and data from monitoring programs for live (serological survey) or slaughtered pigs. Human health data can also be used to support the determination of risk of exposure to *Trichinella* spp.

2. Post-slaughter control measures to protect consumers from exposure to *Trichinella* spp. in the meat of Suidae should be risk-based.

3. These Guidelines incorporate elements of the "risk management framework" (RMF) approach as developed by the Codex Committee on Food Hygiene for managing microbiological hazards (*Principles and Guidelines for the Conduct of Microbiological Risk Management* (CAC/GL 63-2007)) such as:

- Preliminary risk management activities;
- Identification and selection of risk management options;
- Implementation of control measures;
- Monitoring and review.

2. Objectives

4. The primary objective of these Guidelines is to provide guidance to governments and industry on risk-based control measures to prevent exposure of humans to *Trichinella* spp. in meat of Suidae.

5. The Guidelines provide a consistent and transparent technical basis for reviewing and implementing control measures based on epidemiological information and risk analysis. The risk-based control measures that are selected vary between countries and production systems. Measures applied at the national level should be taken into account in the judgement of equivalence¹ by importing countries, thereby facilitating international trade.

3. Scope and use of the Guidelines**3.1. Scope**

6. These Guidelines address only the control of *Trichinella* spp. in meat from Suidae as this is considered the most important source of infection of humans. The control of *Trichinella* spp. in meat from other species (e.g. horses, bears, walrus, etc.) should however be taken into account where considered relevant to the control of *Trichinella* spp. in meat from Suidae.

7. These Guidelines apply to the control of all species and genotypes of *Trichinella* that may infect Suidae and cause foodborne disease. The Guidelines are based on the *Working Principles for Risk Analysis for Application in the Framework of the Codex Alimentarius*² and the *Code of Hygienic Practice for Meat* (CAC/RCP 58-2005) that provides generic advice on a risk-based approach to meat hygiene.

8. These Guidelines used in conjunction with the OIE recommendations (*Chapter 8.15 Infection with Trichinella* spp. of the OIE Terrestrial Animal Health Code), apply to all steps from primary production to consumption.

3.2. Use

9. These Guidelines, used in conjunction with the OIE recommendations (*Chapter 8.15 Infection with Trichinella* spp. of the OIE Terrestrial Animal Health Code), provide specific guidance for control of *Trichinella* in meat of Suidae with potential control measures being considered at each step, or group of steps, in the food chain. The Guidelines are supplementary to and should be used in conjunction with the *General*

¹ *Guidelines on the Judgement of Equivalence Sanitary Measures associated with Food Inspection and Certification Systems* (CAC/GL 53-2003)

² <http://www.fao.org/DOCREP/006/Y4800E/y4800e0o.htm>

Principles of Food Hygiene (CAC/RCP 1–1969), the *Code of Hygienic Practice for Meat* (CAC/RCP 58-2005), the *Code of Practice for the Processing and Handling of Quick Frozen Foods* (CAC/RCP 8-1976), the *FAO/WHO/OIE Guidelines for the Surveillance, Management, Prevention and Control of Trichinellosis*³ and the *Recommendations on Methods for the Control of Trichinella in Domestic and Wild Animals Intended for Human Consumption* prepared by the International Commission on Trichinellosis (ICT) Standards for Control Guidelines Committee⁴.

10. The diagnostic techniques referred to in these Guidelines are those of the *OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals* (Chapter 2.1.16 *Trichinellosis*).

11. Flexibility in application is an essential element of these Guidelines. They are primarily intended for use by government risk managers and industry in the design and implementation of food control systems. These Guidelines could also be used when judging the equivalence⁵ of different food safety measures for meat of Suidae in different countries for international trade purposes.

12. These Guidelines provide a framework for decisions regarding post-slaughter control measures to protect humans from consumption of meat of Suidae which may be infected with *Trichinella* spp. Pre-harvest preventative measures, prerequisite criteria and conditions for recognition of compartments of domestic pigs as negligible risk are described in *Chapter 8.15 Infection with Trichinella* spp of the OIE Terrestrial Animal Health Code.

4. Definitions

Compartment ⁶	means an animal subpopulation contained in one or more establishments under a common biosecurity management system with a distinct health status with respect to a specific disease or specific diseases for which required surveillance, control and biosecurity measures have been applied for the purpose of international trade.
Cross breeds	means the progeny of domestic pigs with non-domesticated animals of the family Suidae.
Domestic pigs	means domesticated animals of the family Suidae living in a managed production system.
Feral pigs	means an animal of a domesticated species of the family Suidae that now lives without direct human supervision or control.
Finishing pigs	means domestic pigs kept solely for meat production.
Reservoir wildlife ⁶	means feral animals, captive wild animals and wild animals that are known to be the most important potential direct or indirect sources of infection for <i>Trichinella</i> spp. to domestic pigs in a region or country.

5. Principles applied to control of *Trichinella* spp. in meat of Suidae

13. Overarching principles for good hygienic practice for meat are presented in the *Code of Hygienic Practice for Meat* (CAC/RCP 58-2005) section 4: *General Principles of Meat Hygiene*. Three principles that have particularly been taken into account in these Guidelines are:

- i. The principles of food safety risk analysis should be incorporated wherever possible and appropriate in the design and implementation of meat hygiene programmes.
- ii. As appropriate to the circumstances, the results of monitoring and surveillance of animal and human populations should be considered with subsequent review and/or modification of meat hygiene requirements whenever necessary.
- iii. Competent authorities should recognise the equivalence of alternative hygiene control measures where appropriate, and promulgate meat hygiene measures that achieve required outcomes in terms of safety and suitability and facilitate fair practices in the trading of meat.

6. Preliminary risk management activities

14. Consumers are exposed to the risk of *Trichinella* spp. infection when they consume meat containing

³ http://www.trichinellosis.org/uploads/FAO-WHO-OIE_Guidelines.pdf

⁴ <http://www.med.unipi.it/ict/ICT%20Recommendations%20for%20Control.English.pdf>

⁵ *Guidelines on the Judgement of Equivalence Sanitary Measures associated with Food Inspection and Certification Systems* (CAC/GL 53-2003)

⁶ Definition in the OIE Terrestrial Animal Health Code.

infectious larvae. Risk management activities should incorporate a “primary production-to-consumption” approach in order to identify all steps in the food-chain where control measures are required.

15. Preliminary risk management activities appropriate to these Guidelines include:

- Development of a national, regional, or compartment risk profile noting that a generic risk profile which takes into account the *FAO/WHO/OIE Guidelines for the Surveillance, Management, Prevention and Control of Trichinellosis* 3 has been published.
- Evaluation of the epidemiological evidence supporting a negligible risk claim for domestic pigs consumed domestically or abroad.

7. Availability and selection of risk-based control measures

7.1 Availability of control measures at herd level

16. Measures to prevent *Trichinella* infection in domestic pig herds and to establish a compartment of negligible risk are described in *Chapter 8.15 Infection with Trichinella* spp. of the OIE Terrestrial Animal Health Code.

7.2 Availability of post-slaughter control measures

17. Post-slaughter control measures for *Trichinella* spp. include: laboratory testing and follow-up actions, freezing and heat treatment. Irradiation of meat of Suidae is also an option to destroy *Trichinella* spp. in meat prior to consumption. Control measures should be validated and then be approved by the competent authority, as appropriate. Non-weaned pigs slaughtered below the age of 5 weeks may be derogated from post-slaughter control measures⁷ when there is relevant information that can be verified by the competent authority.

18. Inactivation of *Trichinella* spp. by curing should follow the recommendations of ICT⁸.

7.2.1 Laboratory testing and follow-up actions

19. When laboratory tests are performed on individual carcasses, those selected analytical methods should be in accordance with the diagnostic techniques recommended in *Chapter 2.1.16. Trichinellosis* of the OIE *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals* (digestion assays) and the ICT *Recommendations for Quality Assurance in Digestion Testing Programmes for Trichinella*⁹ or ISO/CEN standards.

20. Any analytical method that is selected should have known performance characteristics, i.e. sensitivity and specificity, if a risk-based approach to ensuring food safety is to be applied.

21. If a *Trichinella*-positive carcass is identified during post-slaughter testing, the competent authority should be notified. The competent authority can then decide which follow-up actions are necessary including possible disposal of the carcass.

7.2.2 Freezing

22. Freezing of meat should utilise cooling regime parameters that ensure lethality for all *Trichinella* spp. present in different portions of meat or whole carcasses. Use of this method for inactivation of *Trichinella* spp. that are not cold tolerant should be in accordance with validated parameters such as those described in the "*Recommendations on Methods for the Control of Trichinella in Domestic and Wild Animals Intended for Human Consumption*" prepared by the ICT Standards for Control Guidelines. Freezing should not be used as a control measure in regions where *Trichinella* species and genotypes that are known to be cold tolerant such as *Trichinella* T6, *T. britovi*, and *T. nativa*, are endemic.

7.2.3 Heat treatment or irradiation

23. Inactivation of *Trichinella* spp. by these methods should be performed in accordance with validated methods such as those described in the "*Recommendations on Methods for the Control of Trichinella in Domestic and Wild Animals Intended for Human Consumption*" prepared by the ICT Standards for Control Guidelines Committee. Guidance on irradiation is given in the *General Standard on Irradiated Food* (CODEX STAN 106-1983) and the *Code of Practice for Radiation Processing of Food* (CAC/RCP 19-1979).

⁷http://www.aesan.msssi.gob.es/AESAN/docs/docs/evaluacion_riesgos/comite_cientifico/ingles/TRICHINELLA_SUCKLING_PIG.pdf

⁸ Validated methods for curing are currently under development by ICT

⁹http://www.trichinellosis.org/uploads/Part_1_final_-_QA_Recomendations_7Feb2012.pdf

7.3. Selection of risk-based control measures

24. With the establishment of the negligible risk compartment as described in *Chapter 8.15 Infection with Trichinella* spp. of the OIE Terrestrial Animal Health Code, including consideration of the level of public health protection provided, the competent authority may provide derogation from specific post-slaughter controls or change the level of application of specific post-slaughter controls.¹⁰

8. Implementation of risk-based measures

25. Implementation of selected control measures is dependent on official recognition by the competent authority of the *Trichinella* status of the compartment.

9. Monitoring and review

26. After establishing a negligible risk compartment according to Chapter 8.15 *Infection with Trichinella* spp. of the OIE Terrestrial Animal Health Code, ongoing assurance of public health protection should be based on avoiding *Trichinella* spp. contaminated meat from going into commerce. Public health protection can be assured by:

- a. a review of evidence, in particular from audits of herds, demonstrating compliance with the conditions as described in Article 8.15.5 of the OIE Terrestrial Animal Health Code; or
- b. a risk based slaughter surveillance programme that takes into account information from historical testing results and is supplemented by regular review of information from audits of herds within the compartment; or
- c. a slaughter surveillance programme incorporating current testing data demonstrating that prevalence of infection does not exceed 1 infected carcass per 1,000,000 pigs slaughtered with at least 95% confidence.

27. In addition to the above, epidemiological investigation of human trichinellosis cases to confirm that the source of the contaminated meat was not from a negligible risk compartment according to Chapter 8.15 *Infection with Trichinella* spp. of the OIE Terrestrial Animal Health Code should be conducted to the extent possible.

28. Where applicable and available, slaughter and any other relevant data from outdoor pigs and wild animals can provide additional information on the conditions surrounding the negligible risk compartment and the potential for infection of animals within the compartment.

10. Non-domesticated Suidae, feral pigs and cross-breeds

29. All meat derived from non-domesticated Suidae, including wild boars, feral pigs and cross-breeds intended for human consumption should come from animals:

- a. tested in accordance with the diagnostic techniques recommended in the OIE *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals* (digestion assays); or
- b. be processed to ensure the inactivation of *Trichinella* spp. in accordance with one of the methods in section 7.2, validated and approved for post-slaughter control in these animals.

30. Positive carcasses should be disposed of according to recommendations of the competent authority.

11. Risk communication

31. Best practice in the control of *Trichinella* spp. in the meat of Suidae should be communicated to all stakeholders in domestic pig production. Similarly, all stakeholders should be aware of the benefits of obtaining *Trichinella* negligible risk compartment status.

32. Hunters should be informed on the risk of consumption of meat from reservoir wildlife, stressing the importance of testing even if for personal consumption or the need to properly cook any meat from wild game (e.g. a core temperature of at least 71°C as recommended by ICT). Hunters should be also informed of the risk of promulgating and maintaining the sylvatic life cycle associated with the common habit of leaving animal carcasses in the field after skinning, or removing and discarding the entrails, thereby providing the opportunity for transmission to new hosts.

¹⁰ Illustrations of the levels of public health protection that can be achieved when establishing a compartment with negligible risk are provided by FAO and WHO. (<H:\Meetings\CCFH\ccfh46\Trichinella Mtg Report 241014.pdf>).

33. Communication procedures on the occurrence of *Trichinella* infections should be established between the veterinary authority and the public health authority. The competent authority should ideally publish annual laboratory results in a form that demonstrates the epidemiological status of herds, compartments, regions or the whole country. Results of epidemiological investigations of any food-borne outbreaks should also be communicated.
34. Since each country has specific consumption habits, communication programs pertaining to trichinellosis are most effective when established by individual governments.
35. Retailers and consumers, including people who visit regions or countries where *Trichinella* is endemic, should be made aware that meat should be fully cooked e.g. a core temperature of at least 71°C as recommended by ICT in order to avoid becoming sick from consuming meat contaminated with parasites.

Appendix V

PROPOSED DRAFT CODE OF HYGIENIC PRACTICE FOR LOW-MOISTURE FOODS

(At Step 5/8)

INTRODUCTION

1. There are many different types of products that fall under the grouping of low-moisture foods. Since 2001, there have been a number of outbreaks associated with the consumption of low-moisture foods, which has raised concerns regarding the safety of these products. The primary pathogens of concern that are associated with low-moisture foods to date, include *Salmonella* spp. and *Bacillus cereus*. However, most outbreak-related illnesses associated with low-moisture foods have been caused by *Salmonella* spp. and, for this reason, the Code of Hygienic Practice focuses on controls for *Salmonella* spp.

2. The water activity (a_w) of low-moisture foods is often well below 0.85 and foodborne pathogens such as *Salmonella* cannot multiply under these conditions. Even though pathogen growth is prevented in these products, the cells can remain viable for extended periods of time. For *Salmonella* spp., the infectious dose is thought to be very low, as demonstrated by the small numbers of cells per serving recovered from low-moisture foods implicated in outbreaks. Furthermore, there is evidence that the composition of a food (especially, high fat content) may protect *Salmonella* against the acidic conditions of the stomach, potentially increasing the likelihood of illness from consuming low numbers of the organism. Pathogens such as *Salmonella* can be difficult to control in a low-moisture food operation environment, because they can persist for prolonged periods of time in the dry state and in low-moisture products. Microorganisms are more heat tolerant in food matrices at reduced water activity.

3. Investigations from *Salmonella* outbreaks indicate that the safety of low-moisture foods depends fundamentally on the control of *Salmonella* in the food operation environment. Maintaining good hygienic practices, hygienic design of equipment, proactive maintenance programmes, control of incoming materials, and effective ingredient control in the low-moisture food establishment, will help prevent the contamination of low-moisture foods with pathogens. Special attention should be paid to those products that are exposed to the processing environment following a pathogen reduction step, products that are not subjected to a pathogen reduction step, and products for which ingredients are added after a pathogen reduction step.

SECTION I - OBJECTIVES

4. This Code addresses Good Manufacturing Practices (GMPs) and Good Hygienic Practices (GHPs) that will help control microbial hazards associated with all stages of the manufacturing of low-moisture foods. Particular attention is given to minimize *Salmonella* spp., which is currently considered the primary pathogen of concern in these products. These GMPs and GHPs, if adhered to, should also be effective in preventing the risk from other pathogens that may be of concern.

SECTION II - SCOPE, USE AND DEFINITIONS

2.1 Scope

5. This Code covers GMPs/GHPs for the manufacturing of low-moisture foods for human consumption. This Code applies to, dried fruits and vegetables (e.g. desiccated coconut), cereal-based products (e.g. breakfast cereals), peanut and other nut butters, dry protein products¹ (e.g. dried dairy products and soy protein), confections (e.g. chocolate and cocoa), snacks (e.g. spice-seasoned chips/crisps), tree nuts, seeds for consumption (e.g. sesame seeds and sesame seed paste), spices and dried aromatic herbs, and specialized lipid based nutritional products² for the treatment of moderate and severely acute malnutrition³. Milled grain products such as flour may be within the scope when used in foods that would not be subject to a microbial inactivation step.

¹ Report of an FAO/WHO Consultation Process: Ranking of Low Moisture Foods in Support of Microbiological Risk Management (to be published).

² Specialized lipid based nutritional products can be categorized as ready-to-use supplementary foods (RUSF) for the treatment of moderate acute malnutrition and ready-to-use therapeutic foods (RUTF) for the treatment of severely acute malnutrition.

³ Although the provisions of this Code could be applied in the production of powdered infant formula, this product is excluded from the scope, given the specific vulnerable group of consumers. These products are currently appropriately addressed in the *Code of Hygienic Practice for Powdered Formulae for Infants and Young Children* (CAC/RCP 66-2008).

2.2 Use

6. This Code follows the format of the *General Principles of Food Hygiene* (CAC/RCP 1-1969) and should be used in conjunction with it, as well as with other applicable codes such as the *Code of Hygienic Practice for Dried Fruits* (CAC/RCP 3-1969), *Code of Hygienic Practice for Desiccated Coconut* (CAC/RCP 4-1971), *Code of Hygienic Practice for Dehydrated Fruits and Vegetables including Edible Fungi* (CAC/RCP 5-1971), *Code of Hygienic Practice for Tree Nuts* (CAC/RCP 6-1972), *Code of Hygienic Practice for Groundnuts (Peanuts)* (CAC/RCP 22-1979), and the *Code of Hygienic Practice for Spices and Dried Aromatic Plants* (CAC/RCP 42-1995). When designing and implementing food safety control systems for products according to the provisions of commodity specific Codes of Hygienic Practices (e.g. *Code of Hygienic Practice for Milk and Milk Products* (CAC/RCP 57-2004)) the recommended practices and measures of this Code should be taken into consideration.

7. The provisions in this document should be applied as appropriate, with consideration of the diversity of ingredients, processes, and control measures of the products and various degrees of risk involved in producing low-moisture foods.

2.3 Definitions

8. Refer to definitions in the *General Principles of Food Hygiene* and other applicable codes (see section 2.2 of this code for the list of additional applicable codes). In addition, the following terms have the meaning stated:

9. **Controlled wet cleaning** – the removal of soil, including food residues, dirt, grease or other objectionable matter using a limited amount of water and detergents and controlling the spread of the water used.

10. **Dry cleaning** – the removal of soil, including food residues, dirt, grease or other objectionable matter by actions such as wiping, sweeping, brushing, scraping, or vacuuming the residues without the use of water and detergents.

11. **Harbourage site** – a site in the environment or on equipment (e.g. cracks, holes, junctions) that enables the accumulation of residues (e.g. food debris, dust, and water) potentially permitting the growth and/or survival of microorganisms such as *Salmonella*.

12. **Low-moisture foods** – foods that have a water activity (a_w) of 0.85 or below.

13. **Wet cleaning** – the removal of soil, including food residues, dirt, grease or other objectionable matter using water and detergents.

SECTION III - PRIMARY PRODUCTION

14. Raw materials and ingredients used to manufacture low-moisture foods vary substantially. They are produced under different conditions and using various production methods and technologies. Therefore, microbial hazards vary significantly from one type of product to another and detailed discussions of the primary production methods of each raw material and ingredient is beyond the scope of this document. In each primary production area, it is necessary to consider practices that promote the production of safe food. Refer to the *General Principles of Food Hygiene* and other applicable codes.

SECTION IV - ESTABLISHMENT: DESIGN AND FACILITIES

4.1 Location

15. Refer to the *General Principles of Food Hygiene*.

4.2 Premises and rooms

16. Refer to the *General Principles of Food Hygiene*.

4.2.1 Design and layout

17. Proper hygienic design, zoning and layout of premises and rooms are essential to ensure that entry of pathogens into the establishment is controlled (e.g. minimizing the potential for entry and, in the case of entry, preventing the pathogen from becoming established in the environment). For example, if a pathogen such as *Salmonella* is introduced into the establishment, proper design and layout can prevent the transfer to areas where processed products are exposed to the environment prior to packaging. In establishments processing and packing low-moisture foods, dry processing areas should be designed to exclude moisture from the environment to the extent possible, in order to prevent growth and minimize the likelihood of a pathogen becoming established in the environment.

18. Raw material handling, pre-processing and other areas (e.g. maintenance areas, waste areas, and toilet facilities) should be separated from post-processing handling areas. Additionally, physical separation within the low-moisture food establishment based on specific hygiene requirements will help minimize pathogen transfer from one area to another. Where an establishment uses a pathogen reduction step, the area following that step should be physically separated from other parts of the operation in order to implement different hygiene measures based on the type of production and the risk for pathogen introduction. In some establishments the design may include a transitional area in order to enhance hygiene measures prior to the area with the most stringent hygiene measures. This last approach should be considered for food intended specifically for consumers more susceptible to illness from foodborne pathogens, to facilitate the implementation of enhanced controls.

19. Separation of one hygiene area from another and the control of dust can be achieved using physical barriers, such as walls, doors, split conveyers, etc. Alternatively, separation of areas and control of dust can also be achieved by the appropriate design of ventilation systems and airflow.

20. Limiting the introduction and use of water is one of the primary means to control pathogens in low-moisture food establishments. In the low-moisture food establishment, there may be areas that only require dry cleaning and other areas where water is appropriately used. It is important that the layout and the hygienic design of the establishment ensure that areas intended for dry cleaning remain in a dry state and receive only dry cleaning and disinfection. If these sites are intended to be wet cleaned even occasionally, then the hygienic design should accommodate water while preventing the establishment of microbial harbourage sites. To limit the introduction of water in the processing areas requiring stringent hygiene controls, hand washing and footbath (if used) stations should be located outside, at the entrance of this area, and, to the extent possible, water distribution systems (e.g. piping) should be located outside the high hygiene area. Additionally, the infrastructure (e.g. ventilation, physical structure) should be designed to prevent entry of unwanted water from the surrounding processing area, as a result of processing activities or from cleaning and disinfecting activities or from outside the establishment.

4.2.2 Internal structures and fittings

21. Overhead structures should be designed to minimize the accumulation of dust and dry materials, especially when they are directly above exposed products.

22. Internal structures and fittings should be designed to eliminate cavities that could serve as microbial harbourage sites.

23. In operations where condensate may form or where humidity is high, adequate control measures, such as drip pans or a ventilation system to remove environment humidity, should be in place to prevent condensate from contaminating products or creating conditions that allow the proliferation of pathogens such as *Salmonella* within the production environment.

24. Entry and exit doors from basic (general) hygiene areas to areas of more stringent hygiene control should be tightly fitted and, if necessary, equipped with self-closing devices.

4.3 Equipment

25. Refer to the *General Principles of Food Hygiene*.

4.3.1 General

26. Proper hygienic equipment design is essential to prevent contamination of the product with a pathogen from the processing environment and to ensure that if a pathogen such as *Salmonella* is introduced, it remains transient and does not become established in areas of the equipment that could serve as a source of product contamination. Equipment should be designed to facilitate cleaning with little or no water and, when controlled wet cleaning is required, to allow thorough drying before reusing the equipment for low-moisture foods. Alternatively, equipment should be designed for easy disassembly such that parts can be removed from the stringent hygiene area for wet cleaning in a separate location outside the area. The equipment design should be as simple as possible with a minimum number of parts, and to the extent possible, all parts should be accessible for inspection and cleaning. If water is required for washing, the equipment should be designed to accommodate water and should ensure rapid and complete drying to prevent microbial growth and the establishment of microbial harbourage sites. Furthermore, the equipment design should minimize the build-up of food residues and the creation of microbial harbourage sites. Particular attention should be given to the design of equipment located in areas that require the most stringent hygiene controls.

27. A written document should be developed for equipment acceptance, as well as for cleaning, disinfecting and drying of equipment prior to allowing entry into the processing area. This is particularly important for used equipment, which may have been contaminated during its prior use.

28. In order to minimize the potential for harbourage sites, hollow areas of equipment should be eliminated whenever possible or permanently sealed.

29. Push buttons, valve handles, switches and touch screens should be designed to ensure product and other residues (including liquid) do not penetrate or accumulate and become a harbourage site.

4.4 Facilities

30. Refer to the *General Principles of Food Hygiene*.

31. The integrity of the facilities should be inspected on a regular basis for problems such as the presence of bird nests or roosting sites, roof leaks, etc. Problems should be corrected as soon as they are detected to ensure a sound structure of the facility.

4.4.2 Drainage and waste disposal

32. Since limiting water is one of the primary means to control pathogens such as *Salmonella* in a low-moisture food establishment, the areas requiring stringent hygiene controls should ideally not have drains. However, if drains are present, the floors should be properly sloped for effective drainage and to allow for rapid drying and kept dry under normal conditions. The drains should be designed to prevent backflow, especially if drains are connected to areas with less stringent hygiene requirements. Additionally, when drains are present, these should be sealed during dry processing operations. When water is used in other areas such as the basic hygiene area, water drainage must ensure rapid drying.

4.4.3 Cleaning

33. Areas where low-moisture foods are handled and manufactured should be designed and constructed in such way as to facilitate dry cleaning and the avoidance of water. Non-fixed equipment should be cleaned outside of the area needing more stringent hygiene control.

4.4.6 Air quality and ventilation

34. Exhaust vents should be inspected to ensure they are hygienically designed, so as to prevent condensate formation and accumulation around the vent exit and to prevent water dripping back into the facility. It should be ensured that exhaust ducts are of sanitary design, are cleanable, and that reverse air flow does not occur.

35. Where necessary, prevention of the ingress of dust, as well as the movement of dust from one area to another, should be prevented or minimized using air filters and by maintaining a positive air pressure in the areas requiring more stringent hygiene control relative to other areas in the establishment. The type of filters installed in the air handling units may vary from simple dust filters to high efficiency filters, depending on the product and the intended use and consumer. Filters should be inspected and maintained to prevent them from becoming harbourage sites for pathogens.

36. Attention should be given to the location of the air intake for the establishment in relation to sources of contamination e.g. if the air intake is too close to the surface of the roof, contaminants from bird faeces can be drawn into the operation. Air filters should be considered for use on air intakes.

37. Where air is used in the facility, in the equipment or in processing lines for specific purposes such as for cooling or transportation of products, direct contact with the product is possible and the air should be dried and filtered to exclude microorganisms and moisture, where appropriate.

SECTION V - CONTROL OF OPERATION

5.1 Control of food hazards

38. Refer to the *General Principles of Food Hygiene*.

39. Different hygiene requirements should be implemented based on the degree of hygiene control required in the different areas, or zones, such as the pre-processing raw material handling area and the post-processing and finished product handling area. More stringent hygiene controls should be applied in areas where products that have received a pathogen reduction treatment or that are in their final ready-to-eat state are exposed to the environment of the facilities.

40. Since food particles and dust are normally expected to be present in some processing areas, adequate nutrients are always available to microorganisms. However, microbial growth cannot occur if the

low-moisture food establishment is maintained in a dry state. Processing and packing areas for low-moisture foods are typically at ambient temperature. This facilitates maintaining dry conditions, but if moisture is present, growth of microorganisms can occur rapidly. Control measures should be in place to minimize the use of water in the entire low-moisture food establishment. During operation, dry conditions should be maintained in processing areas requiring the most stringent hygienic controls, e.g. after the product has received a pathogen reduction treatment. Some low-moisture food establishments use processing steps that involve the addition of moisture, e.g. blanching almonds in a hot water bath to remove the skin, steam treatments for pathogen reduction. Where water is used, measures should be taken to ensure that it does not enter the dry processing areas of the establishment. Conditions leading to the formation of condensate should be eliminated or minimized to the greatest extent possible. Problems may arise not only when water is visible, but also once an area that has become wet has dried. *Salmonella* is tolerant to drying and can be found in spots where standing water has dried out.

41. Uncontrolled moisture (e.g. leaking roofs, leaking pipes, condensate, improper cleaning) is a major contributor to the presence of pathogens in low-moisture foods because it provides the moisture necessary for multiplication of the pathogen in ambient temperature rooms. This increases the likelihood of product contamination of multiple lots of product over time. In the case of an unusual event in a low-moisture production area, such as a roof leak, a faulty sprinkler, leaking water or steam valves or a drain backup that introduces water in the processing area of the establishment, efforts should be made to remove water immediately from the dry areas, in order to keep the plant environment as dry as possible. A thorough review and assessment of the situation should be made, evaluating the need for increased sampling and testing of product and the environment and appropriate corrective actions. The continuation of production should be assessed with regard to any negative impact on product safety, in which case, production should be stopped. With respect to a roof or other water leak, the leak should be fixed and the affected area cleaned, disinfected and completely dried and clean dry conditions verified through visual inspection. If any product is affected at the time of the event, it should be disposed of appropriately. This could include reconditioning. Environmental samples should be taken to verify the effectiveness of the cleaning and disinfection in the area unintentionally contaminated with water.

5.2 Key aspects of hygiene control systems

42. Refer to the *General Principles of Food Hygiene*.

5.2.2 Specific process steps

43. Whenever feasible, low-moisture foods or their raw materials should be treated with a validated microbial reduction treatment in order to inactivate pathogens such as *Salmonella*, noting that some pathogens have increased heat resistance characteristics at reduced water activities in food matrices. The degree of heat resistance may also vary based on specific ingredients. For additional information on validation, refer to the *Guidelines for the Validation of Food Safety Control Measures (CAC/GL 69-2008)*. Additionally, refer to the *Principles and Guidelines for the Conduct of Microbiological Risk Management (MRM) (CAC/GL 63-2007)*.

44. Commonly used microbial reduction treatments for low-moisture foods or their raw materials include both thermal (e.g. roasting, steam treatment followed by a drying step) and non-thermal (e.g. irradiation, antimicrobial fumigation) control measures. Where foods are irradiated, refer to the *Code of Practice for Radiation Processing of Food (CAC/RCP 19-1979)* and the *General Standard for Irradiated Foods (CODEX STAN 106-1983)*.

45. The need for microbial challenge studies to support the validation should be determined. The following should be considered when choosing and validating a pathogen reduction step (control measure) for low-moisture foods and their raw materials:

- The necessary target level of pathogen reduction should be determined considering the expected level of the target pathogen in the food prior to the microbial reduction treatment.
- The control measure (thermal or non-thermal) should be validated appropriately for the type of low-moisture food and be capable of achieving the necessary target level of pathogen reduction at the operational scale of the in-plant process.
- If microbial challenge studies are needed, appropriate strains of microorganisms (pathogen or surrogate) should be identified. For laboratory studies, a pathogen such as *Salmonella* should be used, but an appropriate surrogate would be necessary for in-plant validation studies. A surrogate organism should be selected based on data specific to the low-moisture food of interest that demonstrate resistance traits equivalent to the pathogen of concern when exposed to the control measure of interest.

- The associated critical limits for the in-plant process to meet its assigned target level of pathogen reduction should be determined.

46. Once the necessary pathogen reduction step of the in-plant process has been appropriately validated, suitable monitoring and verification activities should be conducted by the establishment to demonstrate that the process continues to meet the critical limits during operation. When monitoring of control measures or verification results demonstrate deviations, appropriate corrective actions should be taken.

5.2.3 Microbiological and other specifications

47. Refer to the *Principles and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods* (CAC/GL 21- 1997).

48. In view of the limited information end-product testing provides in terms of the effectiveness of the hygiene control measures, an environmental monitoring program should be considered to verify effectiveness of the sanitation control measures in the low-moisture food establishment.

49. If there is reason to suspect a product may have been contaminated (e.g. a leaking roof over an area where dry product is exposed to the environment), a thorough review and assessment of the situation should be made evaluating the need for increased sampling and testing of product and the environment and appropriate corrective actions, including, where necessary, processing of product using a validated control measure. The finished product should not be released until adequate investigation has shown that it complies with appropriate specifications.

5.2.4 Microbiological cross-contamination

50. The most stringent hygienic practices should be in place following a pathogen reduction step to prevent recontamination during subsequent manufacturing and packaging.

51. The traffic (e.g. movement of personnel and materials) between one hygiene area and another should be controlled to minimize the potential for pathogen contamination. The following should be considered for an area requiring a higher degree of hygienic control:

- Traffic into the area should be minimized and strictly controlled.
- Personnel should follow established hygiene procedures prior to entering the area, e.g. changing or covering shoes, washing and drying hands.
- Dedicated workers and equipment, including utensils and cleaning tools, should be assigned to this area.
- Ingredients that are mixed into a finished product without a subsequent pathogen reduction step should comply with section 5.3.
- Air should flow from the areas requiring most stringent hygiene to those with more basic hygiene, where appropriate.

5.3 Incoming material requirements

52. Refer to the *General Principles of Food Hygiene*.

53. A supplier approval and verification program should be developed for sensitive ingredients. Sensitive ingredients are ingredients that have tested positive for pathogens, such as *Salmonella*, in the past or have been implicated in past outbreaks or are used to make products that are intended for consumers more susceptible to illness from foodborne pathogens. The supplier approval and verification program should be developed to assess the adequacy of control measures implemented for pathogens such as *Salmonella*. The supplier's food safety program should be evaluated and audited with respect to the recommendations outlined in this document before approval. Periodic raw material and/or ingredient testing should be conducted upon receipt to verify supplier control. For sensitive ingredients that will be added to the finished product without a further pathogen reduction step, the most stringent controls may be necessary.

54. Additionally, within the low-moisture food establishment, sensitive ingredients should be held under adequate hygiene conditions to avoid recontamination. Where feasible, sensitive ingredients should be stored in a segregated area. Where required, certain sensitive ingredients should be stored under controlled temperature and moisture conditions. Before sensitive ingredients are brought into an area that requires a high degree of hygiene control, procedures should be in place to minimize cross-contamination from packaging materials or containers used to transport the ingredients, from handling or from other sources of contamination.

5.4 Packaging

55. Refer to the *General Principles of Food Hygiene*.

5.5 Water

56. Refer to the *General Principles of Food Hygiene*.

5.5.4 In temperature-controlled equipment

57. Preventive maintenance should be in place to identify and correct microfractures in jacketed temperature-controlled equipment such as holding or mixing tanks that are double-walled and filled with water to control temperature in the processing of chocolate, peanut butter, etc. Nevertheless, potable water should be used for jacketed temperature-controlled equipment, to prevent contamination of product being held or processed in the equipment in the event of microfractures in the equipment that could allow traces of contaminated water to leak inside.

5.6 Management and supervision

58. Refer to the *General Principles of Food Hygiene*.

59. Managers and supervisors should have knowledge of the primary pathogen of concern (e.g. *Salmonella*) in their low-moisture food, as well as an understanding of the procedures necessary for control of this pathogen. Managers and supervisors should also have an understanding of the procedures to follow when environmental or finished product sampling results are non-compliant.

5.7 Documentation and records

60. Refer to the *General Principles of Food Hygiene*.

5.8 Recall procedures

61. Refer to the *General Principles of Food Hygiene*.

SECTION VI - ESTABLISHMENT: MAINTENANCE AND SANITATION

6.1 Maintenance and cleaning

62. Refer to the *General Principles of Food Hygiene*.

6.1.1 General

63. Processing of low-moisture foods will result in dust accumulation on conveyors, walls, equipment and other surfaces. Product accumulation (e.g. on walls, ceilings, conveyor belts, lids and walls of batch tanks or mixing tanks, the bottom of a bucket elevator), which may become a source of contamination, should be removed in a timely manner. This is particularly important for products that have the ability to attract and hold water, or products that are in an environment of high humidity leading to moisture absorption and localized condensation.

64. When construction in the low-moisture food establishment is done as part of maintenance activities, control measures should be in place to prevent potential release of pathogens, such as *Salmonella*, from hidden harbourage sites. The following should be considered during construction activities:

- The construction area should be isolated from the processing area.
- Dust should be prevented, minimized, or effectively captured and controlled.
- Traffic patterns into and out of the construction area should be controlled.
- Negative air pressure should be maintained in the construction area.
- Cleaning procedures in the processing areas should be intensified to minimize the spread of dust or contaminants from the construction zone.
- Care should be taken when wet cleaning within the construction area to ensure that water does not create conditions that allow the proliferation of pathogens such as *Salmonella* within the production environment.

65. Similar procedures may be necessary during other maintenance activities such as dismantling or re-positioning of equipment.

6.1.2 Cleaning procedures and methods

66. There are three types of cleaning methods in a low-moisture food establishment: dry cleaning, controlled wet cleaning, and wet cleaning. The type of cleaning practices to be used in different hygiene areas should be specified. Dry cleaning should be used as the routine cleaning practice for the area that requires the most stringent hygiene control (e.g. after any pathogen reduction treatment or a product with no pathogen reduction treatment). In the area requiring the most stringent hygiene controls, there may be circumstances where controlled wet cleaning will need to be used (e.g. in response to a situation in which environmental or product contamination has been established). In those cases, documented procedures should be in place. Wet cleaning should only be used in non-critical, non-process areas of the establishment (e.g. maintenance areas, waste areas and toilet facilities).

6.1.2.1 Dry cleaning and disinfection

67. The objective of dry cleaning is to remove product residues without the use of water by using tools or cleaning aids that do not involve the application of water or other aqueous solutions. Where appropriate, dry abrasives can be an effective method of removing persistent product residues on equipment or surfaces without introducing water. Hot food grade oil is sometimes used to flush the interior of equipment used to handle pumpable low-moisture products such as peanut butter or chocolate. However, research has shown that hot oil may not be completely effective in removing *Salmonella* from contaminated processing equipment.

68. The following should be considered when establishing appropriate dry cleaning procedures:

- Designated trained personnel should be responsible for dry cleaning procedures.
- Dry cleaning tools should be cleanable, durable, without loose parts, designed for the purpose and dedicated for the area.
- A designated area should be provided to store cleaning tools not in use.
- Compressed air can be used for dry cleaning in special situations (e.g. to dislodge dust from inaccessible points), but when compressed air is used, it should be dried and filtered to exclude microorganisms and moisture prior to use.
- Separate tools should be provided for the dry cleaning of floors. Tools and vacuums that are used for cleaning food contact surfaces should not be used to clean non-food contact surfaces. Well-designed portable vacuum cleaners or similar tools are recommended to remove residues.
- If possible, vacuum cleaners should be dedicated to specific areas, so that vacuumed material can be tested as part of an environmental monitoring program.
- Dry cleaning tools (e.g. brooms, dry cloth) as well as vacuum cleaners should be well maintained so they do not become carriers of contamination. Vacuum cleaners should be cleaned and disinfected in a designated area, so as not to become a source of contamination.
- Where filters are part of dry cleaning tools, they should be properly maintained on a regular basis and replaced when necessary.
- Alcohol-based disinfectants provide a means to disinfect equipment with a very minimal introduction of water, but water should be avoided as much as possible.
- Cleaning and disinfection programs should be monitored for their effectiveness and verified by visual observations and, where applicable, environmental monitoring.

6.1.2.2 Controlled wet cleaning

69. The following should be considered when establishing appropriate controlled wet cleaning procedures:

- As much product residue as possible should be removed by dry cleaning.
- Only the minimum amount of water needed should be used.
- Procedures should be in place to collect water to prevent water spreading on the floor or to other non-wet cleaned areas.
- Water aerosols should be avoided and high pressure water application should not be used.
- When possible, parts of equipment should be removed and wet cleaning conducted in a room dedicated to cleaning.

- Equipment and areas should be disinfected following the controlled wet cleaning.
- Complete drying of all areas and components involved (e.g. equipment parts, floor) should be done after controlled wet cleaning.
- Controlled wet cleaning should be monitored and verified by visual observation that the area is dry and by environmental monitoring.
- If necessary, production should be stopped while controlled wet cleaning is taking place and only restarted once the area is dry.

6.1.2.3 Wet cleaning

70. The following should be considered when wet cleaning is used:

- The amount of water should be minimized and its use should be limited to specific areas where possible.
- Excessive use of water and high pressure hoses should be avoided.
- Care should be taken to prevent tracking water into areas intended to remain dry.
- Complete drying of all areas should be done after wet cleaning.

6.2 Cleaning programmes

71. Refer to the *General Principles of Food Hygiene*.

72. In some establishments, where there is a potential for the presence of cracks or other harbourage sites that may be difficult to eliminate even with regular maintenance, using a dry cleaning method is particularly important. By keeping the sites dry (i.e. using the dry cleaning method), even if food residues or dust enter such a site, potential problems can be minimized. Once water enters a harbourage site, microbial growth can occur and the potential risk of contamination of the environment and of the product is increased.

6.3 Pest control systems

73. Refer to the *General Principles of Food Hygiene*.

6.4 Waste management

74. Refer to the *General Principles of Food Hygiene*.

6.5 Monitoring effectiveness

75. Refer to the *General Principles of Food Hygiene*.

76. Establishments should put in place an environmental monitoring program for products with known risk for pathogens such as *Salmonella* (e.g. nuts and nut products, dry protein products). Sampling and testing of the environment, including swabs and samples of dust and product residue, is a critical activity to verify the effectiveness of pathogen control measures within the establishment. The main target organism for environmental monitoring should be *Salmonella*. However, it may be advantageous to also include Enterobacteriaceae (EB) as an indicator of process hygiene. The presence of high levels of EB is a good indication of conditions that may support the presence and potential for growth of *Salmonella*. However, testing for EB alone is not sufficient, since even low levels of EB do not guarantee the absence of *Salmonella*.

77. When pathogens such as *Salmonella* or process hygiene indicator microorganisms such as EB are detected in the environment of the establishment and their levels exceed “decision criteria” as established by the food business operator, appropriate measures should be taken to investigate the source of contamination and to eliminate or control the microorganisms in the environment.

SECTION VII - ESTABLISHMENT: PERSONAL HYGIENE

78. Refer to the *General Principles of Food Hygiene*.

SECTION VIII - TRANSPORTATION

79. Refer to the *General Principles of Food Hygiene*.

SECTION IX - PRODUCT INFORMATION AND CONSUMER AWARENESS

80. Refer to the *General Principles of Food Hygiene*.

SECTION X - TRAINING10.1 Awareness and responsibilities

81. Refer to the *General Principles of Food Hygiene*.

10.2 Training programmes

82. Refer to the *General Principles of Food Hygiene*.

83. The training program should educate employees on the proper hygienic practices to follow in order to minimize the entry or the spread of pathogens, such as *Salmonella*, in the low-moisture food establishment. Adherence to traffic pattern control measures should also be included in the training. Since *Salmonella* can be difficult to control in a food operation environment because it can persist for a prolonged period of time in the dry state and in low-moisture products, the employees should understand the importance of following proper hygienic practices and the importance of avoiding the introduction of water. Such training should include personnel who enter the area on a temporary basis (e.g. maintenance workers, contractors).

10.3 Instruction and supervision

84. Refer to the *General Principles of Food Hygiene*.

10.4 Refresher training

85. Refer to the *General Principles of Food Hygiene*.

Appendix VI

CCFH FORWARD WORKPLAN

Ranking	Title of Work	Last Revision	Currency of Information (Yes/No) ¹⁴	Positive impact of new work on public health (Yes/No)	Project document/discussion paper (Yes/No)	Public Health Risk (20/14/8)	Trade Impact (10/5/4/2/0)	Comments	FAO/WHO assistance needed? (Yes/No)	Total
	<i>General Principles of Food Hygiene</i> (CAC/RCP 1-1969) Annex: Guidelines for the Application of HACCP Systems	2003	Yes	Yes	Yes	20	10		Possibly	30
	<i>Code of Hygienic Practice for Meat</i> (CAC/RCP 58-2005)	2005	Yes	Yes	No	20	10			30
	Control of Verotoxigenic <i>E. coli</i> in Beef	N/A	Yes	Yes	No	20	10			30
	<i>Code of Hygienic Practice for Fresh Fruits and Vegetables</i> (CAC/RCP 53-2003)	2013	No			20	10			30
	<i>Code of Hygienic Practice for Milk and Milk Products</i> (CAC/RCP 57-2004)	2009	No			14	10			24
	Development of an annex on tomatoes for the <i>Code of Hygienic Practice for Fresh Fruits and Vegetables</i> (CAC/RCP 53-2003)	N/A	Yes	Yes	No	14	5			19
	<i>Code of Hygienic Practice for Eggs and Egg Products</i> (CAC/RCP 15-1976)	2007	No			14	5			19
	<i>Code of Hygienic Practice for Precooked and Cooked Foods in Mass Catering</i> (CAC/RCP 39-1993)	1993	No			14	5			19
	<i>Code of Hygienic Practice for the Transport of Food in Bulk and Semi-packed Food</i> (CAC/RCP 47-2001)	2001	No			8	10			18

¹⁴Currency of information: Is there new information/data that would justify the need to review the existing code(s) or establish a new one? Are there new technologies that would justify the need to review existing codes or establish a new one? If there is an existing code in place and a determination is made that the code is sufficient, no new work should proceed.

Ranking	Title of Work	Last Revision	Currency of Information (Yes/No) ¹⁴	Positive impact of new work on public health (Yes/No)	Project document/discussion paper (Yes/No)	Public Health Risk (20/14/8)	Trade Impact (10/5/4/2/0)	Comments	FAO/WHO assistance needed? (Yes/No)	Total
	<i>Code of Hygienic Practice for Low-acid and Acidified Low-acid Canned Foods (CAC/RCP 23-1979)</i>	1993								
	<i>Code of Hygienic Practice for Aseptically Processed and Packaged Low-acid Foods (CAC/RCP 40-1993)</i>	1993								
	<i>Guideline Procedures for the Visual Inspection of Lots of Canned Foods for Unacceptable Defects (CAC/GL 17-1993)</i>	1993	No			8	10			18
	<i>Code of Hygienic Practice for Canned Fruit and Vegetable Products (CAC/RCP 2-1969)</i>	1969								
	Code of Hygienic Practice for the Storage of Cereals	N/A	Yes	No	Yes	8	5			13
	Development of an annex on carrots for the Code of Hygienic Practice for Fresh Fruits and Vegetables (CAC/RCP 53-2003)	N/A	No			8	5			13
	<i>Code of Hygienic Practice for Bottled/Packaged Drinking Waters (other than natural mineral waters)(CAC/RCP 48-2001)</i>	2001	No			8	5			13
	<i>Code of Hygienic Practice for Refrigerated Packaged Foods with Extended Shelf-life (CAC/RCP 46-1999)</i>	1999	No			8	5			13
	<i>Code of Hygienic Practice for the Processing of Frog Legs (CAC/RCP 30-1983)</i>	1983	No			8	2			10