CODEX ALIMENTARIUS COMMISSION

E

Food and Agriculture Organization of the United Nations

World Health Organization

Viale delle Terme di Caracalla, 00153 Rome, Italy - Tel: (+39) 06 57051 - Fax: (+39) 06 5705 4593 - E-mail: codex@fao.org - www.codexalimentarius.org

Agenda Item 9 **CX/CF 13/7/9**

February 2013

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON CONTAMINANTS IN FOODS

Seventh Session
Moscow, Russian Federation, 8 – 12 April 2013

PROPOSED DRAFT CODE OF PRACTICE FOR THE PREVENTION AND REDUCTION OF OCHRATOXIN A CONTAMINATION IN COCOA

(AT STEP 3)

Codex Members and Observers wishing to submit comments at Step 3 on the proposed draft Code of Practice for the Prevention and Reduction of Ochratoxin A Contamination in Cocoa, including possible implications for their economic interests, should do so in conformity with the *Uniform Procedure for the Elaboration of Codex Standards and Related Texts* (Codex Alimentarius Commission Procedural Manual) before **25 March 2013**. Comments should be directed:

to:	with a copy to:
Mrs Tanja Åkesson Codex Contact Point Ministry of Economic Affairs P.O. Box 20401 2500 EK The Hague The Netherlands E-mail: info@codexalimentarius.nl	Secretariat, Codex Alimentarius Commission, Joint FAO/WHO Food Standards Programme, Viale delle Terme di Caracalla, 00153 Rome, Italy E-mail: codex@fao.org

BACKGROUND

1. The Committee on Contaminants in Foods, at its Sixth Session held in Maastricht, The Netherlands, from 26 - 30 March 2012, agreed to start new work on the elaboration of a code of practice for the prevention and reduction of Ochratoxin A (OTA) contamination in cocoa subject to approval by the 35th session of the Codex Alimentarius Commission.

2. The Committee also agreed to establish an electronic working group led by Ghana to prepare a draft code for comments and consideration at the next session of the Committee, pending the formal approval of new work by the Commission (REP12/CF, para. 141).

3. The 35th of the Codex Alimentarius Commission approved the elaboration of a code of practice for the prevention and reduction of Ochratoxin A in cocoa as new work for the Committee (REP 12/CAC, Appendix VI)

4. The electronic working group prepared the proposed draft code of practice for the prevention and reduction of Ochratoxin A in cocoa, which is presented in Appendix I to this document. The following countries participated in the electronic working group: Argentina, Brazil, Canada, Cote D'Ivoire, Ecuador, Egypt, European Commission, Ghana, Greece, Indonesia, Italy, Japan, Malaysia, Philippines, Switzerland, United Kingdom, United States of America, European Food Law Association (EFLA), International Confectionery Association and the Food and Agriculture Organization.

APPENDIX I

PROPOSED DRAFT CODE OF PRACTICE FOR THE PREVENTION AND REDUCTION OF OCHRATOXIN A CONTAMINATION IN COCOA

TABLE OF CONTENTS

1. INTRODUCTION

1. This document is intended to provide guidance for all interested parties producing and handling cocoa beans for human consumption. All cocoa beans should be prepared and handled in accordance with the Recommended International Code of Practice – General Principles of Food Hygiene[1], which are relevant for all foods being prepared for human consumption. These codes of practice indicate the measures that should be implemented by all persons that have the responsibility for assuring that food is safe and suitable for consumption.
2. Ochratoxin A (OTA) is a toxic fungal metabolite classified by the International Agency for Research on Cancer as a possible human carcinogen (group 2B). JECFA established a PTWI of 100 ng/kg bodyweight for OTA. OTA is produced by a few species in the genera *Aspergillus* and *Penicillium*. In cocoa beans, the studies have shown that only *Aspergillus* species, specifically *A. carbonarius* and *A. niger* agregate, with lower numbers of *A. westerdijkiae, A. ochraceus* and *A. melleus* are involved. OTA is produced when favourable conditions of water activity, nutrition and temperature required for growth of fungi and OTA biosynthesis are present.
3. The fruit of cocoa derived from the cocoa tree, *Theobroma cacao L*., is composed of pericarp, tissue that arises from the ripened ovary wall of a fruit, and the ovary. When the fruit is ripe the external tissue, also known as the pod, consisting of thick and hard organic material, could be used as compost, animal feed and a source of potash. The ovary contains numerous seeds embedded in an aqueous, mucilaginous and acidic pulp. This white and off-white edible pulp is composed of about 12% sugars and due to its high citric acid content has a low pH (3.3 – 4.0). The pulp contains up to 10% pectin. The pulp might be used for making jams and jellies as well as alcoholic beverages and vinegar.
4. The main commercial use resides in the seeds, also known as cocoa beans. The cocoa bean is composed of an episperm or integument, embryo and cotyledon. The integument, the protective layer of the seed, is also called shell when it is dried. During fermentation the embryo dies and upon drying, the fat content of the cocoa bean ranges between 34% and 56%.
5. After proper fermentation and drying processes the cocoa beans are further processed industrially to produce various commercial cocoa products.
6. Since the cocoa beans are extracted from a fruit, contamination by microorganisms may occur and the development of OTA producing fungi could begin when conditions become appropriate for growth. Generally the fermentation and drying processes could create this favorable condition when these processes are not properly done.
7. It is important to emphasize that the next manufacturing steps that involve removing shells, roasting (or vice versa), liquoring and refining, only the stage of shell removal can significantly reduce OTA levels. As these steps are performed at the industry level, industry should establish food safety specific programs to reduce the OTA level in the processed cocoa products meant for human consumption.

2. DEFINITIONS

PARTS OF COCOA FRUIT (FIGURE 1)

Cocoa bean: The seed of the cocoa fruit composed of episperm (integument), embryo and cotyledon.

Cocoa pod: The cocoa fruit pericarp that arises from the ripened ovary wall of a fruit.

Episperm or integument: The protective layer of the seed also called shell when it is dried.

Pulp: Aqueous, mucilaginous and acidic substance in which the seeds are embedded.

Dry cocoa: A commercial term designating cocoa beans which have been evenly dried throughout and which the moisture content corresponds to the requirements of this standard.

Mouldy bean: A cocoa bean in which mould is visible on the internal parts to the naked eye.

Slaty bean: A cocoa bean which shows a slaty colour over half or more of the surface exposed by a cut made lengthwise through the centre using the method described in ISO/R 1114.

Insect Damaged Bean: A cocoa bean with the internal parts of which contains insects at any stage of development, or has been attacked by insects which have caused damage visible to the naked eye.

Germinated bean: A cocoa bean with the shell pierced, slit or broken by the growth of seed germ.

Flat bean: A cocoa bean of which the two cotyledons are so thin that it is not possible to obtain a cotyledon surface by cutting.

Smoky bean: A cocoa bean which has a smoky smell or taste or which shows signs of contamination by smoke.

Broken bean: A cocoa bean of which a fragment is missing, the missing part being equivalent to less than half the bean.

Fragment: A piece of cocoa bean equal to or less than the original bean.

---

[1] Recommended International Code of Practice - General Principles of Food Hygiene (CAC/RCP 1- 1969).

Piece of shell: Part of the shell without any of the kernel

Adulterations: Adulteration of the composition of a parcel of cocoa beans by means whatsoever so that the resulting mixture or combination does not conform to the contractual description.

Foreign matter: Any substance other than cocoa beans or residue.

Harvesting and opening the fruits: Fruits are manually harvested and opened using a sickle, machete or wooden baton.

Fermentation: Process intended to degrade the pulp and initiate biochemical changes in the cotyledon by inherent enzymes and micro-organisms from the farm environment.

Drying process: Drying of cocoa beans either under sunlight or in mechanical/solar dryers (or a combination of both) in order to reduce the moisture content to make them stable for storage.

Sorting: Handling and technological operation intended to remove foreign matter, fragments of dried cocoa beans, pod and pulp; as well as defective beans from dried cocoa beans.

Roasting: Heat treatment that produces fundamental chemical and physical changes in the structure and composition of cocoa beans and brings about darkening of the beans and the development of the characteristic chocolate flavor of roasted cocoa.

3. PROCESSING OF COCOA

8. Harvesting involves removing ripe fruits from the trees. The fruits are harvested manually by making a clean cut through the stalk with a cleaned and well sharpened blade.
9. The pods are opened to remove the cocoa beans with the pulp as soon as possible or within a few days after harvesting.
10. The cocoa beans with pulp removed from the pod are heaped together or put in boxes, trays, baskets or platforms to allow micro-organisms to develop and initiate the fermentation process.
11. The fermented cocoa beans are usually sun dried in an open drying yard, or on suspended tables with many variations and technological innovations. Sun and mechanical drying can be combined and used together.
12. When the beans are appropriately dried to target moisture levels, they must be sorted to remove flat beans, shriveled beans, black beans, mouldy beans, small and fused beans, beans with insect damage, germinated beans and others defects.
13. Once the drying and sorting out process are completed, the dried cocoa beans must be put into appropriate bags and stored. Appropriate bagging and storage of the processed beans is just as important as proper fermentation and drying.
14. A major part of OTA originally present in cocoa beans is found in the shell fraction. Accordingly, the industrial processing of removing cocoa shells, as well as dried episperm or integument of cocoa seed, before and after the roasting can reduce OTA levels significantly.

4. RECOMMENDED PRACTICES

4.1 PRE-HARVEST

15. The pulp and the cocoa beans are microbiologically sterile in relation to OTA producing fungi while inside the healthy cocoa pod. The contamination by spores of fungi that can produce OTA occurs during the opening process of cocoa pod and in subsequent processes.
16. Consequently the cocoa plantation should be properly maintained to ensure as low a level of mould infestation as possible, in order to avoid inoculation by OTA producing fungal spores during opening of the cocoa pod.
17. Recommended practices to reduce the development and spore load from OTA-producing fungi on cocoa beans are:

    a) Keep cocoa plants healthy, through the appropriate use of good agricultural practices (GAP) such as weeding, improving soil texture, prevention of soil erosion, pruning, fertilizer application, pest and disease control, and irrigation. For establishment of new cocoa farms, cocoa trees should be planted in the most suitable soil, pattern and density to ensure easy management of the farms.

    b) Do not use overhead irrigation during the flowering and fruit development period. This could augment normal spore dispersal rates and increase the chance of infection of beans by OTA producers.

    c) Avoid disposal of uncomposted organic wastes from cocoa or any other source, in or around the plantation. Cocoa seeds and seed associated material, such as dust, earth, and other seed may promote proliferation of OTA producing fungi.

4.2 HARVEST

18. Cocoa fruits should be harvested as soon as they are ripe. Harvesting should be done every week during peak periods and every two weeks in non-peak periods. Likewise, it is important to do a separate round of the farm sanitation every week to remove diseased cocoa fruits with a machete, *bolo* or cocoa hook that is used only for that purpose. Separate diseased pods from healthy pods right in the field to avoid contamination during transport and storage.

19. Discard mummified fruits because they are more likely to be infected.

20. Avoid harvesting unripe fruits. The unripe cocoa fruits have a solid pulp, without mucilage, hence the cocoa beans are difficult to separate from the pod, do not ferment properly and can contribute to slaty beans.

21. The harvester should avoid unnecessary cutting/wounding of the cocoa pods to prevent inoculation and development of OTA producing fungi in the cuts/wounds in the pod.

22. Harvesting must be carried out using specific techniques and tools. The tools and baskets used to transport the fruits must be clean and the tools sharpened regularly.

4.3 STORAGE AND POD OPENING

23. Once a sufficiently large quantity of fruits suitable for fermentation has been harvested, the pods must be opened, manually (using wooden batons, pod splitters or machetes) or mechanically (using cocoa pod breaking machines) and beans extracted. Care should be taken not to damage the seeds during pod breaking. It is recommended opening the fruits as soon as possible or within 7 days after harvesting in order to avoid fungal proliferation. Tools used to open cocoa pods should be clean and sharpened regularly as appropriate. An appropriate degree of personnel hygiene should be maintained by personnel during manual removal of seeds.

24. Wounded or damaged fruits should not be stored longer than one day before opening and fermenting.

25. During the opening process any defective parts of the cocoa pod, mouldy beans, diseased beans, and damaged beans should be removed and appropriately disposed off. Good quality beans should be placed in a suitable container during transport. Transport of fresh/wet beans from pod opening sites to on-farm fermentation facility should be done under conditions that will prevent contamination e.g. spilled beans must be free of soil before being fermented.

4.4 FERMENTATION OF COCOA BEANS

26. The cocoa beans with pulp should be placed in reasonably clean, dry and suitable boxes, baskets, trays or platforms for the fermentation. Care should be taken to prevent cocoa beans from getting in contact with water during fermentation.

27. The mucilaginous mass should be turned frequently to ensure uniform heat in the heaps, to allow for aeration, to break up any lumps and to prevent fungi proliferation. The frequency depends on the method of fermentation.

28. The duration of fermentation is usually 4 to 7 days which will also depend on the method of fermentation. It is however recommended that fermentation beyond 7 days be avoided as this could lead to fungal proliferation and seed germination.

29. Tools (paddle and shovel used for manual turning) and materials used during fermentation should be cleaned regularly. Organic materials used for fermentation should be discarded when appropriate.

30. Fermentation is recommended to avoid ochratoxigenic fungal growth and ochratoxin A production because acetic, lactic and citric acid produced by bacteria during fermentation can compete with and inhibit these undesirable fungal species. Research has shown that fermentation carried out during drying on a drying mat; and partially depulped cocoa also being fermented directly on the drying mat can increase OTA production in cocoa beans.

4.5 DRYING PROCESS

31. After fermentation, the cocoa beans must be removed and immediately spread on appropriate elevated surfaces (i.e., not directly on bare ground or concrete floor) to dry, preferably under direct sunlight. If the drying is not started immediately, the cocoa beans will keep fermenting and over-ferment leading to loss of cocoa flavour.

32. The drying process could be done by direct sunlight or artificial drying or a combination of both. A moisture content of 6 - 8% in cocoa beans is considered optimal in order to avoid growth of microorganisms and for good storage.

33. The drying area should be located away from contaminant sources and should receive maximum sun exposure and air circulation during most times of the day, to speed up the drying process of cocoa beans. Shady areas should be avoided.

34. In rainy or wet regions, cocoa beans must be covered and re-spread once the drying surface has dried. Ensure that the drying surface is clean and located away from contaminants sources.

35. The layer of drying cocoa beans should not exceed 6 cm thick, which corresponds to 40 kg of wet cocoa beans per square meter of drying area to avoid slow or inadequate drying that may lead to mould growth.

36. Beans must be turned several times each day to ensure uniformly dried beans. Rake over the cocoa bean layer frequently during the day time to allow faster drying and reduce the risk of fungal growth (5 - 10 times per day).

37. Protect cocoa beans during drying from rain and dew. The cocoa beans should be heaped and covered at night or during rainy weather to avoid re-wetting.

38. Do not mix cocoa beans at different drying stages. Use specific identification for each one of them to identify each drying stage.

39. Re-wetting of cocoa beans should be avoided because cocoa beans with a level of moisture above 8% can allow rapid growth of the mycelium and the possibility of OTA production. Mouldy cocoa bean should be discarded.

40. Protect the cocoa beans during drying from domestic animals, which can be a source of biological contamination.

41. Drying equipment and tools should be cleaned regularly.

4.6 STORAGE, TRANSPORTATION AND TRADING OF DRIED COCOA BEANS

42. Before storage of dried cocoa beans, they must be sorted to remove flat beans, slaty beans, shrivelled beans, black beans, mouldy beans, small and/or fused beans, germinated beans, beans with insect damage, etc.

43. Ensure the facilities and equipment that are related with sorting process are regularly inspected, maintained and cleaned, in order to avoid physical damage to cocoa beans that make them more susceptible to contamination and deterioration and to prevent the introduction of new contamination and undesirable materials. An appropriate degree of personal hygiene should be maintained by all personnel.

44. The dried cocoa beans that will be stored must be properly identified by lots at the farm level or in out-of-farm warehouses, in bulk or in clean bags under appropriate storage conditions as prescribed in paragraph 43.

45. Cocoa beans should be packaged in clean bags which are sufficiently strong and properly sewn or sealed to withstand transport and storage and which are suitable for food contact use and discourage pest infestation.

46. The bagged cocoa beans must be placed in warehouses or storage sheds that are weatherproof, well aerated, cleaned, free from dampness and insect pests and away from smoke and other odoriferous materials that could contaminate the cocoa.

    a) The design and structure of the warehouses or storage sheds should be adequate to maintain dryness and uniformity of the stored dried cocoa beans.

    b) The cocoa bags should be arranged on pallets and away from walls, to allow good air circulation.

    c) The stored beans should not be exposed to direct sunlight nor stored near heating sources, to avoid the possibility of temperature differentials and water migration.

    d) Cleaning and maintenance programs should be implemented and storage facilities should be periodically inspected, cleaned and repaired.

47. During the entire process, the cocoa beans must also be protected from re-wetting, degradation and cross – contamination. In long term storage conditions, humidity should be kept under strict control (less than 70% RH). Appropriate storage facilities should follow the use of good storage practice and conduct regular monitoring in order to prevent or reduce mould growth.

48. The moisture content of the stored cocoa beans should be periodically checked and kept below 8% by re-drying.

49. Any infestation must be dealt with by proper and approved methods of fumigation. Appropriate documentation accompanying the cargo should state in clear and correct terms the fumigants and the quantities that were used.

50. From the production areas, cocoa may be conveyed by various means to the trading points. The main aspect of concern here is to avoid rewetting of cocoa beans, due to possible climatic changes between different regions, and taking the necessary control measures.

51. Transport of cocoa beans also requires the adoption of practices to avoid re-wetting, to maintain temperature as uniform as possible and to prevent contamination by other materials. The main requirements here are:

    a) Cover cocoa bean loading and unloading areas to protect against rain.

    b) Before receiving a new cargo, the vehicles must be cleaned from residues of previous cargo.

    c) The vehicles must have floor, side walls and ceilings (in closed vehicles) checked for the presence of points where exhaust fumes or water from rain can be channeled into the cocoa cargo. Tarpaulins and plastic canvas used to cover the cargo should also be regularly checked to ensure that they are clean and without holes. The vehicles should also receive regular maintenance and should be kept in good condition.

    d) Reliable transport service-providers that adopt the recommended good transportation practices should be selected by operators.

4.7 CARGO SHIP LOADING AND TRANSPORT

52. Cocoa beans are transported from producing to consuming countries in bags or in bulk, usually in 15 to 25 tonnes capacity containers. Temperature fluctuations, during the transportation time, can cause condensation of the remaining water (present even in well-dried beans) and local re-wetting. The redistribution of water can lead to fungal growth, with the possibility of OTA production. The recommended practices during transportation in the port are:

    a) Cover cocoa loading and unloading areas to protect against rain.

    b) Check cocoa lots to ensure that they are uniformly dried and below 8% moisture content, free of foreign matter and conforming to the established defect levels.

c) Check containers before loading to ensure they are clean, dry and without structural damage that could allow water to enter into the container.

d) Bags should be well stacked and crossed over for mutual support in order to avoid the formation of empty vertical columns (chimneys). The top layer and sides of bags should be covered with materials that can absorb condensed water, such as silica gel or cardboard for protection against the growth of fungi that could result in OTA production. For cocoa in bulk, a sealable plastic liner (e.g. big bag which allows aeration) is desirable and this should be kept away from the roof of the container.

e) Choose an appropriate place, not directly exposed to the weather, aboard the ship to store the cocoa to reduce the possibility of undesirable situations mentioned that can lead to OTA contamination.

f) Keep the ventilation holes in the containers free from clogging.

g) Avoid unprotected stowage on the deck (top layer) and stow away from boilers and heated tanks or bulkheads.

h) The moisture content should not exceed 8% anywhere, from the point where the cocoa beans leave the loading area to the point at which the cocoa is unloaded, stored and/or subjected to other processing procedures such as roasting.

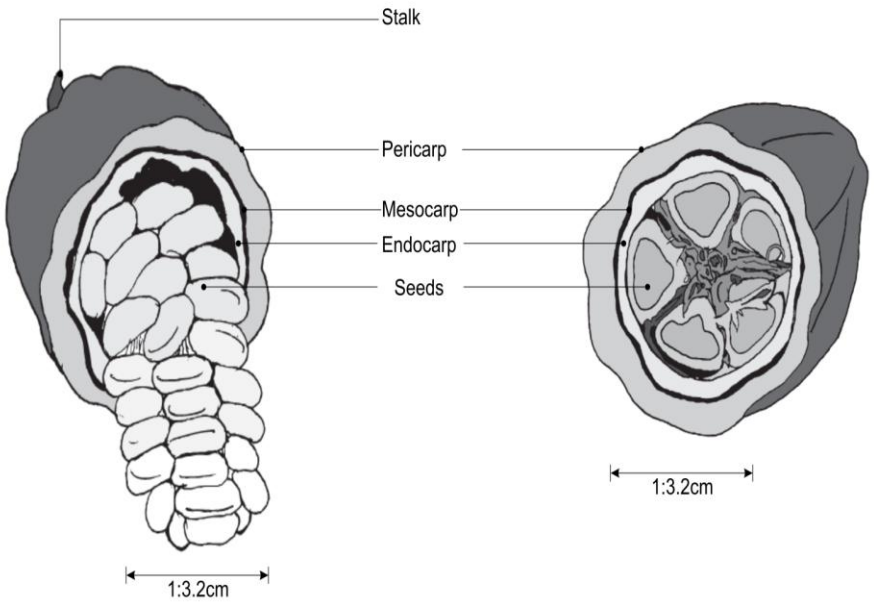

Figure 1a. Longitudinal and transverse sections of a cocoa pod (Kofi Appiah, CRIG) Scale: 1:3.2 cm

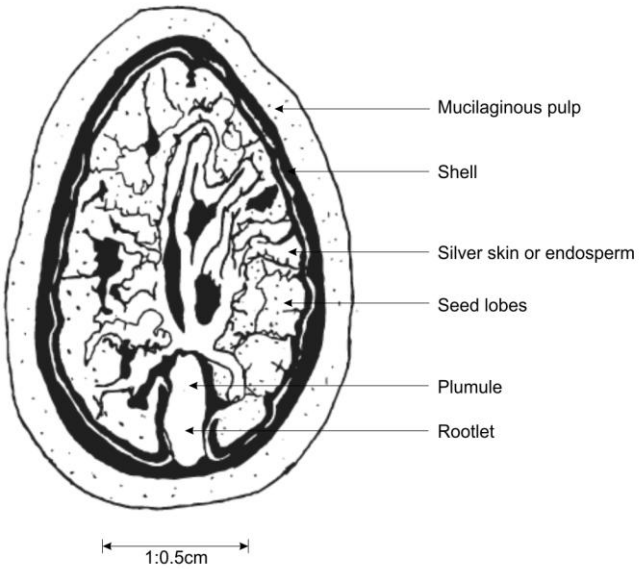

Figure 1b. Longitudinal section of a cocoa seed (Kofi Appiah, CRIG) Scale: 1:0.5 cm

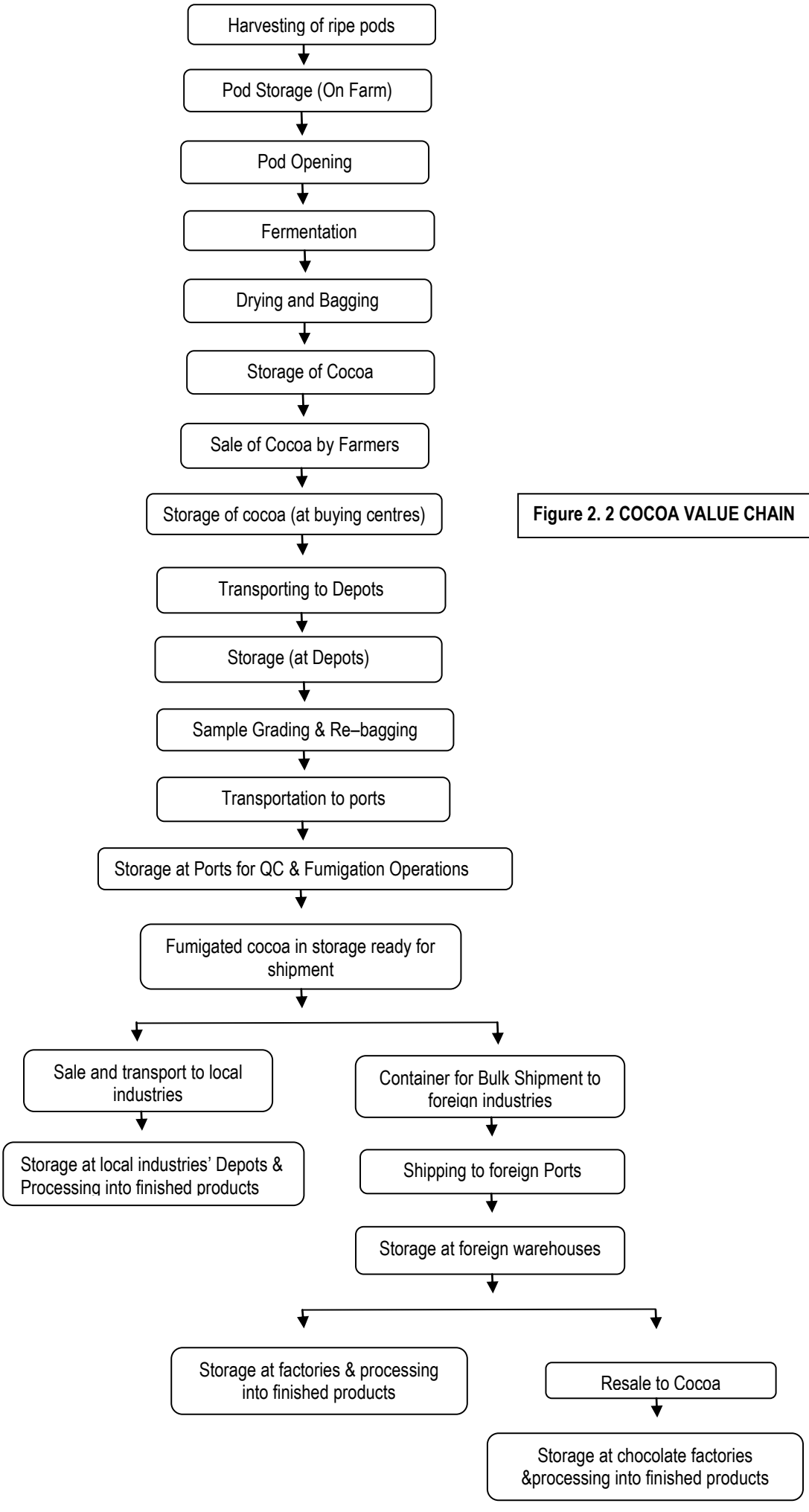

Figure 2. 2 COCOA VALUE CHAIN

APPENDIX II
LIST OF PARTICIPANTS

ARGENTINA
Argentina's Codex Contact Point
Argentina
E-mail: codex@minagri.gob.ar

BRAZIL
Lígia Lindner SCHREINER
E-mail: ligia.schreiner@anvisa.gov.br

CANADA
Carla HILTS
Chemical Health Hazard Assessment Division
Bureau of Chemical Safety, Food Directorate
Health Products and Food Branch
Health Canada
E-mail: Carla.hilts@hc-sc.gc.ca

COTE D'IVOIRE
Dr Narcisse EHOUSSOU
Président du Comité National du Codex Alimentarius (CNCA - CI) de Côte d'Ivoire
Président des Sous-Comité Additifs Alimentaires et Hygiène Alimentaire du Comité National du Codex Alimentarius.
Tel: 00 (225) 01 01 55 96
E-mail: narcehoussou@yahoo.fr

Prof. Dembele ARDJOUMA,
Responsable du Laboratoire d'Agrochimie et d'Ecotoxicologie (LANADA)
Président du sous comité Résidus des Médicaments Vétérinaires et des Résidus de pesticides, méthodes d'analyse et d'échantillonnage et des contaminants du Comité National du Codex Alimentarius.
Tel: 00 (225) 21 24.39 95 /
00 (225) 22 49 24 94
00 (225) 05 95 95 72
Fax: 00 (225) 20 22 71 17
E-Mail: labeco@aviso.ci ardjouma@yahoo.fr

M. Amari Raphael AGNEROH
Ingénieur Agroéconomiste (IA,M.Sc.)
Structure: Conseil Café- Cacao
Tel: (225) 07 83 87 84/20 20 29 48
Fax: 20 21 10 58
E-mail: agnero100@yahoo.fr
ragneroh@cgfcc.ci

Marcel KOUAKOU GOORE- BI
Ingénieur Agronome, Spécialiste en Protection des Végétaux
Ministère de l'Agriculture
Direction des Productions Vivrières et de la Sécurité Alimentaire
Conseiller Technique du Directeur
Tel: 00 (225) 01 58 03 20
00 (225) 06 35 92 52
E-mail: m.goorebi56@yahoo.fr

Fait à Abidjan le 31 juillet 2012
Secrétariat du Comité national du Codex Alimentarius Côte d'Ivoire
Tel: 00(225)20 22 24 81
E-mail: codexalimentariusci@yahoo.fr

CUBA
Lic. Carmen Garcia CALZADILLA
Licenciada en Ciencias Alimentarias
Instituto de Nutritción e Higiene de los Alimentos del Ministerio de Salud Pública de Cuba
E-mail: jfelix@ncnorma.cu

THE EUROPEAN UNION
Mr. Frans VERSTRAETE
European Commission
Health and Consumers Directorate – General
Tel: +32 – 2 – 295 63 59
E-mail: frans.verstraete@ec.europe.eu
codex@ec.europa.eu

GERMANY
Prof. Dr. Reinhard MATISSEK
Director, LCI - Lebensmittelchemisches Institut des Bundesverbandes der Deutschen Süßwarenindustrie e.V. in Bonn
Adamsstraße 52-54
51063 Köln
Germany
Tel: +49 (0) 221-62 30 61
Fax: +49 (0) 221-61 04 77
E-mail: Reinhard.Matissek@lci-koeln.de
beate.knuebben@lci-koeln.de

GHANA
Dr. Jemmy **TAKRAMA**
Principal Research Officer
Cocoa Research Institute of Ghana
Physiology and Biochemistry, Postbox 8
Tafo-Akim
Ghana
Tel: +233 2541395936
E-mail:takramax@yahoo.com

Dr. Kafui **KPODO**
Deputy Director
Food Research Institute
Council for Scientific & Industrial Research
P.O. Box M 20
Accra
Ghana
Tel: +233 244 650 635
E-mail: kafui@kpodo.net

Mr. Ebenezer Kofi **ESSEL**
Head, Food Inspectorate Department
Food and Drugs Board
Food Division
P.O. Box CT 2783 Cantonments
Accra
Ghana
Tel: +233 244 655 943
E-mail: kooduntu@yahoo.co.uk

Codex Contact Point
Ghana Standards Authority
P. O. Box MB 245
Accra
Ghana
Tel: +233 244 381 351
E-mail: codex@gsa.gov.gh

GREECE
Dr. Zoe Mousia
Head of Unit of Processed Food
Department of Enterprises Control
Central Service
Hellenic Food Authority (EFET)
124 Kifisias Ave
115 26, Athens
Greece
Tel: +30 210 6971 602
Fax: +30 210 6971 501
E-mail: zmousia@efet.gr

INDONESIA
Mrs. Tetty H. SIHOMBING
Director
Food Products Standardization
National Agency of Drug and Food Control
E-mail: tettyhelfery@yahoo.com
codexbpom@yahoo.com

JAPAN
Dr Takashi SUZUKI
Deputy Director
Standards and Evaluation Division,
Department of Food Safety,
Ministry of Health, Labour and Welfare
1-2-2 Kasumigaseki, Chiyoda-ku Tokyo 100-8916, Japan
Tel: +81-3-3595-2341
Fax: +81-3-3501-4868
E-mail: codexj@mhlw.go.jp

Mr Wataru IIZUKA
Assistant Director
Standards and Evaluation Division,
Department of Food Safety,
Ministry of Health, Labour and Welfare
1-2-2 Kasumigaseki, Chiyoda-ku Tokyo 100-8916, Japan
Tel: +81-3-3595-2341
Fax: +81-3-3501-4868
E-mail: codexj@mhlw.go.jp

Mr Ryo IWASE
Section Chief
Standards and Evaluation Division,
Department of Food Safety,
Ministry of Health, Labour and Welfare
1-2-2 Kasumigaseki, Chiyoda-ku Tokyo 100-8916, Japan
Tel: +81-3-3595-2341
Fax: +81-3-3501-4868
E-mail: codexj@mhlw.go.jp

Dr Yoshiko SUGITA-KONISHI
Director, Division of microbiology
National Institute of Health Sciences
1-18-1 Kamiyoga, Setagaya-ku, Tokyo 158-8501, Japan
Tel: +81-3-3700-9048
Fax: +81-3-3700-9049
E-mail: ykonishi@nihs.go.jp

Dr Tomoya YOSHINARI
Researcher, Division of microbiology
National Institute of Health Sciences
1-18-1 Kamiyoga, Setagaya-ku, Tokyo 158-8501, Japan
Tel: +81-3-3700-9407
Fax: +81-3-3700-9852
E-mail: t-yoshinari@nihs.go.jp

NIGERIA
Dr Abimbola O. ADEGBOYE
E-mail: adegboye.a@nafdac.gov.ng
bimbostica@yahoo.com

Codex Contact Point
Standards Organization of Nigeria
E-mail: codexng@sononline.org
bob_king_george@yahoo.com

PHILIPPINES
Karen Kristine ROSCOM
Chief Science Research Specialist
Standards Development Division, Bureau of Agriculture and Fisheries Product Standards,
Department of Agriculture – Philippines
BPI Compound, Visayas Ave. Diliman, Quezon City,
Philippines
Tel: +6324552858
Fax: +6329206131
E-mail: kroscom@yahoo.com

Mary Grace GABAYOYO
Food-Drug Regulation Officer III
Laboratory Services Division, Food and Drug Administration,
Department of Health - Philippines
Civic Drive, Filinvest Corporate City, Alabang, Muntinlupa City, Philippines
Tel: +6328571900 local 8201
Fax: +6328070751
E-mail: mggabayoyo@yahoo.com

THE RUSSIAN FEDERATION

Prof., Dr. Victor TUTELYAN
Director
Institute of Nutrition of Russian
Academy of Medical Science
E-mail: tutelyn@ion.ru

Dr. Lidiya KRAVCHENKO
Leading Research Associate
Institute of Nutrition of Russian
Academy of Medical Sciences
E-mail: Kravchenko@ion.ru

Dr. Irina SEDOVA
Senior Research Associate
Institute of Nutrition of Russian
Academy of Medical Sciences
E-mail: ISedova@ion.ru

SUDAN

Mr. Gaafar IBRAHIM
National Expert (Mycology),
Co-Chair National Codex Committee
Sudanese Standards & Metrology Organization
Khartoum
Sudan
Tel: +24912888440
E-mail: gaafaribrahim@yahoo.com

UNITED STATES

Henry KIM
U.S. Food and Drug Administration
Center for Food Safety and Applied Nutrition
5100 Paint Branch Parkway
College Park, MD 20740
E-mail: henry.kim@fda.hhs.gov

Kathleen D'OVIDIO
U.S. Food and Drug Administration
Center for Food Safety and Applied Nutrition
5100 Paint Branch Parkway
College Park, MD 20740
E-mail: kathleen.d'ovidio@fda.hhs.gov

VANUATU

Mr Baegeorge SWUA
E-mail: bswua@vanuatu.gov.vu

Mrs Emily TUMUKON
E-mail: vccp@vanuatu.gov.vu

INTERNATIONAL NON - GOVERNMENTAL ORGANISATIONS

Dr. Jack M. MAIA
International Council of Grocery Manufacturers Associations (ICGMA)
Head Delegate to CCFA and CCCF
Director, Science Policy – Chemical Safety
1650 I Street, NW, Suite 300,
Washington, D.C.,20005
Tel: 202-639-5922
202-285-6056
Fax: 202-639-5991
E-mail: mjack@gmaonline.org

Charlotte ter HAAR
Association of the Dutch Bakery and Confectionery Industry
Sir Winston Churchhilllaan 366 (20th), 2285, SJ Rijswijk, The Netherlands
Tel: + 31 (0)70-372 11 28 / (0)6 -206 094 25
E-mail: vbz@vbz.nl

Alice COSTA
Regulatory and Scientific Manager
Association of the Chocolate, Biscuit & Confectionery Industries of Europe (CAOBISCO)
Bd Saint Michel, 47 - 1040
Brussels (Belgium)
Tel: +32 (0) 499306155
E-mail: alice.costa@caobisco.be

Quintana SABINE
Quality System Manager and Cocoa Products Development Manager at GROUPE CEMOI CHOCOLATIER
Tel: +32 (4) 68857518
E-mail: s.quintana@cemoi.fr