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JOINT OFFICE: Viale delle Terme di Caracalla 00100 ROME Tel: 39 06 57051 www.codexalimentarius.net Email: codex@fao.org Facsimile: 39 06 5705 4593

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PROPOSED DRAFT REVISION OF THE CODE OF HYGIENIC PRACTICE FOR EGG PRODUCTS (CAC/RCP 15-1976 (AMENDED 1978, 1985))

Prepared by Australia with assistance of the USA and Asociacion Latino Americana de Avicultura (ALA)

BACKGROUND

The Thirty-third session of Codex Committee on Food Hygiene (CCFH) recalled that the 32nd Session of CCFH requested the Delegation of Australia to prepare a document on the priorities for the revision of Codex codes of hygienic practice which would include the identifying of: 1) which codes were superseded; and, 2) which codes could be combined. The Delegation of Australia introduced the document CX/FH 00/14, which was prepared with the assistance of its drafting partners. The Committee agreed that some codes of practice could be combined and revised on a commodity basis. Regarding the priority for the revision, while some delegations expressed their view on assigning higher priority to some codes that appeared on the priority list, the Committee generally recognized the necessity for revision of the Code of Hygienic Practice for Egg and Egg Products (the Code) due to the important public health aspects of the Code and the long period since its original development. The Committee agreed to start the revision of the Egg Products Code pending approval of the Commission. It was noted that the microbiological risk assessment on Salmonella in eggs and poultry to be finalized by FAO and WHO would be useful for the revision of the code. The Committee agreed that Australia, with the assistance of the United States and Asociacion Latino Americana de Avicultura (ALA) would prepare an initial document for consideration at the Thirty-fourth session of CCFH.

The revised Code needs to take into account the current range of egg products, egg production and egg processing systems in different countries and for different species of domesticated egg laying birds. Its requirements should be in the form of guidelines elaborated in full conformity with the Codex Procedures and with the participation of all Member countries.

Because of the extensive developments in egg products production and processing technology, the existence of a revised *Recommended International Code of Practice: General Principles of Food Hygiene* (including the HACCP Annex) which changes the Egg Products Code construct and content, and enhanced knowledge of pertinent food borne pathogens, a revised Egg Products Code is essentially a completely new Code. Hence, to provide the Committee with the greatest opportunity for thought and comment on the nature and content of a revised Code, this Background document has been prepared to begin work on the revision to the Code.

ISSUE

The eggs and egg products of domesticated birds are a major source of food for people in all countries and international trade of these products is significant. Additionally, domesticated chicken eggs and egg products are recognized as being a significant contributor to foodborne salmonellosis. Since the last revision of the egg code, *Salmonella Enteritidis* (SE) has emerged, in many countries, as the principal *Salmonella* serotype of concern.

Oviduct infection of eggs by SE was initially identified in duck eggs and SE has been shown to infect the oviducts of domesticated chickens, demonstrating at least the possibility that it could be identified as a hazard in other eggs from other domesticated birds. In addition SE can be a surface contaminant of eggs and may penetrate the shell and contaminate the egg contents under certain conditions. Domesticated chickens have been demonstrated to be carriers of SE. SE can be zoonotically spread to laying hens by feral animals such as birds and rodents, or by water or feed. SE is shed intermittently over irregular periods that are poorly defined. Hens that appear healthy are known to shed SE in and on their eggs. These factors make it difficult to consistently guarantee a flock to be free of infected hens that are capable of shedding SE into their eggs.

In addition to microbial hazards, residues of agricultural chemicals and mycotoxins, especially aflatoxins, need to be addressed in the Code. Egg products, therefore, warrant comprehensive food safety measures to control these hazards.

Egg and egg products (e.g. liquid, frozen and dried whole eggs, yolks, and whites, with or without added ingredients) are generally subjected to a bacteriocidal process or processes before consumption e.g., shell eggs are usually cooked during preparation at home, and processed eggs are pasteurised. These steps can render egg and egg products microbiologically safe, provided that the level of contamination of raw egg ingredients does not exceed the capacity of the processing and cooking steps to reduce the incidence of pathogens to a safe level. This accounts for the good safety history of egg products. However, eggs and egg products can be consumed without further heat treatment in products such as some desserts, sauces, salad dressings, and mayonnaise, or with a less than adequate heat treatment, as in the case of par boiled or lightly cooked eggs. Therefore, they can also be considered as ready-to-eat foods.

Additionally, processing does not significantly reduce chemical hazards, including natural toxins, and therefore it is important to minimise the likelihood of contamination at all stages of production and processing.

Current and future needs that would benefit from the development of a *Code of Hygienic Practice for Eggs and Egg Products* include:

- ensuring the safety of eggs and egg products;
- providing guidance in the safe production and processing of eggs and egg products to assist countries to enhance their capacity to produce safe and suitable eggs and egg products; and
- facilitating free trade of eggs and egg products derived from domesticated chickens.

There are divergent views in regard to achieving product safety in the production, processing, and marketing of eggs and egg products. In all approaches, the measures taken are combinations of various safeguard and control measures applied through the production and processing chain. The most common approaches for ensuring that eggs are safe and free from microbial and chemical contaminants include:

On-Farm: On-farm biosecurity, feed and water control, rodent control, effective cleaning and disinfection practices, and good animal husbandry and pest management practices;

Eggs in Shell: Temperature control, restriction of shelf-life, and the use of packaging and transport conditions which prevent damage and protect eggs from chemical contamination;
and

Processing: Pasteurization is the most commonly used basic technology in combination with Good Manufacturing Practices (GMPs) to ensure product safety for egg products. Alternative approaches, including new technologies, may also be used provided that they are scientifically validated to ensure that they provide an appropriate level of public health protection.

Egg products are also prone to processing and post-processing contamination that can negate the effects of on-farm and processing measures for managing food safety hazards. Therefore, special care must be taken in handling, packaging, storing and distributing egg products to avoid contamination with secondary hazards, including pathogens and chemical hazards such as pesticides and processing chemicals.

ELEMENTS OF THE CODE

Attached as an Appendix to this paper is a detailed outline of elements that are recommended for inclusion in the proposed International Code of Hygienic Practice for Eggs and Egg Products, using headings and order of the GPFH.

The Appendix is a framework to assist the development of the proposed Code and is intended as an example of how the elements discussed below could be addressed. There is no requirement to use the exact same titles as in the Codex General Principles of Food Hygiene nor a need to reference headings if they do not occur in the proposed egg Code.

Scope

The Scope of the Draft revised Code is proposed to include all eggs and egg products of domesticated birds including eggs in shell, and all pasteurized egg products (liquid, frozen, and dried whole eggs, yolks, and whites, with or without added ingredients) and egg substitutes. The proposed Code should also cover new and emerging products and processing technologies that could include, for example, scrambled egg mix and extended shelf life boiled eggs and in-shell pasteurized eggs.

Format

The draft revised Code will only contain material additional to the GPFH, which is necessary to take into account the particular requirements for managing food safety hazards of egg and egg products, and must be read in conjunction with the GPFH.

As in the case of the GPFH, other appropriate Codex documents will be referenced for horizontal requirements such as pesticide residues, veterinary drug residues, chemical contaminants, etc.

Content

The following stepwise approach is proposed for identifying the contents of the draft revised Code:

1. Undertake a hazard analysis on the production of eggs and egg products and identify the hazards and control measures which apply at each step of the production and processing steps for eggs;
2. Evaluate the relevant provisions of the GPFH to assess whether these adequately address the hazards identified at step 1 above;
3. Develop the Code by calling up, by reference, the requirements of the GPFH, and where these requirements do not adequately address the hazards identified at step 1 above, formulating specific provisions which are necessary to manage the identified hazard(s).

This approach would be especially useful to define the aim of each of the sections of the Code in terms of the hazards that the requirements within that section are designed to address.

RECOMMENDATIONS

The Delegation of Australia, together with its drafting partners has prepared this background paper and Appendix. The Appendix outlines a proposed scope and format of a draft code and also presents a possible structure based on the *Recommended International Code of Practice: General Principles of Food Hygiene* (CAC/RCP 1- 1969, Rev. 3 (1997)).

It is suggested that the Committee agrees at its 34th Session to the recommended approach for preparing the Revised Code and endorses the outline for the Code in the Appendix to this background paper.

APPENDIX

NOTE: This appendix is intended as an example of a framework to assist in the development of the proposed egg Code. There is no requirement to use the exact same titles as the Codex General Principles of Food Hygiene nor a need to reference headings if they do not occur in the revised Code.

**PROPOSED DRAFT REVISION OF THE RECOMMENDED INTERNATIONAL CODE
OF PRACTICE FOR EGG PRODUCTS (CAC/RCP 15-1976, Amended 1978, 1985)**

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INTRODUCTION

The controls described in this Proposed Draft International Code of Hygienic Practice for Eggs and Egg Products have been identified as necessary to ensure the safety of eggs and egg products. A hazard analysis approach was used to assist in determining the controls presented in this Code. The Code is based on the *Recommended International Code of Practice: General Principles of Food Hygiene* (CAC/RCP 1-1969, Rev. 3 (1997)) (GPFH). For each section of this Code where no additional requirements to those contained in the GPFH are needed, it is so noted. Likewise, for those sections of this Code that require specific food safety requirements beyond those contained in the GPFH due to specific commodity characteristics, the specific requirements are detailed.

The code is formatted in accordance with the GPFH, which must be consulted in the use of this Code, as those hygienic requirements are a prerequisite to the specific requirements of the individual food hygiene requirements given in this code. The code also references other Codex Standards, Codes or Guidelines, such as the labelling standards and the Codex Code of Hygienic Practice for the Transport of Foods in Bulk and Semi-Packed Food, when they apply to the hygienic production of eggs and egg products.

This Code of Hygienic Practice for Eggs and Egg Products takes into consideration, to the extent possible, the differing egg and egg product production and processing procedures used by countries. This code focuses primarily on domesticated chickens used for egg production, but also considers the differing characteristics, when those differences are important to the hygienic practices used, for eggs produced from all domesticated egg producing birds.

SECTION I - OBJECTIVES

It is the objective of this Code to ensure the safety of the egg and egg products. Different approaches exist with regard to achieving this objective. In all approaches, the measures taken are combinations of various safeguard measures that provide an *acceptable level of protection*. This code has been written in an outcome-focused manner to allow for various measures and technologies to be used provided that their capacity to provide an acceptable level of protection is established by validation. For example, pasteurization is a common basic technology in combination with GMPs to ensure product safety although alternatives safeguards (approaches) may be used provided that the appropriate level of public health protection is obtained and is scientifically validated.

This document describes specific hygienic and other food safety considerations associated with the technological production and processing practices covered by this Code, including the application of HACCP principles and prerequisite programs. It will be noted that when generic HACCP programs are used, they must be tailored or customized to the particular production unit or factory.

SECTION II - SCOPE, USE AND DEFINITION

2.1 SCOPE

This Code applies to the production and processing of eggs in shell and egg products. The products within the scope of the Code include raw eggs in shell (i.e. eggs in shell), eggs pasteurized in the shell, irradiated eggs, pasteurized egg products (liquid, frozen and dried whole eggs, yolks, and whites, with or without added ingredients) and other products covered by the definition of an egg product, intended for direct consumption, as ingredients, or for further processing.

2.2 USE

This proposed Code is intended to be used in combination with the *Recommended International Code of Practice: General Principles of Food Hygiene* (CAC/RCP 1-1969, Rev. 3 (1997)) whose paragraph numbers and section headings it maintains.

2.3 DEFINITIONS

To be determined, but are proposed to include the following:

Eggs / Eggs in shell

Egg products

Pasteurization

Pulping/crushing

Breaking

Poultry

Domesticated chickens

Acceptable Level of Protection

SECTION III - PRIMARY PRODUCTION

These guidelines are supplemental to those set forth in Section 3 of the *Recommended International Code of Practice: General Principles of Food Hygiene* (CAC/RCP 1-1969, Rev. 3 (1997)).

3.1 ENVIRONMENTAL HYGIENE

3.2 HYGIENIC PRODUCTION OF EGGS

To include provisions for small egg producers and/or those using simplified equipment and provisions where applicable for poultry other than chickens.

3.2.1 *Premises for egg production*

3.2.1.1 Flock health

3.2.1.2 Layer housing

3.2.1.3 Egg collection system

3.2.1.4 Egg storage and refrigeration prior to packing

3.2.2 *Hygienic egg production practice*

3.2.2.1 Feeding

3.2.2.2 Vermin

3.2.2.3 Agricultural chemicals

3.2.2.4 Sanitation of egg collection system

3.2.2.5 Cleaning and disinfection of houses

3.2.2.6 Personal hygiene of egg handlers

3.2.2.7 Use of vaccines in egg production

3.3 HANDLING, STORAGE AND TRANSPORT OF EGGS PRIOR TO PACKING

3.3.1 Egg handling equipment

3.3.2 Storage of eggs prior to packing

3.3.3 Collection equipment for eggs

3.3.4 Collection procedure

3.3.5 Holding time and temperature prior to packing

3.3.6 Cleaning and disinfection

3.3.7 Egg haulers (driver or individual in charge of transport to packing facility)

3.3.7.1 Personal Hygiene

3.3.7.2 Behavior at the farm

3.3.7.3 Behavior when transferring eggs

3.3.8 Condition of eggs destined for packing or processing establishment

3.3.8.1 Time from collection to delivery

3.3.8.2 Temperature of eggs

3.4 CLEANING, MAINTENANCE, AND PERSONAL HYGIENE AT PRIMARY PRODUCTION

To include provisions for small egg producers and/or those using simplified equipment and provisions, where applicable, for poultry other than chickens.

3.4.1 Laying houses and associated areas managed in neat and tidy fashion

3.4.2 Personnel clean and in good health

SECTION IV - ESTABLISHMENT: DESIGN AND FACILITIES

No specific requirements beyond those made in Section 4 of the *Recommended International Code of Practice: General Principles of Food Hygiene* (CAC/RCP 1-1969, Rev. 3 (1997)) are needed.

SECTION V - CONTROL OF OPERATION

These guidelines are supplemental to those set forth in Section 5 of the *Recommended International Code of Practice: General Principles of Food Hygiene* (CAC/RCP 1-1969, Rev. 3 (1997)).

5.1 CONTROL OF FOOD HAZARDS

Food business operators should control food hazards to ensure the safety of the end product. Different approaches exist with regard to achieving this objective. In all approaches, measures

taken are combinations of various safeguard measures. Pasteurization is the most commonly used basic technology in combination with GMPs to ensure product safety for egg products. Alternative safeguards (approaches) may be used provided that a level of public health protection equivalent to pasteurization is obtained and scientifically validated. Specification to obtain eggs from laying flocks free of SE, diverting high risk eggs from SE positive flocks to egg products facilities, removing inedible and restricted eggs from the table egg market, controlling outgrowth of pathogens throughout handling and distribution channels, and egg handler education on proper storage handling methods are the approaches used to ensure risk management for eggs during packing and egg products processing.

5.2 KEY ASPECTS OF HYGIENE CONTROL SYSTEMS

5.2.1 Time and temperature control

5.2.2 Specific process steps

5.2.2.1 Egg products pasteurization

5.2.2.1.1 Product specific pasteurization requirements

5.2.2.1.2 Monitoring the pasteurizer

5.2.2.2 Alternative methods (irradiation, in-shell pasteurization)

5.2.2.3 Egg cleaning prior to packing or breaking

5.2.2.3.1 Methods for removing surface contamination

5.2.2.3.1.1 Wet cleaning

5.2.2.3.1.2 Dry cleaning

5.2.2.3.1.3 No cleaning (sorting to remove contaminated eggs)

5.2.2.4 Methods of breaking

5.2.2.4.1 Hand breaking

5.2.2.4.2 Machine breaking

5.2.2.4.3 Pulping/crushing

5.2.3 Microbiological and other specifications

Microbiological criteria shall be established in accordance with the *Principles for the Establishment and Application of Microbiological Criteria for Foods* (CAC/GL 21-1997) including the use of a Risk Assessment approach.

5.2.3.1 Acceptance criteria for eggs to be broken to make egg products**5.2.3.1.1 Microbiological criteria****5.2.3.1.2 Criteria for drug and pesticide residues****5.2.3.1.3 Criteria for external contamination****5.2.3.1.4 Other criteria (date of lay, storage conditions, SE status of flock)****5.2.3.2 Microbiological end product specifications for egg products****5.2.3.3 Acceptance criteria for eggs to be packaged as shell eggs****5.2.3.3.1 Microbiological criteria****5.2.3.3.1.1 Untreated eggs****5.2.3.3.1.2 Pasteurized eggs****5.2.3.3.1.3 Irradiated eggs****5.2.3.3.2 Criteria for drug and pesticide residues, and aflatoxins****5.2.3.3.3 Criteria for external contamination****5.2.3.3.4 Other criteria (date of lay, storage conditions, SE status of flock)****5.2.3.4 Microbiological end product specifications for eggs****5.2.4 *Microbiological cross-contamination*****5.3 INCOMING MATERIAL REQUIREMENTS**

Inedible eggs and eggs beyond a specified period of time since the date of lay are not eligible for use in egg products manufacture.

5.4 PACKAGING**5.5 WATER**

5.5.1 This section should address the appropriate uses of recycled water in addition to those covered in the *Recommended International Code of Practice: General Principles of Food Hygiene* (CAC/RCP 1-1969, Rev. 3 (1997)) and the *Proposed Draft Guidelines for the Hygienic Reuse of Processing Water in Food Plants* (document in progress).

SECTION VI - ESTABLISHMENT: MAINTENANCE AND SANITATION

These guidelines are supplemental to those set forth in Section 5 of the *Recommended International Code of Practice: General Principles of Food Hygiene* (CAC/RCP 1-1969, Rev. 3 (1997)).

6.1 GENERAL

This section should address the importance of cleaning in egg packing facilities, considering the barrier provided by the egg shell, relative to that of egg products manufacturing facilities, where the product being handled is an exposed raw product.

6.2 CLEANING PROGRAMMES

This section should address alternate of extended cleaning programs for electronic equipment not suited to wet cleaning and define a performance objective to be met.

SECTION VII - ESTABLISHMENT: PERSONAL HYGIENE

No specific requirements beyond those made in Section 7 of the *Recommended International Code of Practice: General Principles of Food Hygiene* (CAC/RCP 1-1969, Rev. 3 (1997)).

SECTION VIII - TRANSPORTATION

These guidelines are supplemental to those set forth in Section 8 of the *Recommended International Code of Practice: General Principles of Food Hygiene* (CAC/RCP 1-1969, Rev. 3 (1997)).

SECTION IX – PRODUCT INFORMATION AND CONSUMER AWARENESS

These guidelines are supplemental to those set forth in Section 9 *Recommended International Code of Practice: General Principles of Food Hygiene* (CAC/RCP 1-1969, Rev. 3 (1997)).

9.1 LOT IDENTIFICATION

Labeling and record keeping to enable traceback of eggs and egg products to the farm of origin to enable food recalls, and to implement other emergency actions and corrective programs.

SECTION X - TRAINING

No specific requirements beyond those made in Section 10 *Recommended International Code of Practice: General Principles of Food Hygiene* (CAC/RCP 1-1969, Rev. 3 (1997)).