codex alimentarius commission

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

WORLD HEALTH ORGANIZATION

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JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON FOOD HYGIENE

Thirty-sixth Session
Washington DC, United States of America, 29 March – 3 April 2004

PROPOSED DRAFT REVISED CODE OF HYGIENIC PRACTICE FOR EGGS AND EGG PRODUCTS (CAC/RCP 15-1976) (At Step 3 of the Procedure)

Prepared by Australia with assistance of Belgium, Brazil, Canada, India, the Netherlands, New Zealand, Spain, the United Kingdom, the United States, ALA and the EC

Governments and interested international organizations are invited to submit comments on the attached Draft Code at Step 3 (see Appendix) and should do so in writing in conformity with the Uniform Procedure for the Elaboration of Codex Standards and Related Texts (see *Procedural Manual of the Codex Alimentarius Commission, Twelfth Edition,* pages 19-20) **to**: Mr S. Amjad Ali, Staff Officer, Food Safety and Inspection Service, U.S. Department of Agriculture, Room 4861, 1400 Independence Avenue, SW, Washington, D.C. 20250, USA, FAX +1-202-720-3157, or email syed.ali@fsis.usda.gov with a copy **to**: Secretary, Codex Alimentarius Commission, Joint WHO/FAO Food Standards Programme, FAO, Viale delle Terme di Caracalla, 00100 Rome, Italy, by email codex@fao.org or fax: +39-06-5705-4593 **by February 1, 2004.**

Background

The Codex Committee on Food Hygiene (CCFH), at its 32nd (2000) 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for the revision of Codex codes of hygienic practice which would include the identifying of: 1) which codes were superseded; and, 2) which codes could be combined.

At the 33rd session of CCFH, 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. Subsequently CCFH agreed to revise the Code of Hygienic Practice for Egg Products (the Code), pending the approval of the Commission. The 49th Session of the Executive Committee approved the revision as new work.

The Committee recognized the necessity for revision of the Code due to the important public health aspects of the Code and the long period since its original development. 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 34th session of CCFH.

At the 34th Session[1] of CCFH, Australia on behalf of its drafting partners presented a paper proposing a strategy for the revision of the Code. The paper detailed an outline of elements that were recommended for inclusion in the revised Code, based on the *Recommended International Code of Practice: General Principles of Food Hygiene* (GPFH). The Committee agreed that the revised Code should include eggs in shell in addition to egg products. The Committee also agreed to the general approach in the framework document and returned the document to Step 2 for revision by Australia with the assistance of its drafting partners.

Following discussions, comments submitted and suggestions at the 35th Session of the CCFH, the revised proposed Draft Code of Hygienic Practice for Eggs and Egg Products (CAC/RCP 15-1976) is attached (see Appendix).

[1] ALINORM 03/13, paragraphs 152-157

Appendix

PROPOSED DRAFT REVISED CODE OF HYGIENIC PRACTICE FOR EGGS AND EGG PRODUCTS (CAC/RCP 15-1976) (At Step 3 of the Procedure)

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INTRODUCTION

The controls described in this Draft International Code of Hygienic Practice for Eggs and Egg Products are designed for the safe production of eggs and egg products. The Code supersedes the Codex Code of Hygienic Practice for Egg Products (CAC/RCP 15-1976, as amended in 1978 and 1985). A hazard analysis approach was used to assist in determining the controls presented in this Code. Three joint FAO/WHO documents were used to provide a risk-based foundation for the revised Code.

- Risk characterization of *Salmonella* spp. in eggs and broiler chickens and *Listeria monocytogenes* in ready-to-eat foods, Joint FAO/WHO Expert Consultation on Risk Assessment of Microbiological Hazards in Foods, FAO Headquarters, Rome, Italy 30 April – 4 May 2001, which considered the following two preliminary reports;
- Hazard Identification and Hazard Characterization of Salmonella in broilers and eggs, Joint FAO/WHO Activities on Risk Assessment of Microbiological Hazards in Foods, Risk Assessment: *Salmonella* spp. In broilers and eggs (MRA 00/03 preliminary report July 2000);
- Exposure assessment of *Salmonella Enteritidis* (*SE*) in eggs, Joint FAO/WHO Activities on Risk Assessment of Microbiological Hazards in Foods, Risk Assessment: *Salmonella* spp. In broilers and eggs (MRA 00/04 preliminary report July 2000).

This Code of Hygienic Practice for Eggs and Egg Products takes into consideration, to the extent possible, the differing egg and egg product production systems 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 species. Therefore, the code is, of necessity, a flexible one to allow for different systems of control and prevention of contamination for eggs and egg products.

1 OBJECTIVES

The objective of this Code is to ensure the safety of eggs and egg products by applying the recommendations of the Recommended Code of Practice: General Principles of Food Hygiene to the particular case of eggs and egg products. The document describes the specific considerations for food hygiene and safety associated with all methods of production and processing of eggs and egg products, including the adequate measures for small producers and processors of eggs and egg products.

2 SCOPE AND USE OF THE DOCUMENT

2.1 SCOPE

This Code is about the hygienic production and processing of eggs and egg products of domesticated birds, intended for human consumption. It is relevant to all egg producers and processors, regardless of size.

This Code addresses the two main sources of contamination of eggs:

1. internally during egg formation, and

2. externally, at any point at or after laying.

It takes into consideration the possibility of illness in the general population due to the consumption of eggs or egg products contaminated by *Salmonella* species, other enteric pathogens or other contaminants, as well as the susceptibility to illness of sectors of the population such as the elderly, children, and immunocompromised individuals. For microbiological contamination, this approach is consistent with the approach identified by the Joint FAO/WHO Expert Consultation on Risk Assessment of Microbiological Hazards in Foods[1].

This Code applies to products in international trade. It may also serve as a basis for national legislation.

2.2 USE OF THE DOCUMENT

The provisions of this document are supplemental to and should be used in conjunction with, the *Recommended International Code of Practice-General Principles of Food Hygiene*, CAC/RCP 1- 1969, Rev. 3, 1997.

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 document consists of a series of principles, explanatory narratives and guidelines.

Principles, shown in **bold text**, are a statement of the goal or objective that is to be achieved. *Explanatory narratives*, shown in *italicized text*, serve to explain the purpose of the stated principle. Additional information to assist in the application of the stated principle is shown in normal text.

Principles that are applicable to all phases of production, processing and handling of eggs and egg products are given in Section 2.3.

Recognition of the Production and Processing of Eggs by Small-Scale/Less Developed Egg Producers/Business

In the context of this Code, the expression "small-scale egg producer" refers to production systems based on the number of birds[2], or where automated collecting and sorting machines are not generally used, or where water and other requirements are in poor supply thus limiting the number of birds that can be kept. The maximum number of birds permitted in small-scale establishments may be set down in national legislation, Codes of Practice or other guidelines.

Flexibility in the application of these requirements in this code may apply to less developed egg producers, i.e. those producers with larger flocks that have less developed systems, and/or economic, water and/or power supply constraints, preventing investment in modern grading and packaging processes and infrastructure.

Flexibility in the application of requirements on the primary production of eggs by small-scale and/or less developed egg producers can be exercised, where necessary. However, any microbiological or other control measures used should be sufficient to obtain a safe and suitable egg product.

Such flexibility is indicated throughout the Code by the use of a parenthetical statement "where practicable" placed next to the particular provision where the flexibility is needed.

2.3 PRINCIPLES APPLYING TO THE PRODUCTION, HANDLING AND PROCESSING OF ALL EGGS AND EGG PRODUCTS

The following principles should apply, where appropriate and practicably applicable, to the production, handling and processing of all eggs and egg products.

- **From primary production to the point of consumption, regardless of size of the operation, eggs and egg products produced under this Code should be subject to control measures shown to achieve the appropriate level of public health protection.**

  The code is aimed at encouraging the safe production of eggs and egg products for human consumption, and gives relevant guidance to producers and processors, large and small, on the application of control measures. It recognizes that there is a continuum of effective effort or controls, which should be applied, by primary producers in addition to processors, in assuring the safety and suitability of eggs and egg products.

[2] These production systems have small numbers of birds.

- **Good hygienic practices should be identified during primary production, egg preparation and egg processing. Such practices should be applied throughout the food production chain so that eggs and egg products are safe and suitable for their intended use.**

  Both the relationship and impact of one part of the food production chain on another part should be identified to ensure that potential gaps in the continuum are dealt with through communication and interaction between the egg producer, the processor and others in the chain.

  No part of this Code should be used without consideration of what takes place in the production chain prior to the particular measure being applied or what will take place subsequent to a particular step. The Code should only be used within the context of an understanding that there is a continuum of controls that are applied from breeding the laying flock and sourcing of the laying flock to consumption of the end product.

- **Wherever appropriate, hygienic practices for eggs and egg products should be implemented within the context of HACCP as described in the Annex to the *Recommended International Code of Practice – General Principles of Food Hygiene.***

  There should be an understanding of the hazards associated with eggs, at each stage in egg production, handling, grading, packaging, transporting and processing so as to minimize contamination. It is principally the responsibility of the producer, where practicable, to conduct a hazard analysis within the context of developing a control system based on HACCP and thus to identify and control hazards associated with flock management and egg production. Similarly it is principally the responsibility of the processor to conduct a hazard analysis to identify and control hazards associated with egg processing.

  This principle is presented with the recognition that there are limitations to the full application of HACCP principles at the primary production level of eggs. In the case where HACCP is not implemented at the producer level, good hygienic, agricultural and animal husbandry practices should be followed.

- **Control measures should be effective and validated, where practicable.**

  The overall effectiveness of the control measures should be validated according to the prevalence of hazards in the egg, taking into consideration the characteristics of the individual hazards(s) of concern and established [Food Safety Objectives]. Guidance on validating control measures should be obtained from the Codex Guidelines for the Validation of Food Hygiene Control Measures *(under development).*

2.4 RELATIVE ROLES OF EGG PRODUCERS, PROCESSORS AND TRANSPORTERS

All parties involved in the egg production continuum share responsibility for food safety. This can include those involved in primary production, handling, grading, packaging processing, supplying, distributing and commercial and domestic cooking of eggs and egg products for human consumption. In order to achieve this common goal, respective parties should pay attention to the following responsibilities:

- Good communication and interaction should exist between egg producers, processors and others in the chain so that an effective continuum of controls from breeding of the laying flock to production to consumption is maintained. This can help to ensure that appropriate and complementary hygiene practices are applied at each stage of the chain and that appropriate and timely action is taken to resolve any food safety problems that may arise.
- Primary producers should apply good hygienic and agricultural animal husbandry practices consistent with food safety, and adapt their operations as appropriate and practicable to meet any specifications for specific hygiene controls to be applied and/or any standards to be achieved as may be agreed by the processor.
- Processors should follow good manufacturing and good hygienic practices, especially those presented in this Code and in the *Recommended International Code of Practice: General Principles of Food*

Hygiene (CAC/RCP 1-1969, Rev. 3 (1997)). The processor may have to implement controls, or adapt their manufacturing processes, based on the ability of the egg producer to minimize or prevent hazards associated with the eggs.

- Producers and/or processors should communicate any recommendations for safe handling and storage of eggs and egg products during distribution and transportation, and their subsequent use by food businesses.
- Distributors and transporters should assure that eggs and egg products under their control are handled and stored properly and according to the producers and/or processors instructions.
- Information to consumers should include advice on safe handling and storage of eggs.

2.5 DEFINITIONS

Definitions of general expressions are included in the General Principles of Food Hygiene. For the purpose of this code, the following terms have the definition stated:

[*Appropriate level of protection*]

Breaking – *the process of intentionally cracking the egg shell and separating its pieces to remove the egg contents*[3].

Breeding flock - *a group of birds kept for the purpose of production of the laying flock.*

Broken/leaker eggs – *eggs showing breaks of both the shell and the membranes, resulting in the exposure of their contents.*

***[*Collection and handling** – *the stage after primary production that prepares the egg for either the table market or for processing into egg products. This may include washing, cleaning, selection, treatment, grading, packaging, storing and distribution of eggs and may be done wholly or in part, by the producer, the processor or others involved in egg preparation.]*

Cracked eggs – *eggs with a damaged shell, but with intact membranes.*

Domesticated birds – *members of the Class Aves that are managed for the production of eggs intended for human consumption.*

Egg – *the ovum in the shell produced by domesticated birds and intended for human consumption, other than eggs that have been in an incubator or those treated to change the functional properties.*[4] **Egg laying establishment** – *the facilities and the surrounding area where primary production of eggs takes place.*

Egg product –*all, or a portion of, the contents found inside eggs separated from the shell, as well as raw or pasteurised liquid, frozen and dried whole eggs, yolks, and whites, with or without added ingredients, intended for human consumption.*[5]

[Free range foraging]

Incubator eggs – *eggs that have been set in an incubator.*

Laying - *is the exit to the exterior or expulsion of the egg through the cloaca of domesticated birds, which were formed in their reproductive tract.*

Laying flock- *a group of domesticated birds kept for the purpose of production of eggs for human consumption.*

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[3] Spanish translation note: recommend 'cascado' to refer to breaking; Mexico previously recommended Rotura/Breaking to Quebrado

[4] *Query Spanish translation: Mexican comment to change text for correct Spanish translation (CX/FH 03/10-Add.1)*

[5] Query Spanish translation: delete *se entiende como establecimiento de postura*

Microorganisms – *include yeasts, moulds, bacteria, viruses and parasites. When used as an adjective, the term "microbial" is used.*

Packing – *putting eggs or egg products in packaging*

*[***Pasteurization** - *a microbiocidal control measure where eggs or egg products are subjected to a process, using heat or other treatment, to reduce the load of pathogenic microorganisms to an acceptable level to ensure safety[, taking account of the intended use of the egg or egg product].]*

Potable water – *water that meets the quality standards for drinking water such as described in the WHO Guidelines for Drinking Water Quality.*

Producer – *the person responsible for the management of domesticated birds for the production of eggs for human consumption and/or the person responsible for handling eggs and delivering them to the grading and packaging establishment.*

2.6 SUITABILITY

No specific requirements beyond those made in Section 2.3 of the *Recommended International Code of Practice: General Principles of Food Hygiene* (CAC/RCP 1-1969, Rev. 3 (1997)) are needed.

3 PRIMARY PRODUCTION

It is recognised that some of the provisions in this Code may be difficult to implement in areas where primary production is conducted in small holdings in both developed and developing countries and also in areas where traditional farming is practised. Therefore, the Code is, of necessity, a flexible one to allow for different systems of control and prevention of contamination of eggs during primary production.

These principles and narratives supplement those contained in Section 3 of the *Recommended International Code of Practice-General Principles of Food Hygiene,* CAC/RCP 1 - 1969, Rev. 3, 1997 and the general principles presented in Section 2.3 above.

Primary production activities can significantly impact on the safety of eggs and egg products. Bacterial contamination of eggs can occur during formation, thus the practices used at this phase of production are a key factor in reducing the potential for microorganisms to be present in or on eggs.

It is recognised that microbiological hazards can be introduced both from the primary production environment and from the breeding and laying flocks themselves. Pathogens such as Salmonella Enteritidis can be transmitted vertically from breeder flocks to commercial laying flocks, and horizontally from other layers, feed and environment and hence to eggs. Importantly, the presence of Salmonella in the laying and/or breeding flock increases the possibility of Salmonella in the egg.

Thus the preventative role of good hygienic and agricultural practice in the primary production of eggs is critically important. Appropriate animal husbandry practices should be respected and care should be taken to assure that proper health of the breeding and laying flocks is maintained. Further, lack of good agricultural, animal feeding and veterinary practices and inadequate general hygiene by personnel and equipment during egg handling, and/or collection may lead to unacceptable levels of bacterial and other contamination (such as physical and chemical) during primary production.

The focus for primary producers is to reduce the likelihood that such hazards will occur during the primary production phase of the continuum. Likewise, in certain primary production situations, the occurrence of food safety hazards may be less avoidable which may result in the application of more stringent control measures during subsequent processing in order to ensure that safety and suitability of the finished product. The degree to which primary production practices control the likelihood of occurrence of a food safety hazard in or on eggs will have an impact on the nature of controls needed during the subsequent processing of egg.

Contamination of eggs from personnel, animal and environmental sources during primary production should be minimized.

Producers should obtain domesticated birds from breeding stock that have been subject to control measures to reduce and, if possible eliminate, the risk of introducing poultry diseases and pathogenic organisms transmissible to humans into laying flocks. The breeding flock should be subject to a programme to monitor the effect of the control measures.

Laying flock management is key to safe primary production of eggs. Laying flocks are managed under a wide range of climatic conditions using various agricultural inputs and technologies, and on farms of various sizes. Hazards may vary between one type of production system and another. In each egg laying establishment, it is necessary to consider the particular agricultural practices that promote the safe production of eggs, the type of products (e.g., unsorted eggs, eggs for table egg market, eggs strictly for breaking) and production methods used.

The microbial load of eggs should be as low as achievable, using good egg production practices, taking into account the requirements for subsequent processing. Measures should be implemented at the primary production level to reduce the initial load of pathogenic microorganisms and microorganisms affecting suitability to the extent possible to provide for a greater margin of safety and/or to prepare the eggs in a way that permits the application of microbiological control measures of lesser effectiveness than might otherwise be needed to assure product safety and suitability.

3.1 ENVIRONMENTAL HYGIENE

The egg laying establishment should be appropriate for the primary production of eggs such that sources of potentially harmful substances are minimized and are not present at unacceptable levels in or on eggs.

Potential sources of contamination from the egg laying establishment including the immediate environment should be identified. This could include contamination associated with previous uses of the land, presence of contaminants, polluted surface and drinking water, potential microbial and chemical hazards from contamination by faeces, other organic waste and the environment that could be introduced into the egg laying establishment. Where possible, producers should evaluate the previous use of the egg laying establishment (indoor and outdoor) in order to identify hazards. This is particularly relevant in the case of free range foraging of domesticated birds.

Primary production should not be carried out in areas where the presence of potentially harmful substances would lead to an unacceptable level of such substances in or on eggs. The potential for contamination from, for example, agricultural chemicals, hazardous wastes, etc. should be considered.

The evaluation process should include the following:

- Identification of previous and present usage of the primary production area and the adjoining sites to determine potential microbial, chemical and physical hazards and from contamination by faeces, other organic waste and the environment, that could be introduced into the egg laying establishment.
- Site uses of concern can include crops grown, feed lot, animal production, hazardous waste site, sewage treatment site, and mining extraction site.
- Identification of points of access to the site by domesticated and wild animals, including access to water sources used in primary production, to determine potential faecal and other contamination of the soils and water and the likelihood of contamination of eggs.
- Existing practices should be reviewed to assess the prevalence and likelihood of uncontrolled deposits of animal faeces coming into contact with eggs.
- Domestic and wild animals, including wild birds should be excluded from egg laying establishments, as far as possible.

- Identification of the potential for contamination of egg laying establishments by leaking, leaching or overflowing manure storage sites and flooding from polluted surface waters.

If previous uses cannot be identified, or the evaluation leads to the conclusion that hazards exist, the sites should be analysed for contaminants of concern. Additionally, periodic monitoring of the environment and forage, and judicious selection and use of natural fertilizers and agricultural chemicals should also occur.

If contaminants are present at levels which would result in the egg or egg product being harmful to human health, and corrective or preventive actions have not been taken to minimize identified hazards, the sites should not be used until correction/control measures have been applied.

Care should be taken to minimize access to contaminated water or to environmental contaminants to the extent practicable for the laying system in use in order to avoid diseases transmissible to birds or to humans or the likelihood of contamination of eggs.

3.2 HYGIENIC PRODUCTION OF EGGS

Provisions in this section are equally relevant for small-scale egg producers and/or those using simple equipment.

3.2.1 Flock Management and Animal Health

Eggs should come from flocks (both breeding and laying) in good health so that flock health does not adversely affect the safety and suitability of the eggs.

Good animal husbandry practices should be used to help maintain flock health and resistance to colonization by pathogenic organisms. These practices should include timely treatment for parasites, minimizing stress through proper management of human access and environmental conditions and use of appropriate preventive measures for example, veterinary medicines and vaccines.

The *SE* Risk assessment has shown that reducing the prevalence of *SE* infected flocks is anticipated to result in a reduction in the risk of human illness from the consumption of *SE* positive eggs[6].

Flock management is critical in reducing the risk of human illness from the consumption of eggs. Good husbandry practices should also be used to reduce the likelihood of pathogens (i.e. avian disease) and thus reduce the use of veterinary drugs. Where drug treatment of diseased birds or flocks occurs, its use should be appropriate. In particular, measures to prevent disease include:

- Evaluating the health status of domesticated birds relative to avian diseases and colonization by pathogenic organisms transmissible to humans and taking action to ensure, where practicable, that only healthy birds are used.
- Taking preventive measures, including managing human access, to reduce the risk of transferring micro-organisms that may impact on food safety to, or from, or between, flocks.
- Using, where permitted, appropriate vaccines as part of an overall flock management program.
- Regularly checking the flock and removing dead and diseased birds, isolating sick birds, and following up suspicious or unknown causes of illness or death to prevent further cases.
- Disposing of dead birds in a manner that prevents recycling of diseases to the laying flock by either pests or handlers.
- Treating birds only with veterinary drugs permitted for the specific use, prescribed by a veterinarian and in a manner that will not adversely impact on the safety and suitability of eggs, including adhering to the withdrawal period specified by the manufacturer or veterinarian.

[6] Joint FAO/WHO Expert Consultation on Risk Assessment of Microbiological Hazards in Foods, FAO Headquarters, Rome, Italy 30 April – 4 May 2001, page 13.

- Only those medicinal products and medicinal premixes that have been authorized by the relevant authority for inclusion in animal feed should be used.
- Where birds/flocks have been treated with veterinary drugs that can be transferred to eggs, their eggs should be discarded until the withholding period for the particular veterinary drug has been achieved. Established MRLs for residues of veterinary drugs in eggs may be used to verify such measures.
- The veterinarian and/or the producer/layer establishment owner/manager or the collection center should keep a record of the products used, including the quantity, the date of administration and the identity of flock.
- Appropriate sampling schemes and testing protocols should be used to verify the effectiveness of onfarm controls of veterinary drug use and in meeting established MRLs.
- Veterinary drugs should be stored appropriately and according to manufacturer's instructions.

- Monitoring for SE through faecal testing and the use of a vaccination protocol may reduce the risk of human illness[7].
- Disposing of eggs from infected flocks that are still in production in a safe manner or specifically diverted them to a process that ensures elimination of any hazard.
- Ensuring visitors, where necessary, wear appropriate protective clothing.

3.2.2 Areas and Establishments for Egg Laying Systems

Egg laying areas and establishments should, to the extent practicable, be designed, constructed, maintained and used in a manner that minimizes exposure of domesticated birds or their eggs to hazards and pests.

Improperly protected and maintained areas and premises for the housing of flocks, including free range and barn flocks and laying of eggs may contribute to the contamination of eggs.

Taking into account climatic conditions, production systems including those used to provide feed, water, shelter, control predators and manage interactions between birds should be designed, constructed, maintained and used in a manner to minimize the likelihood of transfer of foodborne pathogens to the egg, either directly or indirectly[8]. The following should be considered in the assessment of areas and establishments used for egg laying:

- The internal design and layout of housing should not adversely affect the health of animals and should permit compliance with good hygienic practices.
- The facilities used to house flocks should be cleaned and disinfected in a way that reduces the risk of transfer of zoonotic pathogens.
- A management plan should be in place to detect any failure in cleaning and disinfection programs and ensure that corrective actions are taken.
- Use of litter should be managed to reduce the risk of introducing or spreading hazards.
- Water delivery systems should be protected, maintained and cleaned, as appropriate, to prevent microbial contamination of water.
- Drainage systems and systems for storing and removal of manure should be designed, constructed and maintained so as to prevent the likelihood of contaminating the water supply or eggs.

[7] Joint FAO/WHO Expert Consultation on Risk Assessment of Microbiological Hazards in Foods, FAO Headquarters, Rome, Italy 30 April – 4 May 2001, page 14.

[8] although evaluation of the importance of such interventions for reducing the risk of human illness based on existing data was inconclusive Joint FAO/WHO Expert Consultation on Risk Assessment of Microbiological Hazards in Foods, FAO Headquarters, Rome, Italy 30 April – 4 May 2001, page 17

Access to egg laying establishments by other animal species (i.e. dogs, cat, wild animals and other birds) that would adversely affect the safety of the eggs should be minimized.

The egg laying establishments should, as far as practicable, be kept clean. Accumulations of broken eggs, manure, or any other objectionable materials should be minimized in order to reduce the likelihood of contact with eggs and to minimize attracting pests into the establishment.

3.2.3 General Hygienic Practice

3.2.3.1 Watering

Water should be managed in a way that minimizes the potential for the transmission of hazards, directly or indirectly, into or on the egg.

Water used in primary production operations should be suitable for its intended purpose and should not contribute to the introduction of microbiological or chemical hazards in or on eggs.

Contaminated water may contaminate feed, equipment or laying birds leading to the introduction of hazards into eggs.

As water can be a source of contamination, disinfection of drinking water to reduce or eliminate Salmonella *should be considered.* [9]

- *Potable water should be used, or if potable water in not available for some or all purposes, water that is of a quality that does not introduce hazards to humans consuming the eggs.*
- *Potential sources of contamination of water from improperly managed faeces should be identified and controlled to the extent practicable to minimize the likelihood of contaminating eggs.*
- *Appropriate safety and suitability criteria that meet the intended outcomes should be established for any water used in egg handling, grading and packaging, such as in cleaning.*
- *Good purchasing practices for water should be used to minimize the risk associated with hazards in the water and may include using vendor assurances or contractual agreements.*
- *Water recirculated or recycled for reuse should be treated and maintained in such a condition that no risk to the safety and suitability of food results from its use.*
- *Reconditioning of water for reuse and use of reclaimed, recirculated and recycled water should be managed in accordance with HACCP principles.*

Any reuse of water should be subject to a hazard analysis including assessment of whether it is appropriate for reconditioning. Critical control point(s) should be identified, as appropriate, and critical limit(s) established and monitored to verify compliance.

3.2.3.2 Feeding

Feed for the laying and/or breeding flock should not introduce, directly or indirectly, microbiological or chemical contaminants into eggs that present an unacceptable health risk to the consumer or adversely affect the suitability of eggs and egg products.

The improper procurement, manufacturing and handling of animal feed may result in the introduction of pathogens and spoilage organisms to the breeding and laying flock and the introduction of chemical hazards such as pesticide residues, and other contaminants, which can affect the safety, and suitability of eggs and egg products.

Producers should take care where appropriate, during production, transportation, preparation, processing, procurement, storage, and delivery of feed to reduce the likelihood of introducing hazards into the production system.[10]

[9] Commercial Chicken Production Manual, 3rd edition, AVI, Chapter 37, Diseases of the Chicken.

- *When the egg producer processes their own feed, information should be kept about its composition, the origin of the ingredients and if appropriate, the results of any analyses of the finished feed.*
- *Feed should be managed so that it is not contaminated from waste including faeces.*
- *Good purchasing practices for feed and feed ingredients, to minimize the risk associated with hazards in the feed may include using vendor assurances or contractual agreements.*
- *The owner should keep a record of relevant information concerning feed.*
- *As feed can be a source of contamination, heat or other treatment of feed to reduce or eliminate* Salmonella *should be considered.* [11]

3.2.3.3 Pest control

Pests should be controlled as they are recognized as vectors for pathogenic organisms.

Any pest control measures should not result in unacceptable levels of residues, such as pesticides, in or on eggs.

Pests such as insects and rodents are known vectors for the introduction of human and animal pathogens into the production environment. Improper application of chemicals used to control these pests may introduce chemical hazards into the production environment.

A properly designed pest control program should be used.

- *Before pesticides or rodenticides are used, all efforts should be made to minimize the presence of insects, rats and mice and reduce or remove places which could harbour pests.*
- *As cages/pens/enclosures/coops (if used) attract such pests, measures such as proper design, construction and maintenance of buildings (if applicable), cleaning procedures and removal of faecal waste should be used to minimize pests.*
- *Mice and rats are attracted to stored feed. Any feed stores should be located, designed, constructed and maintained so as to be, where practicable, inaccessible to pests. Feed should be kept in pest proof containers.*
- *If it is necessary to resort to chemical pest control measures, the chemicals should be officially approved for use in food premises and used in accordance with the manufacturer's instructions.*
- *Any pest control chemicals should be stored in a manner that will not contaminate the laying environment. Such chemicals should be stored in a safe manner. They should not be stored in wet areas or close to feed stores or be accessible by birds. It is preferable to use solid baits, wherever possible.*

3.2.3.4 Agricultural and Veterinary Chemicals

Procurement, transport, storage and use of agricultural and veterinary chemicals should be undertaken in such a way that they do not pose a risk of contaminating the eggs, flock or the egg-laying establishment.

- Transport, storage and use of agricultural and veterinary chemicals should be in accordance with the manufacturer's instructions.
- Storage and use of agricultural and veterinary chemicals on the egg laying establishment should be evaluated and managed, as they may represent a direct or indirect hazard for the eggs and flock.
- Agricultural and veterinary chemical residues should not exceed limits established by the Codex Alimentarius Commission or as per national legislation.

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[10] Query Spanish translation, as per Mexican comments *CX/FH 03/10-Add.1*

[11] Commercial Chicken Production Manual, 3rd edition, AVI, Chapter 37, Diseases of the Chicken.

- Workers that apply agricultural and veterinary chemicals should receive training in the proper application procedures.
- Agricultural and veterinary chemicals should be kept in their original containers. Labels should have the name of the chemical substances and the instructions for their application.
- Empty agricultural and veterinary containers should be disposed of according to the manufacturer's directions and should not be used for other purposes.
- Equipment used to apply or administer agricultural and veterinary chemicals should be stored or disposed of in a manner that does not represent a direct or indirect hazard for the eggs and flock
- Producers should keep records of agricultural and veterinary chemical applications. Records should include information on the date of application, the chemical used, the concentration, method and frequency of application, the purpose for using the chemical applications and where it was applied.

3.3 COLLECTION, HANDLING, STORAGE AND TRANSPORT OF EGGS

Eggs should be collected, handled, stored and transported in a manner that minimizes contamination and/or damage to the egg or egg shell, and with appropriate attention to time-temperature considerations.

Proper collection, whether using manual or automated methods, handling, storage and transport of eggs are important elements of the system of controls necessary to produce safe and suitable eggs and egg products. Contact with unsanitary equipment and foreign materials or methods that cause damage to the shell, may contribute to egg contamination.

Whether manual or automated methods are used to collect eggs, producers should minimize the time between egg laying and further handling or processing.

Methods used to collect, handle, store and transport eggs should minimize damage to the shell, and avoid contamination.

- Cracked and/or dirty eggs should be excluded from the table egg trade.
- Hygienic practices should protect the egg from surface moisture in order to minimize microbial growth, taking into account time and temperature factors.
- Where appropriate, broken and/or dirty eggs should be segregated from clean and intact eggs.
- Cracked and/or dirty eggs should be directed to a processing or packing establishment as soon as possible after collection.
- Broken eggs should not be used for human consumption and be disposed of in a safe manner.

Egg processors should communicate any specific requirements at farm level (i.e. time/temperature controls) to the egg producer.

3.3.1 Egg collection equipment

Collection equipment should be made of materials that are non-toxic and be designed, constructed, installed, maintained and used in a manner to facilitate good hygiene practice.

It is important to prevent any damage to the eggshells by collecting equipment since such damage can lead to contamination and consequently adversely affects the safety and suitability of eggs and egg products. It is also important that the equipment can be maintained to a standard of cleanliness adequate to prevent contamination of the eggs.

Where used, egg collecting equipment should be cleaned and disinfected regularly, or if necessary replaced, and with sufficient frequency to minimize or prevent contamination of eggs.

There should be a periodic verification process to ensure that egg collecting equipment is in good working condition.

Egg collecting equipment should be maintained in proper working condition.

3.3.2 Packaging and storage

Egg packaging and packaging equipment should be designed, constructed, maintained and used in a manner that will minimize damage to the eggshell and avoid the introduction of contaminants into or on eggs.

Wherever eggs are stored, it should be in a manner that minimizes damage to the eggshell and avoids the introduction of contaminants into or on eggs.

Any egg packaging, storage or associated equipment should not transfer substances to eggs that will present a health risk to the consumer.

Where permanent equipment is used, it should be corrosion resistant and easy to clean and disinfect or if necessary able to be dismantled and reassembled.

Storage temperatures and times should not have a detrimental effect on the safety and suitability of eggs. The time and temperature conditions for egg storage at the farm should be established taking into account the hygienic condition of the eggs, the hazards that are reasonably likely to occur, the end use of the eggs, and the intended duration of storage.

3.3.3 Transport, Delivery Procedures and Equipment

Whenever eggs are transported, it should be in a manner that minimizes damage to the egg or eggshell and avoids the introduction of contaminants into or on eggs.

Personnel and vehicular access should be adequate for the hygienic handling of eggs.

Lorries, trucks or other vehicles or equipment, which carry the eggs, should be cleaned at a frequency necessary to prevent contamination of eggs.

The time and temperature conditions for the transport and delivery of eggs from the producer should be established taking into account the hygienic condition of the eggs, the end use of the eggs, and the intended duration of storage.

- These conditions may be specified in legislation, in Codes of Practice, or by the processor receiving the eggs in collaboration with the egg producer and transporter and the relevant authority.

Delivery procedures should be adequate for the hygienic handling of eggs.

3.4 CLEANING, MAINTENANCE AND PERSONNEL HYGIENE AT PRIMARY PRODUCTION

3.4.1 Cleaning and maintenance of egg laying establishments

Egg laying establishments should be cleaned and maintained in a manner that ensures the health of flocks and safety and suitability of eggs.

Cleaning and disinfection programs should be in place, and their efficacy should be periodically verified by [appropriate] methods. Such programs should refer to all equipment, housing and buildings.

These programs should include procedures for cleaning and/or sanitising nest boxes/cages, poultry houses, disposing of contaminated litter, and, where necessary, safe disposal of eggs from infected flocks and dead or diseased birds.

3.4.2 Personnel health, hygiene and sanitary facilities

3.4.2.1 Personnel hygiene

Hygiene and health requirements should be followed to ensure that personnel who come directly into contact with eggs are not likely to contaminate them.

Hygiene and health requirements should be followed to ensure that personnel who come directly into contact with birds are not likely to transmit illness between birds

Personnel should understand and follow preventative measures specifically relating to the handling of birds and/or eggs, so as to prevent introducing hazards from one to the other, from other facilities or from cross contamination of birds from personnel.

Personnel should be adequately instructed and/or trained to handle eggs and domesticated birds to ensure the use of good hygienic practices that will minimise the risk of egg or flock contamination.

3.4.2.2 Sanitary facilities

Facilities should be available to ensure that an appropriate degree of personal hygiene can be maintained.

Facilities should:

- Be located in close proximity to wherever eggs or domesticated birds are handled;
- Be constructed to facilitate hygienic removal of wastes and avoid contamination of facilities; equipment raw materials and the immediate environment;
- Have adequate means for hygienically washing and drying hands; and
- Be maintained under sanitary conditions and in good repair at all times.

3.4.2.3 Health status

Personnel should be in good health and not introduce diseases or illness likely to affect flock health or the safety and suitability of eggs.

People known, or suspected, to be suffering from, or to be a carrier of a disease or illness likely to be transmitted to birds or through eggs should not be allowed to enter any bird facility or egg collection or handling area, if there is a likelihood of their contaminating the birds or the eggs. Any person so affected should immediately report illness or symptoms of illness to the management.

3.4.2.4 Personal cleanliness

Personnel who have direct contact with eggs should maintain a high degree of personal cleanliness and, where appropriate, wear suitable protective clothing and footwear.

Personnel should wash their hands before starting work that involves the handling of eggs, each time they return to handling areas after a break, immediately after using the toilet, and after handling anything of which may contaminate eggs.

3.5 DOCUMENTATION AND RECORD KEEPING

Records should be kept, as necessary and where practicable, to enhance the ability to verify the effectiveness of the control systems.

With respect to food safety, records should be kept where necessary on:

- *Prevention and control of avian diseases with an impact on public health;*
- *Identification and movement of birds and eggs;*

- *Use of agricultural veterinary and pest control chemicals;*
- *Nature and source of feed, feed ingredients and water;*
- *Use of veterinary drugs/medicines;*
- *Results of testing where testing is performed.*

4 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.

General points relevant to primary production have been included in Section 3.2.2 Areas and Establishments for Egg Laying Systems

5 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)).

This section refers to measures that should be taken to prevent, eliminate or reduce hazards associated with grading and packaging of eggs and with incoming materials to reduce the likelihood of contamination of eggs and egg products resulting from inadequate control of manufacturing operations from grading of eggs to the processing into egg products, including processing parameters. These measures should be used in conjunction with good hygienic and animal husbandry practices for the primary production of eggs and in accordance with Section 3 in order to effectively control the microbiological and other hazards in or on eggs and egg products.

These principles are also intended to enhance and supplement those aspects of the *Recommended International Code of Practice-General Principles of Food Hygiene* HACCP Annex, which are essential to the successful design of a system of food safety controls for egg products. The users of this document are encouraged to implement the guidelines contained in the HACCP Annex when designing a HACCP system.

Principles Applying to the Processing of Eggs:

5.1 CONTROL OF FOOD HAZARDS

Eggs used to produce egg products should be safe and suitable for human consumption.

Cracked or dirty eggs are not suitable for table eggs but may be directed to processing or be disposed of in a safe manner. Broken/leaker eggs (i.e. unintentionally broken eggs) are generally not used to produce egg products. Cracked eggs (i.e. with a damaged shell, but membranes intact) generally may be used, but should be processed without delay.

Risk-based control measures should be in place to ensure that process and product specifications are met and the hazards in or on eggs and egg products are effectively identified and controlled.

Control measures used should achieve an appropriate level of public health protection. Where possible, measures should be based on HACCP principles.

These measures should allow the identification and removal of eggs and egg products that are not suitable for human consumption. They should also address the need to control pathogen growth throughout handling, grading, packaging, preparation processing and distribution and have a sound basis in good hygiene practice. It is important that control measures are applied during primary production, preparation and processing to minimize or prevent the microbiological, chemical or physical contamination of eggs.

Processors should only use eggs that have been produced in accordance with the Code.

5.2 KEY ASPECTS OF HYGIENE CONTROL SYSTEMS

5.2.1 Temperature and Time Issues

From laying, handling, processing and distribution to point of consumption, consideration should be given to time and temperature conditions for eggs and egg products such that the growth of pathogenic microorganisms will be minimized and the product's safety and suitability will not be adversely affected.

Eggs and egg products should be stored under conditions that will minimize the risk of human illness by minimizing the potential for microbial contamination, and by minimizing the outgrowth of microbial pathogens.

Storage and handling conditions should be used that will avoid condensation of water on the shell surface.

Particular attention should be paid to temperature conditions throughout storage and distribution of perishable products, noting that lower storage and distribution temperatures lend themselves to longer shelf life and minimize microbial growth, for example of SE.

Products that can be stored at ambient temperatures should be protected against external agents and contamination, e.g. direct sun radiation, excessive heating, moisture, external contaminants, and from rapid temperature changes which could adversely affect the integrity of the product packaging or the safety and suitability of the product.

The shelf life of eggs and egg products is influenced by a number of factors, such as:

- Applied microbiological control measures, including storage temperatures;
- Methods and treatments applied to product;
- Type of packaging;
- Likelihood of post process contamination and type of potential contamination.

The shelf life of egg products may be limited by microbial changes (e.g., deterioration and growth of pathogenic and spoilage microorganisms to unacceptable levels).

When establishing product shelf life, it is the responsibility of the processor to assure and, as necessary, to demonstrate, that the safety and suitability of the egg product can be retained throughout the maximum period specified, taking into consideration the potential for reasonably anticipated temperature abuse during processing, storage, distribution, sale and handling by the consumer.

Temperature abuse may allow the growth of pathogenic microorganisms, if present, unless appropriate measures are applied to prevent such growth.

Reasonably anticipated temperature abuse takes into account the normal period of transporting of purchased products to appropriate consumer storage facilities and normal patterns of handling during consumption, for instance, whether the product is stored in the refrigerator and/or subjected to changing or ambient temperatures until the whole product has been consumed.

The possible reactivation of pathogens with time should be taken into account when determining the shelf life.

Shelf life determination can be carried out at the plant level by testing products subjected to the storage conditions specified or by predicting microbial growth in the product under the specified storage conditions. Reasonable anticipated temperature abuse can be integrated into the study or be taken into account by an applying an appropriate safety factor (e.g., by shortening the maximum durability specified in the labeling or by requiring lower storage temperatures).

5.2.2 Grading and Packaging

Eggs should be visibly clean prior to packing for either the table egg market or processing. Dirty eggs may be cleaned or sorted. Cracked or dirty eggs should be segregated from clean and intact eggs, for example by candling.

Incorrect cleaning of eggs can result in a higher level of contamination of eggs than existed prior to cleaning. The cleaning process used should not damage or contaminate the eggs.

These activities may be done by the primary producer, the processor or others involved in the egg production chain. Grading and packaging includes cleaning, storing, packaging and transporting of graded eggs.

Eggs should be handled during cleaning, sorting, grading, packaging, storing and distributing in a manner that avoids damage, minimizes moisture on the shell surface and prevents contamination.

Eggs can be treated to eliminate pathogens without affecting their functional properties using a process approved by the competent authority.

Grading and packaging of the egg refers to the stage between primary production and processing, where the whole egg may undergo one or more activities to prepare it for either the table or for processing into egg products. These preparatory activities may include washing, cleaning, selection, treatment, packaging, storing and distribution of eggs.

Grading and packaging activities can result in damage to eggs. Eggs should be handled at this stage of production in a manner that avoids damage and contamination.

Unintentionally broken and/or unsuitable eggs should be segregated from eggs for human consumption. These eggs should be identified in such a way that they cannot be used for human consumption, for example by an agent that indicates membrane penetration/damage (e.g. denaturing agent).

Cracked eggs should be segregated and sent for processing or disposed of in a safe manner.

Cleaning

Eggs should be visibly clean prior to packing.

- *A cleaning process may be used to remove visible contamination from the shell surface, but this should be carried out under carefully controlled conditions so as to minimize damage to that surface. An alternative to a cleaning process would be to sort eggs.*
- *If dry cleaning is undertaken, the methods used should minimize damage to the protective cuticle and where appropriate be followed by oiling of the shell using a suitable food grade oil.*

Washing

If washing is undertaken it may be followed by effective disinfection of the shell and, where appropriate, with subsequent oiling of the shell using a suitable food grade oil.

- *Eggs should not be submersed or soaked prior to or during washing. An appropriate water temperature should be used. If cleaning compounds are used, they should be suitable for use on eggs.*
- *When water is used for the cleaning, it should be of such quality that it does not adversely affect the safety and suitability of the eggs.*

Sorting/Selection

- *Eggs should be segregated in relation to the species of poultry and stored separately.*

Treatment

- Table eggs can be treated to eliminate pathogens without affecting their functional properties using a process approved by the relevant authority.

Storing

- Eggs should be stored under conditions that will minimize the risk of human illness by minimising the potential for microbial, chemical, or physical contamination, and by minimising the outgrowth of microbial pathogens[12].
- Storage conditions should minimize moisture on the shell surface.

Distribution

- Eggs should be distributed under conditions that will minimize the risk of human illness by minimizing the potential for microbial, chemical, or physical contamination, and by minimizing the outgrowth of microbial pathogens.

5.2.3 Egg Processing

Separating the egg contents from the shell, whether by hand or by machine, should be done in a manner that will, so far as possible, avoid cross-contamination between the shell and egg contents, and avoid contamination by personnel or from equipment.

Only clean eggs should be used in processing. Commingling of shell and egg contents should never occur.

Where contact between the egg contents and the shell's exterior may occur, additional precautions should be taken, including the use of clean eggs and treating the liquid egg, for example by immediate processing, so as to ensure safety and suitability of the product.

- *Broken eggs should be disposed of in a safe manner.*
- *Hygienic procedures should be used to minimize contamination of subsequent egg contents by contaminated equipment after an unacceptable egg has been broken.*

Treatments

Formulated egg products should be treated in such a way that the products are safe and suitable for their intended use.

Eggs can be treated to eliminate pathogens without affecting their functional properties using a process approved by the relevant authority.

Treatments should achieve the appropriate reduction in microbial load to result in a safe and suitable product.

Where heat treatment is used, consideration should be given to time and temperature combinations.

Time/temperature combinations in the treatment should be adequate to achieve the planned reduction in microbial load, and the process should be closely monitored to ensure that the time/temperature combinations are achieved in practice.

- *Heat treated liquid egg products should be cooled rapidly immediately after heat treatment and maintained under refrigeration.*
- *Hygienic manufacturing and personnel practices should be in place to manage the risk of contamination from the food contact surfaces, equipment, and personnel, and between raw egg and processed egg products.*

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[7] Storage of eggs at 10°C (<50°F) or limiting storage at ambient temperatures such that shelf life at retail will not exceed 7 days both are projected to comparably reduce risk of human illness, with the actual reduction dependant on the prevalence of SE within flocks and other variables. Joint FAO/WHO Expert Consultation on Risk Assessment of Microbiological Hazards in Foods, FAO Headquarters, Rome, Italy 30 April – 4 May 2001, page 14.

- *Dried egg products preferably should be produced from pasteurized liquid egg. In the case of egg albumen manufacture, peroxidase-catalase treatment and/or an appropriate heat treatment (e.g., "hot-boxing") can be used providing the procedure has been validated.*
- Criteria for products undergoing treatments (including those using heat) may be specified in legislation, in Codes of Practice, or by the processor in collaboration with the relevant authority.

5.2.4 Microbiological and Other Specifications

Refer to the *Recommended International Code of Practice- General Principles of Food Hygiene,* (*Principles for the Establishment and Application of Microbiological Criteria for Foods (CAC/GL 21-1997*)).

Information that may be useful for establishing specifications could include:

- Flock health (including pathogen status);
- Pathogen load in/on eggs;
- Agricultural and veterinary chemical status;
- Age of eggs;
- Handling methods.

There should be adequate separation of areas with different levels of contamination risk.

Processors should be satisfied that the eggs they receive and the egg products they produce are safe and suitable for human consumption.

5.3 INCOMING MATERIAL REQUIREMENTS

Refer to the *Recommended International Code of Practice- General Principles of Food Hygiene, (*CAC/RCP 1-1969, Rev. 3, (1997)).

Unsafe or unsuitable materials may include:

- Incubator eggs
- Unintentionally broken eggs
- Eggs with bacterial or fungal rots
- Eggs that may have been adversely affected by exposure to environmental contamination.

Depending upon the end use of the egg, certain specific microbiological criteria may be appropriate to verify that the control systems have been implemented correctly.

5.4 PACKAGING

No additional provisions required beyond those noted in the *Recommended International Code of Practice-General Principles of Food Hygiene, (*CAC/RCP 1-1969, Rev. 3, (1997)).

5.5 WATER

No additional provisions required beyond those noted in the *Recommended International Code of Practice-General Principles of Food Hygiene, (*CAC/RCP 1-1969, Rev. 3, (1997)).

5.6 DOCUMENTATION AND RECORDS

No additional provisions required beyond those noted in the *Recommended International Code of Practice-General Principles of Food Hygiene,* CAC/RCP 1-1969, Rev. 3, 1997.

6 ESTABLISHMENT: MAINTENANCE AND SANITATION

These guidelines are supplemental to those set forth in Section 6 of the *Recommended International Code of Practice: General Principles of Food Hygiene* (CAC/RCP 1-1969, Rev. 3 (1997)).

6.1 MAINTENANCE AND CLEANING

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

6.2 CLEANING PROGRAMS

Handling, packaging, and processing eggs uses a variety of equipment with sensitive electronic controls. Where wet cleaning may damage or result in the contamination of the equipment, alternative cleaning programs may be used.

7 ESTABLISHMENT: PERSONAL HYGIENE

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

8 TRANSPORTATION

These principles and 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 and, as appropriate, those set forth in *Code of Hygienic Practice for the Transport of Foodstuffs in Bulk and Semi-Packed Foodstuffs*. (CAC/RCP 47 – 2001.)

8.1 EGG HAULERS

Eggs and egg products should be transported in a manner that will minimize breakage, damage and contamination.

Egg haulers (driver or individual in charge of transport to packing facility) should use suitable vehicles for transporting eggs. The vehicles should be made of materials that permit easy and thorough cleaning.

Eggs should be transferred between establishments promptly. Eggs should be maintained at an appropriate temperature, including avoiding fluctuations in temperatures that will avoid condensation of water on the shell surface.

9 PRODUCT INFORMATION AND CONSUMER AWARENESS

These principles and guidelines are supplemental to those contained in Section 9 of the *Recommended International Code of Practice-General Principles of Food Hygiene,* CAC/RCP 1 - 1969, Rev. 3, 1997.

9.1 LOT IDENTIFICATION

Refer to the *Recommended International Code of Practice- General Principles of Food Hygiene, (*CAC/RCP 1-1969, Rev. 3, (1997)).

Documentation can enhance the credibility and effectiveness of the food safety control system, especially when it includes measures that permit a client to refer to their supplier on the history of a product. Labelling and record keeping also aid in the implementation of other emergency and corrective actions.

Where appropriate, a system should be in place that allows the identification of the egg layer establishment where eggs and egg products were produced. The system should be easy to audit. Records should be kept for a period no shorter than the shelf life of the eggs and/or egg products. It is important to ensure that all parties involved in this system are adequately informed and trained in its implementation.

9.2 LABELLING

Egg products should be labeled in accordance with the Codex *General Standard for the Labelling of Prepackaged Foods* (Codex Standard 1-1985 (Rev. 1 – 1991)).

10 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)).