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JOINT FAO/WHO CODEX ALIMENTARIUS COMMISSION
Sixth Session

REPORT OF THE FIFTH SESSION
OF THE
CODEX COMMITTEE ON FOOD HYGIENE

Washington, D.C.
6-10 May 1968

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JOINT FAO/WHO FOOD STANDARDS PROGRAM

CODEX ALIMENTARIUS COMMISSION

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WASHINGTON, D. C., U.S.A.

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Introduction.

1. The Fifth Session of the Codex Committee on Food Hygiene was held at the Pan American Health Organization/WHO Building, in Washington, D.C., from 6 to 10 May 1968, under the chairmanship of Mr. L.R. Shelton (U.S.A.), who welcomed the participants on behalf of the Government of the U.S.A. The list of participants is contained in Appendix I to this Report.

Adoption of Agenda.

2. The provisional agenda was adopted with some rearrangement in the order of items to be discussed.

Decisions of the Fifth Session of the Codex Alimentarius Commission on the Subject of Food Hygiene.

3. The representative of the FAO gave the Committee an oral report on the decisions of the Fifth Session of the Codex Alimentarius Commission on the subject of food hygiene. The matters brought to the attention of the Committee were as follows:

(a) Authority to Elaborate Codes of Practice

The Commission had endorsed the view that codes of practice would be useful in facilitating compliance with the provisions of Codex Standards and would also fulfill a very useful function as check lists of requirements for national enforcement agencies. The Commission had discussed whether it had authority under its Statutes to elaborate international codes of practice which would constitute recommendations to Governments, and had concluded that Article 1(a) of the Statutes of the Commission concerning the protection of the health of consumers gave it sufficient authority to continue its work on such codes. The Commission had considered that it might be desirable to be able to elaborate codes of practice for subjects other than purely hygiene, such as codes of technological practice. In order to clarify the position of codes of practice, the Commission had requested the Legal Counsels of both FAO and WHO to give an opinion as to whether any amendment would be necessary to the Statutes of the Commission.

(b) Status of Codes of Practice.

The Commission had agreed that codes of practice were advisory, but that parts of these codes, especially those dealing with end-product specifications, could be included in Codex Standards and could then become mandatory.

(c) Procedure for the Elaboration of Codes of Practice

The Commission had agreed that the existing procedure for the Elaboration of Codex Standards should be followed in the elaboration of Codes of Hygienic Practice. This procedure allowed for certain steps to be omitted under certain circumstances.

(d) Publication of Codes of Practice

The Commission had considered that Codes of Practice should not be published in the standards section of the Codex Alimentarius, but that the Codex Alimentarius should contain appropriate cross reference to these codes.

(e) Codes of Hygienic Practice Adopted at Step 8

The Committee noted that the General Principles of Food Hygiene and the Code of Hygienic Practice for Canned Fruit and Vegetable Products had been adopted by the Commission at Step 8 and that they would be sent to member Governments of FAO and WHO.

4. The Committee noted the above decisions and, in particular, the importance which the Commission attached to Codes of Hygienic Practice. The Committee also underlined that Codes of Hygienic Practice could be very useful to developing countries as a means of facilitating exports to countries with highly developed public health legislation. The Committee also drew attention to the decision of the Commission that all provisions relating to hygiene in Codex Standards were subject to the endorsement of the Codex Committee on Food Hygiene.

Definition of Food Hygiene.

5. The Committee took note of the slightly amended definition of the term "food hygiene" as adopted by the Codex Alimentarius Commission at its Fifth Session, and found the amended version, as quoted below, to be satisfactory.

"Food hygiene comprises conditions and measures necessary for the production, processing, storage, and distribution of food designated to ensure a safe, sound, wholesome product fit for human consumption."

Relationship between the Codex Committee on Food Hygiene and the WHO Expert Committee on Food Hygiene (Food Microbiology).

6. At its Fourth Session, the Codex Committee on Food Hygiene decided to ask the Commission for a clear separation and definition of the inter-related work of the Food Hygiene Committee and the WHO Expert Committee on Food Hygiene. The Committee was informed that the Commission had discussed this matter at its Fifth Session and had noted that the WHO Expert Committee on Food Hygiene would be dealing primarily with the overall problem of the prevention of the transmission of pathogens by food, including laboratory control and recommendations for further research. The Committee was informed that the Expert Committee was composed of individual experts, who served in their personal capacity and not as representatives of their Governments. The Committee further noted that this body was convened on an ad hoc basis only, and that the members invited to serve on the Committee were drawn from a WHO expert advisory panel on food hygiene and from other WHO expert advisory panels. A list of experts invited to attend the first meeting of the Expert Committee, held in Geneva in October 1967, was made available to the members of the Food Hygiene Committee. The Committee was informed that the report of the meeting of the Expert Committee would be available shortly. The Committee noted that it could utilize any recommendations made by the Expert Committee and that it could refer any residual problems to WHO. The representative of WHO intimated, however, that for budgetary reasons it was not possible to indicate when the next session of the Expert Committee would be likely to take place, and that this problem was being investigated. The Committee noted that the Commission had requested the Directors-General of FAO and WHO to ensure that there would be a minimum of overlap of functions as between this Committee and the WHO Expert Committee. In view of the fact that it was not clear when the next meeting of the WHO Expert Committee would be held, for the reason already stated, the Committee expressed some concern regarding the period of time which might elapse before the views of the WHO Expert Committee on matters referred to it by the Food Hygiene Committee might be forthcoming. The Committee expressed the hope, therefore, that at its next session, it would receive some indication as to developments regarding a further meeting of the Expert Committee and, in particular, when responses were likely to be received to referrals already made to the Expert Committee but not yet considered by it.

7. The Committee agreed that any food hygiene referrals by Commodity Committees to WHO should be channeled through the Food Hygiene Committee and the responses of WHO should also be channeled in the same way. The Committee also agreed that food hygiene referrals from Codex Commodity Committees should be accompanied by the necessary background material and data.

Responses to Referrals to the WHO Expert Committee on Food Hygiene (Food Microbiology).

8. The Committee reviewed the disposition of referrals and requests made to the WHO Expert Committee on Food Hygiene in the Report of the Fourth Session of the Committee. It was explained that the requests from this Committee were received by the WHO Secretariat too late to have them incorporated in the agenda for the meeting, which had been agreed by the Director General of WHO. It was further explained that all the background material and working documents for the previously agreed agenda had been distributed before these requests had been received. Consequently, the WHO Expert Committee was not in a position to respond to all of these referrals.

The following is the position with respect to the referrals:

(a) The Committee at its last session had requested the WHO Expert Committee on Food Hygiene (Food Microbiology) to consider the problem of indicating the exact significance of the statement "the products should be free from any pathogen infectious to man and from any toxic substance originating from micro-organisms" in general terms. The Committee was informed that the Expert Committee at its meeting in Geneva in October 1967, in discussing the role of the food microbiology laboratory in food hygiene programs, considered the above request. The views expressed by the Expert Committee on this subject were as follows:

(b) "The food hygiene laboratory is often asked to furnish information about the microbiological status of foods in terms of freedom from pathogens in the food. Indeed there are regulations and laws that are written which contain statements that food 'shall be free from any pathogens capable of causing human disease.' The Committee feels that such statements are not scientifically correct. The food hygiene laboratory can give only the microbiological status of the food in relation to the sensitivity of the test used and with the consideration that tests can be used only for a limited range of pathogenic organisms. Further, the finding of no pathogens does not mean that such pathogens are absent from the food. They may not be found by the methods used.

"This caution is especially important since any other interpretation of microbiological data would lead to the impression that foods certified by a laboratory as pathogen-free did not contain pathogens, or might be so safe that subsequent care in handling could be disregarded. In order to maintain the scientific integrity of the food hygiene laboratory, the Committee recommends that no microbiological results be issued

without a qualifying statement which indicates the exact number of samples examined in relation to the total lot in question, the quantity of sample, and the methods used. Results should be stated in terms of the laboratory being unable to find any pathogens in the specified food rather than in the positive terms that the food does not contain any pathogens. This practice may be difficult to institute and may be objected to by administrators. It is felt that results issued without such stipulations are not complete."

9. (a) In view of the above statement, which is an extract from the report of the Expert Committee, the Food Hygiene Committee amended the paragraph in the End-Product Specification dealing with microorganisms to read as follows:

"Appropriate methods should be used for sampling, analysis, and determinations in the specification that

The product(s) shall not contain any pathogenic microorganisms or any toxic substance originating from microorganisms."

- (b) The Committee discussed the question of having agreed international referee methods of analysis and sampling for determining the presence of microorganisms, in particular pathogenic microorganisms. The Committee noted that, with a view to arriving, in due course, at agreed methods, it would be desirable to have this subject studied in the first instance by international bodies qualified in this field.
- (c) A referral to the WHO Expert Committee regarding the end-product specification in desiccated coconut that "there be no bacteria of the Salmonella group in a 50 gram sample" was resolved in view of the WHO Expert Committee's response concerning pathogenic microorganisms.

10. The Committee also discussed in detail the role of food microbiology in food hygiene programs with particular respect to problems and progress in the establishment of microbiological criteria for foods. These discussions with recommendations on the objectives and rationale for the development of microbiological criteria will serve as a basis for the consideration of specific requests from this Committee. The WHO representative indicated that specific requests from the Codex Committee should in the future be received through the WHO Secretariat for referral to an appropriate WHO Expert Committee or other consultant group.

11. Among the remaining requests to the WHO Expert Committee are the following:

- (a) development of standardized methodology including sampling procedures for determining freedom from pathogens and toxic substances originating from microorganisms in fish and fish products;
- (b) special methods needed for the examination of products of high fat content for pathogenic organisms;
- (c) microbiological specifications for egg products, Enterobacteriaceae test, and the alpha-amylase test.

Responses to Referrals to Other Codex Committees.

12. The following is the position with regard to referrals to other Codex Committees:

(a) Codex Committee on Fish and Fishery Products

- (i) At its Fourth Session, the attention of the Food Hygiene Committee had been drawn to the request of the Codex Committee on Fish and Fishery Products for guidance as to sanitary requirements on frozen fillets of cod and haddock, which included a number of figures for microbial counts. The Food Hygiene Committee had felt that it was premature to deal with such figures and had asked the Codex Committee on Fish and Fishery Products for the further information which was needed to make sure that these figures represented reasonable limits for good manufacturing practice. No response was received to this request.
- (ii) No response was received from the Codex Committee on Fish and Fishery Products as to the responsibility for drafting Codes of Practice on Fish and Fishery Products or the various groups who may be participating in the development of such Codes of Practice. The Codex Committee on Fish and Fishery Products is again being asked to respond to this question, as stated in paragraph 22 of this Report.

(b) Codex Committee on Cocoa Products and Chocolate

No response was received from the Codex Committee on Cocoa Products and Chocolate regarding their views as to the development of end-product hygienic specification requirements relating to yeast and mould counts in cocoa and chocolate products.

(c) Codex Committee on Food Labelling

No response was received from the Codex Committee on Food Labelling with respect to marking the containers with the identification of the factory at which products, particularly desiccated coconut, are produced as an important part of food hygiene control.

Consideration of Specific Requests from Codex Commodity Committees.

13. Noting that there were no specific requests on the subject of food hygiene from the Fifth Session of the Codex Alimentarius Commission, the Committee proceeded to consider requests on this subject received from the following Codex Commodity Committees and Joint ECE/Codex Alimentarius Groups of Experts. These requests were taken from the Reports of the last session of the Committees and Groups in question, and were contained in document CX4/20.3, April 1968.

(a) Joint ECE/Codex Alimentarius Groups of Experts on Standardization of Quick (Deep) Frozen Foods

The Committee noted that the Joint Group of Experts had agreed that this Committee should continue to develop a Code of Hygienic Practice for Pre-cooked Frozen Foods, and that the Joint Group had expressed the wish that this Code should also cover semi-cooked products. The Committee agreed to consider how best the request of the Joint Group regarding semi-cooked products could be met, when it came to discuss the Code of Hygienic Practice for Pre-cooked Frozen Foods in detail (see paragraph 24).

(b) Joint ECE/Codex Alimentarius Group of Experts on Standardization of Fruit Juices

(i) The Committee noted that the Joint Group of Experts had requested it to elaborate a Code of Hygienic Practice for Frozen Fruit Juices and that the Joint Group had also requested it to give consideration to chilled fruit juices. The Committee agreed to consider how best to deal with the question of chilled fruit juices when it came to examine the Code of Hygienic Practice for Frozen Fruit Juices.

(ii) The Committee had before it for endorsement the food hygiene provisions appearing in the draft standards for fruit juices. The Committee endorsed the following provisions:

"Microorganisms capable of development under normal conditions of storage--none."

"It is recommended that the products covered by the provisions of this standard be prepared in accordance with the Code of Hygienic Practice for Canned Fruit and Vegetable Products."

The Committee agreed with the concept contained in the suggested provision on freedom from pathogens but recommended the following rewording of this provision:

"The product shall not contain any pathogenic microorganisms or any toxic substances originating from microorganisms."

- (iii) A lengthy discussion took place on the remaining provision in the fruit juices standards, which was as follows:

"Mould Filaments--Technologically unavoidable traces. The maximum percentage of positive fields shall not exceed 2% 2 as determined by the Howard mould count method."

The view was put forward that the provision on mould filaments above should more properly be treated as a quality factor rather than a hygiene matter. The majority view of the Committee, however, was that although such a provision could to some extent be regarded as a quality factor, it should, on balance, be dealt with under food hygiene.

- (iv) The view was also put forward that the provision "technologically unavoidable traces" could remain in the standards as a mandatory requirement, but that any maximum figures set in respect of positive fields should be treated as advisory. Following a full exchange of views, the members of the Committee took the following positions. The delegations of Australia, Canada, Denmark, France, Hungary, and the Netherlands, representing the majority view, agreed that the provision as it stood in the draft standards envisaging, as a mandatory requirement, the setting of limits in respect of positive fields should be a

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For apricot, peach and pear nectars a provisional figure of (20%) was agreed upon. For tomato juice a figure of 30% was agreed upon. Figures for other fruit juices to be specified later."

mandatory provision. The delegations of Poland, the United Kingdom, and the United States of America took the view that any such figures set should be advisory. The delegations of Cuba and Turkey declared that they reserved their position on the matter at this stage.

- (v) The Committee noted that only one firm figure concerning maximum percentage of positive fields was before it for endorsement, namely 30% for tomato juice, as determined by the Howard Mould Count Method. While the Committee agreed to accept this figure, taking into account that it had already been the subject of considerable discussion in the Fruit Juices Group and was a compromise figure, it suggested that the Fruit Juices Group should consider adopting a lower figure for application after a specified period of time. The U.S. delegation expressed a preference for a figure of 20% for tomato juice. The Committee decided to defer comment on the figure of 20% proposed for nectars, which it noted was only a tentative figure at this stage. At the next stage at which the figures for mould count would be referred to the Food Hygiene Committee, the Committee would need from the Fruit Juices Group a summary of the evidence on which they were based.
 - (vi) The Committee noted that the provision specifically provided for the use of the Howard Mold Count Method. The Committee expressed the view that it was imperative that a specific method or its equivalent be designated for determining quantitative end-product specifications. It was recognized that specifications might need to be revised in the light of other existing or improved methodology. The Committee recognized that this was a matter which concerned the Codex Committee on Methods of Sampling and Analysis and urged that Codex Commodity Committees should provide that Committee with detailed information, both as to a proposed international referee method and other methods which they regarded as being equivalent.
- (c) Codex Sub-Committee on Processed Meat Products and Consumer Packaged Meat
- (i) The Committee had before it for endorsement the hygiene provisions appearing in the draft standards for canned hams, canned luncheon meat, and canned corned beef. As regards the provision that "the heat treatment shall be such as to result in a temperature of at least 65.5°C at the center of the product," the Committee

found itself unable to give an opinion on this provision in the absence of all the relevant details.

- (ii) As regards the provision that the "cans shall be cooled in water of good bacteriological quality," the Committee recommended that the following text which appears in the Code of Hygienic Practice for Canned Fruit and Vegetable Products should be used instead.

"Where processed containers are cooled in water, the water should be of potable quality and suitably treated so as not to constitute a public health hazard. If cooling water is recirculated, it should be effectively disinfected by chlorine or otherwise before use or each re-use."

- (iii) As regards the provision that "the product shall be packed in hermetically sealed containers which do not permit contamination and which shall be clean and show visible vacuum," the Committee recommended that Section IV D (5) (a) and (b) of the General Principles of Food Hygiene be used, with the addition of the provision regarding visible vacuum, so that the provision would read as follows:

"Materials. Packaging materials should be stored in a clean and sanitary manner and should not transmit to the product objectionable substances beyond limits acceptable to the official agency having jurisdiction and should provide appropriate protection from contamination.

"Techniques. Packaging should be done under conditions that preclude the introduction of contamination into the product.

"The product shall be packed in hermetically sealed containers, which shall show visible vacuum."

- (iv) The Committee noted that this Sub-Committee would be considering at its next session further hygienic requirements for meat products and the establishment of a Code of Hygienic Practice for such products. The Committee agreed that the attention of the Sub-Committee should be drawn to the General Principles of Food Hygiene.

(d) Codex Committee on Natural Mineral Waters

The Committee noted that the proposed hygienic requirements for natural mineral waters did not stipulate that the bacteriological standards of potability should not be less than those contained in the "International Standards for Drinking Water," WHO, 1963, and considered that this requirement should appear in the draft standard. As regards the requirement that "if during production (exploitation), it is found that the water is polluted, the producer must eliminate the cause of pollution without delay," the Committee expressed the view that this provision should stipulate that production should be stopped until such time as the problem was resolved. The Committee further considered, with regard to the final requirement in the draft standard, that it should be stated which body was responsible for ensuring that the periodic checks referred to were carried out as well as the frequency of such checks. The Committee expressed the wish to see the complete draft standard for natural mineral waters before deciding whether it considered the proposed requirements to be suitable.

(e) Codex Committee on Sugars

The Committee had before it the relevant extract from the Fourth Session of the Codex Committee on Sugars, as well as the document, Codex/Sugar/17-Amended, entitled "Health and Hygiene Aspects of Sugar," prepared by the Secretariat of the Codex Committee on Sugars in 1966. The Committee was of the opinion that although lactose was a product of animal origin, the production process was such that there were no particular hygiene problems associated with this product, which would require it to be treated from a hygienic point of view differently from other sugars. In view of the above, the Committee did not feel it necessary to pursue its request on this subject to the WHO Expert Committee, as contained in paragraph 22 of the report of its last session.

General Remarks regarding Referrals from Other Committees.

14. With a view to dealing with referrals more effectively, the Committee expressed the wish to have before it the complete texts of draft standards rather than just the hygiene sections of final drafts. The Committee also expressed the wish that these draft standards be sent to it as soon as possible before sessions, accompanied by explanatory material in summary form where there were departures from or additions to the General Principles of Food Hygiene.

Submission of Codes of Practice to the Codex Alimentarius Commission at the Final Adoption Stage.

15. The Committee agreed that when Codes of Hygienic Practice were being sent out to Governments, as recommendations of the Commission, following adoption by the Commission at Step 8, the cross-references to the General Principles of Food Hygiene should be quoted in full in the Codes, so that each Code would be a complete document in itself. The Committee also noted that a certain amount of editorial work would be necessary in carrying out this operation. In this connection, the Committee agreed that the wishes of the Commission should be sought on whether it would prefer to have before it, at the final adoption stage, the complete text of each Code or the abbreviated text with cross-references to the General Principles.

Draft Code of Hygienic Practice for Dried Fruits.

16. The Committee examined the Draft Code of Hygienic Practice for Dried Fruits, as contained in Appendix IV of the Report of its last session, in the light of Government comments received thereon. The Committee agreed on certain amendments to the draft Code, and the text as revised by the Committee appears as Appendix II in this report. The Committee, noting that this draft Code had already been the subject of two rounds of Government comments, and being of the opinion that it was now complete, decided that the draft Code should be submitted to the next session of the Commission at step 5, with the recommendation that steps 6, 7, and 8 be omitted. The Committee considered the comment of Sweden that "high concentration of pollutants," appearing in Section IV A (1) of the draft Code, should be adequately defined. The Committee decided not to alter or expand the present wording because of a lack of necessary hygienic criteria for air for drying purposes.

Draft Code of Hygienic Practice for Desiccated Coconut.

17. The Committee examined the Draft Code of Hygienic Practice for Desiccated Coconut, as contained in Appendix VI of the Report of its last session, in the light of Government comments received thereon. The Committee agreed on certain amendments to the draft Code and the text revised by the Committee appears as Appendix III to this Report. The Committee agreed to send the draft Code forward to the next session of the Commission at step 5.

The Committee agreed on the introduction of a new requirement in the end-product specifications stipulating a maximum moisture content of 3% for the product. The delegation of Australia expressed a preference for a figure of 4%. It was agreed that the figure was one which applied at the import stage.

Draft Code of Hygienic Practice for Dehydrated Fruits and Vegetables, Including Edible Fungi.

18. The Committee had before it the above draft Code, referenced as Appendix DHF (ALINORM 66/13), June 1966. The Committee agreed on various amendments to the draft, and the text as amended by the Committee appears as Appendix IV to this Report. The Committee considered a suggestion that it might be possible for dehydrated fruits and vegetables to be covered in the dried fruits code, but agreed that, because of differences in the nature of the products and other factors, separate codes were appropriate. The Committee agreed to send the draft Code forward to the next session of the Commission at step 5.

Draft Code of Hygienic Practice for Deep Frozen Fruit and Vegetable Products.

19. The Committee examined the above draft Code which was contained in Appendix V to the Report of the last session of the Committee, and agreed on various amendments to the text. The draft Code as amended by the Committee is contained in Appendix V to this Report. The Committee agreed to send the draft forward to the next session of the Commission at step 5. The Committee also agreed that this draft Code should be sent to (a) the Joint ECE/Codex Alimentarius Group of Experts on Standardization of Quick (Deep) Frozen Foods, since that Group would be considering at step 8, at its next session (September 1968), a General Standard for all Quick (Deep) Frozen Foods, parts of which might be considered to be more appropriate to a Code of Practice, and (b) the Joint ECE/Codex Alimentarius Group of Experts on Standardization of Fruit Juices (see paragraph 17 of this Report).

Draft Code of Hygienic Practice for Tree Nuts.

The Committee had before it the above draft Code, referenced as Appendix TN (second draft prepared by the U.S.A. in collaboration with Switzerland), January 1967. The Committee examined the draft Code, made certain amendments to it, and agreed that the draft should be sent to Governments for comment at step 3. The question was raised whether to broaden the scope of the draft Code to cover ground nuts, particularly in view of the importance of the international trade in this commodity, and its significance to the developing countries. The Committee did not dispute the desirability of elaborating a Code of Hygienic Practice for Ground Nuts, but considered that such a Code should be elaborated separately from tree nuts, since this product would call for the elaboration of hygiene requirements differing in certain respects from those for tree nuts.

The Committee discussed the following provision which was in the draft Code:

"Sanitizing facilities: It is generally known that nuts are subject to and sensitive to bacterial contamination that presents a health hazard. Due to the extreme sensitivity of nut products to bacterial contamination (with particular reference to the enteric bacteria), strict measures must be taken to ensure that all employees wash their hands before handling nut meats and sanitation measures must include a hand dip or rinse with a bactericidal solution."

Some delegations took the view that it would not be appropriate to include such a provision in the draft Code, since a similar provision was not inserted in other draft Codes for dried products which had a higher inherent moisture content than tree nuts. Other delegations took the view that the provision was particularly desirable for tree nuts, because tree nuts were a product which was virtually sterile in the shell, which received substantial handling during shelling and processing, and finally, unlike certain other dried products, was consumed mainly in the raw state. The Committee decided to delete the above provision from the text at this time.

Draft Code of Hygienic Practice for Eggs and Egg Products.

21. The Committee had before it a revised draft, dated December 1967, which had been drawn up by the United Kingdom. The draft Code had been elaborated on the basis of considerable previous discussion and comments and, after making editorial amendments to the draft, the Committee agreed that the amended document, which appears as Appendix VII to this Report, should be submitted to Governments for comment at step 3. The Committee was given a summary of the main points in the written U.S. comments on the draft. The delegation of the Netherlands undertook to send to the Chairman of the Committee before 1 November 1968 a paper dealing with microbiological tests relative to the presence of Salmonella.

Draft Code of Hygienic Practice for Molluscan Shellfish.

Draft Code on Sanitation and Disinfection of Fish Processing Plants.

22. The Committee did not consider the documents on Molluscan Shellfish and Sanitation and Disinfection of Fish Processing Plants as it had received no response from the Codex Committee on Fish and Fishery Products in regard to its referrals to that Committee as contained in paragraph 18 of the Report of its last session. The attention of the Codex Committee on Fish and Fishery Products is called to this referral and it is requested to advise this Committee in respect to the points contained in the referral.

Draft Code of Hygienic Practice for Frozen Fruit Juices.

23. The Committee noted the request of the Joint ECE/Codex Alimentarius Group of Experts on Standardization of Fruit Juices that

it proceed with the elaboration of a draft Code of Hygienic Practice for Frozen Fruit Juices and that it also consider chilled fruit juices. The Committee decided, however, that before proceeding with this work, it would be useful to refer the draft Code of Hygienic Practice for Deep Frozen Fruit and Vegetable Products to the Joint Group for consideration, as to whether it might be suitable also for frozen fruit juices. The Committee drew attention to the fact that this draft Code did not cover chilled products.

Draft Code of Hygienic Practice for Frozen Pre-cooked Foods.

24. The Committee noted the request of the Joint ECE/Codex Alimentarius Group of Experts on Standardization of Quick (Deep) Frozen Foods that it should continue to develop a Code of Hygienic Practice for Pre-cooked Frozen Foods, which should also include the semi-cooked products. In view of the fact that the existing draft Code did not cover semi-cooked products, it was agreed that the delegation of the author country (Canada) should present a revised draft which would include the semi-cooked products, for the next session of the Committee. The delegation of the United Kingdom drew attention to previous documentation which would be useful to the Canadian delegation in undertaking its task of revision. This documentation, which included definitions of fully cooked and semi-cooked products, would be made available to the Canadian delegation by the delegation of the United Kingdom.

Draft Code of Hygienic Practice for Poultry and Poultry Products.

25. The Committee considered the draft Code which had been prepared by the United Kingdom. The Committee recognized that there were important matters of substance to be resolved in the document, and therefore decided to hold it at step 2. Certain amendments were made to the document under discussion and it was agreed that the document as amended, which appears in Appendix VIII to this Report, should be sent to members of the Committee for their comments. The comments should be sent to the Chairman of the Committee as soon as possible, and in any event not later than 1 December 1968. It was agreed that this draft Code would be ascribed a high order of priority for the next session.

Among major points to which the Committee would have to direct its attention at the next session were the following examples:

- (a) to what extent should the Committee concern itself, from a hygienic point of view, with feed and water for poultry;
- (b) the question of whether there should be provisions on ante-mortem and post-mortem inspection in the Code;

- (c) the matter of buildup of microorganisms in the ice water slush used for cooling the product;
- (d) the materials utilized for equipment and construction, and frequency of cleaning.

Comments from the Federal Republic of Germany Concerning the Work of the Codex Committee on Food Hygiene.

26. The delegate of the Federal Republic of Germany introduced the above comments and stressed their salient features. He indicated that the comments concerned the question of whether Codes of Practice should be advisory or mandatory, the way in which the Codes would be published and their application, the relationship between the Committee and the WHO Expert Committee on Food Hygiene. The Committee noted that the comments had been formulated before the last session of the Codex Alimentarius Commission, which in fact had considered these matters. The Committee noted that the decisions of the Fifth Session of the Codex Alimentarius Commission responded in large measure to the points brought to the attention of the Committee.

Program of Future Work.

27. In view of its existing workload, the Committee decided not to embark upon the elaboration of any further Codes of Practice at this time.

Date and Place of the Next Session.

28. The Committee noted that the date and place of the next session would be fixed at the Sixth Session of the Codex Alimentarius Commission.

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JOINT FAO/WHO CODEX ALIMENTARIUS COMMISSION

CODEX COMMITTEE ON FOOD HYGIENE

Proposed Draft Provisional Code of Hygienic Practice
for Dried Fruits

(Going forward to Step 5)

To be read in conjunction with the General Principles of Food Hygiene. Side-lined portions indicate material which is particular to this Code of Hygienic Practice and therefore does not appear in the General Principles of Food Hygiene.

SECTION I - SCOPE

This code of practice applies to all fruits that have been dried by natural or artificial means or a combination of both. The fruit is dried to the extent that the greater part of the moisture has been removed, and in addition the fruit may be subjected to a safe and appropriate treatment in preparation and packing, to permit marketing in normal trade channels. Fruits covered by this code include apples, apricots, peaches, pears, nectarines, prunes, figs, dates, and vine fruits such as raisins and currants. Fruits other than vine fruits, prior to drying, if desired, and applicable for the particular fruit, may be cored, or pitted, sliced, diced, quartered, halved, or otherwise subdivided. This code does not apply to fruits commonly known as "dehydrated fruits" with a moisture content not exceeding 5%.

SECTION II - DEFINITIONS

None considered necessary for this code of practice.

SECTION III - RAW MATERIAL REQUIREMENTS

A. Environmental Sanitation in Growing and Production Areas

- (1) Sanitary disposal of human and animal wastes: Adequate precaution should be taken to ensure that human and animal wastes are disposed of in such a manner as not to constitute a public health or hygienic hazard and extreme care

should be taken to protect the products from contamination with these wastes.

- (2) As in the General Principles of Food Hygiene.
- (3) Animal, plant pest and disease control: Growing areas should be kept free from rotten or decomposing fruit that is attractive to insects, rodents, and birds. Where control measures are undertaken, treatment with chemical, biological, or physical agents should be done only in accordance with the recommendations of the appropriate official agency, by or under the direct supervision of personnel with a thorough understanding of the hazards involved, including the possibility of toxic residues being retained by the crop.

B. Sanitary Harvesting and Food Production

- (1) and (2) As in the General Principles of Food Hygiene.
- (3) Removal of obviously unfit materials: Unfit products should be segregated during harvesting and production to the fullest extent practicable and should be disposed of in an appropriate manner. The harvested fruit should be examined by competent persons to ensure that it is fit for further processing into food.
- (4) Protection of product from contamination: Suitable precautions should be taken to prevent the raw product from being contaminated by animals, insects, vermin, birds, chemical or microbiological contaminants or other objectionable substances during handling and storage. The nature of the fruit and the methods of harvesting will indicate the type and degree of protection required. The raw or dried fruit should be moved to suitable storage, or to the processing area for immediate processing, as soon as possible after harvesting or drying. Where products are likely to have become infested with insects or mites during or after harvesting or drying or as a preventive measure, suitable treatment such as fumigation should be applied. Fruit held for processing should be stored in closed containers, buildings, or under suitable type of covering that protects it from rodents, insects, birds, debris, and dust. Fumigation methods and chemicals used should be approved by legal authorities having jurisdiction.
- (5) Drying yards: Where fruit is dried by the sun in drying yards, such yards should be recognized as food processing yards whether drying is carried out on a grower's property or as a commercial operation. Such yards should as far as possible comply with such

of the provisions of Section IV of this code as are applicable, and in particular with the following requirements:

- (a) Location. Drying yards should in all cases be located a sufficient distance from cattle feed lots, settling ponds and/or other waste collection areas to prevent contamination from these sources. They should also be so located that they have proper and adequate drainage.
- (b) Construction. The drying yard should be so surfaced that it will permit maintenance of clean yard surfaces and prevent contamination of drying fruit. The drying yard should be fenced, where necessary, to keep out animals as far as practicable, and the area around the drying yard should be kept clean, free from weeds and other debris that can blow into the yard.

Cutting sheds in which fruit is pitted, cut, or otherwise prepared and spread on trays for drying should preferably be closed buildings with screened windows that do not permit access by rodents, insects, or birds. Where cutting is done in open sheds, adequate precautions should be taken to protect against insect, rodent, and bird contamination or harborage. The sheds should be adequately lit and ventilated, and adequate, clean toilet and hand-washing facilities should be provided.

Both fresh fruit for processing and the dried fruit should be stored in areas where it is protected from rodent, insect, and bird depredations, and storage time should be kept to a minimum consistent with good manufacturing practice.

There should be an adequate supply of clean potable water for hand-washing, equipment cleaning, and raw product washing. Standards of potability shall not be less than those contained in the "International Standards for Drinking Water," World Health Organization, 1963.

- (c) Hygienic operating requirements. Drying trays, cutting equipment, and storage bins should be kept clean and free from fruit residue and foreign substances that may cause contamination of the product.

C. Transportation

- (1) and (2) As in General Principles of Food Hygiene.

SECTION IV - PLANT FACILITIES AND OPERATING REQUIREMENTSA. Plant Construction and Layout

(1) Location, size and sanitary design: The building and surrounding area should be such as can be kept reasonably free of objectionable odors, smoke, dust, or other contamination; should be of sufficient size for the purpose intended without crowding of equipment or personnel; should be of sound construction and kept in good repair; should be of such construction as to protect against the entrance or harboring of insects or birds or vermin; and should be so designed as to permit easy and adequate cleaning. In areas experiencing high concentrations of airborne pollutants, equipment should be utilized to remove pollutants from the air blown across or through the product.

(2) Sanitary facilities and controls:

(a), (b), (c), (d), (e), (f), (g), and (h) As in General Principles of Food Hygiene.

B. Equipment and Utensils

(1), (2), and (3) As in General Principles of Food Hygiene.

(4) Equipment used for drying should be so constructed and operated that the product cannot be adversely affected by the drying medium.

C. Hygienic Operating Requirements

(1), (2), (3), (4), (5), and (6a - 6f) As in General Principles of Food Hygiene.

D. Operating Practices and Production Requirements

(1) Raw material handling:

(a) and (b) As in General Principles of Food Hygiene.

(c) Water used for conveying raw materials into the plant should be from such a source or suitably treated as not to constitute a public health hazard and should be used only by permission of the official agency having jurisdiction.

(2), (3), (4), and (5) As in General Principles of Food Hygiene.

(6) Preservation of finished product: Methods of preservation or treatment of the finished product should be such as to kill any insects or mites remaining after processing and to result in protection against contamination, deterioration, or development of a public health hazard. The finished product should be of such moisture content that it can be held in the localities of origin and distribution under any normally foreseeable conditions for those localities without significant deterioration by decay, mould, enzymatic changes, or other causes. In addition to applicable drying, the finished product may be treated with chemical preservatives at levels approved by the Codex Committee on Food Additives, as referenced in the Commodity Standards, heat processed and/or packed in hermetically sealed containers so that the product will remain safe and will not spoil under normal non-refrigerated storage conditions.

(7) Storage and transport of finished products: The finished products should be stored and transported under such conditions as will preclude the contamination with or development of pathogenic or toxigenic microorganisms and protect against rodent and insect infestation and deterioration of the product or of the container.

(a) The product should be stored under suitable conditions of time, temperature, humidity, and atmosphere, to prevent significant deterioration.

(b) Where dried fruits are stored under conditions in which they may become infested by insects and mites, appropriate methods of protection should be used regularly. Dried fruits should be stored in such a manner that they can be fumigated in situ or so stored that they can be removed elsewhere for fumigation in special facilities (e.g., fumigation chambers, steel barges, etc.). Cold storage can be used, either to prevent infestation in localities where insects are likely to be present in ordinary storage or to prevent insects damaging the fruit.

E. Sanitation Control Program

As in General Principles of Food Hygiene.

F. Laboratory Control Procedures

In addition to any control by the official agency having jurisdiction it is desirable that each plant in its own interest should have its

own or access to laboratory control of the sanitary quality of fruits processed. The amount and type of such control will vary with the fruit as well as the needs of management. Such control should reject all fruits that are unfit for human consumption. Analytical procedures used should follow recognized or standard methods in order that the results may be readily interpreted.

SECTION V - END-PRODUCT SPECIFICATIONS

Appropriate methods should be used for sampling, analysis, and determinations in the following specifications:

- A. To the extent possible in good manufacturing practice, the products should be free from objectionable matter.
- B. The products should not contain any pathogen microorganisms or any toxic substance originating from microorganisms.
- C. The product should comply with the requirements set forth by the Codex Committees on Pesticide Residues and Food Additives as referenced in the commodity standards.

JOINT FAO/WHO CODEX ALIMENTARIUS COMMISSION

CODEX COMMITTEE ON FOOD HYGIENE

Proposed Draft Provisional Code of Hygienic Practice
for Desiccated Coconut

(Going forward to Step 5)

To be read in conjunction with the General Principles of Food Hygiene. Side-lined portions indicate material which is particular to this Code of Hygienic Practice and therefore does not appear in the General Principles of Food Hygiene.

SECTION I - SCOPE

The following code of hygienic practice applies to desiccated coconut, the dried product prepared for human consumption without requiring further processing which is obtained by shredding or otherwise comminuting the kernel of coconuts, the fruit of the palm, Cocos nucifera.

SECTION II - DEFINITIONS

- A. Coconuts - coconuts consist of an outer skin (green or brown when harvested) enclosing a thick fibrous coating or husk; inside the husk is a woody shell which encloses the kernel and is separated from it by a brown skin. The kernel consists of an outer solid white layer enclosing an aqueous liquid known as coconut milk.
- B. Coconut meat - white solid outer layer of the kernel.
- C. Husking - the removal of the husk.
- D. Hatcheting - the removal of the shell.
- E. Paring - the removal of the brown skin around the kernel.

SECTION III - RAW MATERIAL REQUIREMENTSA. Environmental Sanitation in Growing and Food Production Areas

(1) and (2) - As (1) and (3) of the General Principles of Food Hygiene / (2) of GP is omitted /.

B. Sanitary Harvesting and Food Production

Harvesting and production operations and procedures should be in accord with clean and sanitary methods.

Coconuts are enclosed within a thick fibrous coating or husk, which has a green or brown skin when harvested. During ripening and dehusking after harvesting, contamination of the nuts may occur and clean and sanitary methods should be observed on the plantation and during dehusking. Following dehusking, special precautions should be taken to ensure that contamination does not occur.

C. Transportation

- (1) Facilities. Conveyances for transporting the harvested crop, which may have the husk removed on the farm, should be adequate for the purpose and should be of such material and construction as will permit thorough cleaning, and should be so cleaned and maintained as not to constitute a source of contamination to the nuts.
- (2) Handling procedures. All handling procedures should be such as will prevent the product from being contaminated. Extreme care should be taken in transporting dehusked coconuts to prevent spoilage or deterioration.

SECTION IV - PLANT FACILITIES AND OPERATING REQUIREMENTSA. Plant Construction and Layout

- (1) Location, size, and sanitary design. The buildings and surrounding area should be such as can be kept reasonably free of objectionable odors, smoke, dust, or other contamination; should be of sufficient size for the purpose intended without crowding of equipment or personnel; should be of sound construction and kept in good repair; should be of such construction as to protect against the entrance and harboring of insects, birds, or vermin; and should be so designed as to permit easy and adequate cleaning. Special precautions should

be taken in the shredding, desiccating, and packing sections to protect against the entry of birds, insects, and vermin and for this purpose all openings should be covered with perforated metal gauze or other suitable protective covering. Separate and adequate space should be provided for the storage of nuts awaiting manufacture, shell awaiting disposal, rejected nuts, firewood, etc.

Floors should be constructed of material which is not capable of supporting microbial growth, and should be hard surfaced. They should be designed and so drained as to facilitate effective cleaning.

(2) Sanitary facilities and controls

- (a) Separation of processes. The husk, if it is not removed in the growing area, should be removed in a place separate from the factory. Dehusked nuts should be received into the factory buildings, and the processes of hatcheting, paring, and washing of the coconut meat should be carried out in a separate section from the subsequent processes. There should be no direct access from the hatcheting, paring, and washing sections to the other sections.

The sections should be so arranged that the coconut passes from the hatcheting, paring, and washing sections through to the packing room without retracing its path or passing through an area used for ancillary activities. Precautions should be taken to prevent contamination of shredding, desiccating, and packing sections of the factory with dust.

Separate rooms or compartments should be provided for the storage of inedible materials, such as fuel and lubricants. The food handling area should be completely separated from any part of the premises used as living quarters.

- (b) Water supply. An ample supply of cold water should be available and an adequate supply of hot water where necessary. The water supply should be of potable quality. Standards of potability shall be not less than those contained in the "International Standards for Drinking Water," World Health Organization, 1963. No husk pit for the retting of husks should be located within 300 feet of any well from which water is drawn for use in the factory.
- (c) As in (d) in the General Principles of Food Hygiene.
(d) As in (e) in the General Principles of Food Hygiene.

- (e) As in (f) in the General Principles of Food Hygiene.
- (f) As in (g) in the General Principles of Food Hygiene.

(Item (c) of the General Principles of Food Hygiene is omitted.)

- (g) Washing facilities. Adequate and convenient facilities for employees to wash and dry their hands should be provided wherever the process demands. They should be in full view of the processing floor. Single-use towels are recommended, but otherwise the method of drying should be approved by the official agency having jurisdiction. In addition, where applicable, foot baths containing a suitable bactericidal solution should be provided at all appropriate entrances to the factory. The facilities should be kept in a sanitary condition at all times.

B. Equipment and Utensils

- (1) Materials. All food contact surfaces should be smooth; free from pits, crevices, and loose scale; non-toxic; unaffected by the coconut meat and milk; and capable of withstanding repeated exposure to normal cleaning, and non-absorbent unless the nature of a particular and otherwise acceptable process renders the use of a surface such as wood necessary.
- (2) As in General Principles of Food Hygiene.
- (3) Equipment and utensils used for inedible or contaminating materials should be so identified and should be used only for handling such products. Suitable containers should be provided for the collection of coconut shell and parings, and for rejected kernels.

Coconut parings must not under any circumstances be dried in the desiccators used for the coconut meat.

C. Hygienic Operating Requirements

- (1) Sanitary maintenance of plant, facilities, and premises. The building, equipment, utensils, and all other physical facilities of the plant should be kept in good repair and should be kept clean and maintained in an orderly sanitary condition. Waste materials should be frequently removed from the working area during plant operation and adequate waste receptacles should be provided. All equipment in the shredding, desiccating, and packing sections coming into direct contact with the coconut should be cleaned, washed, and disinfected after each period of work and at least twice daily by means approved by the official

agency. Detergents and disinfectants employed should be appropriate to the purpose and should be so used as to present no hazard to public health.

- (2) Vermin control. Effective measures should be taken to protect against the entrance into the plant, and especially into the shredding section, desiccating section, and packing and storage sections, and the harborage on the premises of insects, rodents, birds, or other vermin.
- (3) Exclusion of domestic animals. Dogs, cats, and other domestic animals should be excluded from areas where coconut or coconut products are processed or stored.
- (4), (5), (6a) and (6b) As in the General Principles of Food Hygiene.
- (6c) Spitting, eating, and the use of tobacco, betel nut, or chewing gum should be prohibited in food handling areas.
- (6d), (6e), and (6f) As in the General Principles of Food Hygiene.

D. Operating Practices and Production Requirements

- (1) Raw material handling
 - (a) As in General Principles of Food Hygiene.
 - (b) Storage. Coconuts stored on the plant premises should be maintained under conditions that will protect against contamination and infestation, and minimize deterioration.
- (2) Inspection and sorting. At the paring and washing stage, all kernels should be inspected and any unfit, including germinated kernels, rejected. Such operations should be carried out in a clean and sanitary manner. Only clean, sound coconut meat should be permitted for further processing.
- (3) Washing. Water used for washing the kernels should be clean and of potable quality. It should be so frequently changed that the possibility of contamination is kept to a minimum and the water should not be recirculated unless suitably treated, for example by filtration and chlorination, to maintain it in a condition such as will not constitute a public health hazard.
- (4) After washing and before shredding, the coconut meat should be subjected to an effective process to eliminate pathogenic organisms from the surface of the meat, such as immersion in an adequate quantity of boiling water for a period of not less than one and a half minutes.

- (5) After this process, the coconut meat should not be manually handled in any way, but mechanical devices, or containers and scoops or rakes or other implements constructed of impervious materials, should be used to prevent contamination. Such implements should be cleaned, washed, and disinfected after each period of work and at least twice daily, by means approved by the official agency, and suitable racks or other places provided for their placing when not in use, such that they do not become contaminated.
- (6) Shredded coconut should be dried in a current of clean hot air free from chemical contamination until the moisture content reaches a safe level for storage. There should be thin layering of the shredded coconut on the desiccator trays, and effective methods for the breaking up of the mat should be used. After drying, coconut should be cooled before packaging.
- (7) Preparation and processing. As in Section IV D 4 of General Principles of Food Hygiene.
- (8) If desiccated coconut is not packed at the factory into the containers in which it will be shipped, it should be transported to the packing rooms in nonabsorbent containers capable of being cleaned and which are disinfected before filling at the factory. The same hygienic precautions should be taken in these packing rooms as are appropriate to the packing section at the factory.
- (9) Packaging of finished product
 - (a) Materials. Packaging materials should be stored in a clean and sanitary manner, should not transmit to the product objectionable substances beyond limits acceptable to the official agency having jurisdiction, and should provide appropriate protection from contamination. The packaging material should be approved by the official agency and, for example, may comprise multiwall paper sacks with appropriate fat- and moisture-resistant layers or aluminum lined cases.
 - (b) Techniques. Packaging should be done in a separate clean room. Precautions such as the use of magnets or metal detectors should be taken to eliminate any metallic contamination. Packaging should be done under conditions that preclude the introduction of contamination into the product, and mechanical rams or vibrators should be used so as to eliminate manual handling of the desiccated coconut.

- (10) All containers should be so marked as to identify the factory at which the desiccated coconut has been manufactured.
- (11) As in D(7) in the General Principles of Food Hygiene.

E. Sanitation Control Program

As in the General Principles of Food Hygiene.

F. Laboratory Control Procedures

Regular and frequent samples of desiccated coconut should be taken from the packing section and examined for:

- (1) moisture content
- (2) microorganisms
- (3) fat content and free fatty acids
- (4) contamination with any objectionable matter.

SECTION V - END-PRODUCT SPECIFICATIONS

Desiccated coconut should be the clean, sound, wholesome product of the kernel of sound mature coconuts.

Appropriate methods should be used for sampling, analysis, and determination to meet the following specifications:

The product should--

- A. not contain pathogenic microorganisms such as salmonellae or any toxic substance originating from microorganisms.
- B. be such that the acidity of the oil extracted by the solvent process should not exceed 0.3% of free fatty acids calculated as lauric acid.
- C. to the extent possible in good manufacturing practice be free from any objectionable matter.
- D. have a moisture content not exceeding 3%.

JOINT FAO/WHO CODEX ALIMENTARIUS COMMISSION

CODEX COMMITTEE ON FOOD HYGIENE

Proposed Draft Provisional Code of Hygienic Practice
for Dehydrated Fruits and Vegetables Including Edible Fungi

(Going forward to Step 5)

To be read in conjunction with the General Principles of Food Hygiene. Side-lined portions indicate material which is particular to this Code of Hygienic Practice and therefore does not appear in the General Principles of Food Hygiene.

SECTION I - SCOPE

The scope includes fruits and vegetables which are artificially dehydrated (including freeze-dried), either from the succulent stage or in combination with sun-drying, and covers the products commonly associated with the phrase "dehydrated food." Such fruits and vegetables are relatively low in moisture and generally unpalatable in dehydrated form and can be held under normal conditions without significant deterioration by decay, mold, enzymatic, or bacterial action. Fruits covered by these standards cover, but are not limited to: apples, bananas, cranberries, cherries, bilberries, and subdivided and whole forms of "dried fruits" of low moisture content (maximum of 5%); vegetables include but are not limited to: artichokes, asparagus, green beans, cabbage, cauliflower, celery, sweet corn, eggplant, onions, green peas, potatoes, squash, sweet potatoes, tomatoes, edible cultivated mushrooms, and whole and sliced dried wild fungi, according to the Codex Alimentarius list of acceptable varieties. The fruit or vegetable may be sliced, cubed, diced, granulated, or in other subdivided form, or left whole prior to dehydration.

Exclusion: Tree nuts and the relatively high moisture content "dried fruits" of commerce, which are edible in the dry state; cereal grains, dried beans, dried peas other than green peas, dried spices, and other dry food products which only on occasion require an artificial drying or conditioning treatment prior to storage.

SECTION II - DEFINITIONS

Dehydration is the removal of moisture by artificial means and in some cases in combination with sun-drying.

SECTION III - RAW MATERIAL REQUIREMENTSA. Environmental Sanitation in Growing and Food Production Areas

(1) Sanitary disposal of human and animal wastes. Adequate precautions should be taken to ensure that human and animal wastes are disposed of in such a manner as not to constitute a public health or hygienic hazard, and extreme care should be taken to protect the product from contamination with these wastes.

(2) and (3) As in the General Principles of Food Hygiene.

B. Sanitary Harvesting and Food Production

(1), (2), (3), and (4) As in the General Principles of Food Hygiene.

C. Transportation

(1) and (2) As in the General Principles of Food Hygiene.

SECTION IV - PLANT FACILITIES AND OPERATING REQUIREMENTSA. Plant Construction and Layout

(1) Location, size, and sanitary design. The building and surrounding area should be such as can be kept reasonably free of objectionable odors, smoke, dust, or other contaminants; should be of sufficient size for the purpose intended without crowding of equipment or personnel; should be of sound construction and kept in good repair; should be of such construction as to protect against the entrance or harboring of insects or birds or vermin; and should be so designed as to permit easy and adequate cleaning. In areas experiencing high concentrations of air-borne pollutants, equipment should be used to remove pollutants from the air blown across or through the product.

(2) Sanitary facilities and controls

(a) As in the General Principles of Food Hygiene.

(b) An ample supply of hot and cold water should be available. The water supply should be of potable quality. Standards of potability shall not be less than those contained in the "International Standards for Drinking Water," World Health Organization, 1963.

(c) and (d) As in the General Principles of Food Hygiene.

(e) Plumbing and waste disposal. All plumbing and waste disposal lines (including sewer systems) must be large enough to carry peak loads. All lines must be water-tight and have adequate traps and vents. Disposal of waste should be effected in such a way as not to permit contamination of potable water supplies. The plumbing and the manner of waste disposal should be approved by the official agency having jurisdiction. Removal of solid or semi-solid wastes from the product preparation and canning areas should be on a continuous or near continuous basis, using water and/or appropriate equipment so that these areas are kept clean and there is no danger of contaminating the product. Also, they should be disposed of in a way that they cannot be used for human food. Waste materials should be disposed of in a place and in such a manner that they cannot contaminate food and water supplies and cannot offer harborage or breeding places for rodents, insects, or other vermin.

(f), (g), and (h) As in the General Principles of Food Hygiene.

B. Equipment and Utensils

(1), (2), and (3) As in General Principles of Food Hygiene.

(4) Equipment used for drying should be so constructed and operated that the product cannot be adversely affected by the drying medium.

C. Hygienic Operating Requirements

As in the General Principles of Food Hygiene.

D. Operating Practices and Production Requirements

(1), (2), (3), (4), and (5) As in the General Principles of Food Hygiene.

- (6) Preservation of finished product. Methods of preservation or treatment of the finished product should be such as to kill any insects or mites remaining after processing and to result in protection against contamination, deterioration, or development of a public health hazard. The finished product should be of such moisture content that it can be held in the localities of origin and distribution under any normally foreseeable conditions for those localities without significant deterioration by decay, mould, enzymatic changes, or other causes. In addition to applicable drying, the finished product may be treated with chemical preservatives at levels approved by the Codex Committee on Food Additives, as referenced in the Commodity Standards, heat processed and/or packed in hermetically sealed containers so that the product will remain safe and will not spoil under normal non-refrigerated storage conditions.
- (7) Storage and transport of finished products. The finished products should be stored and transported under such conditions as will preclude the contamination with or development of pathogenic or toxigenic microorganisms and protect against rodent and insect infestation and deterioration of the product or of the container.
- (a) The product should be stored under suitable conditions of time, temperature, humidity, and atmosphere, to prevent significant deterioration. Humidity control is of primary importance for this product.
- (b) Where dehydrated products are stored under conditions in which they may become infested by insects and mites, appropriate methods of protection should be used regularly. The dehydrated products should be stored in such a manner that they can be fumigated in situ or so stored that they can be removed elsewhere for fumigation in special facilities (e.g., fumigation chambers, steel barges, etc.). Cold storage can be used, either to prevent infestation in localities where insects are likely to be present in ordinary storage or to prevent insects damaging the fruit.

E. Sanitation Control Program

As in the General Principles of Food Hygiene.

F. Laboratory Control Procedures

As in the General Principles of Food Hygiene.

SECTION V - END-PRODUCT SPECIFICATIONS

Appropriate methods should be used for sampling, analysis, and determination to meet the following specifications:

- A. To the extent possible in good manufacturing practice, the products should be free from objectionable matter.
- B. The products should not contain any pathogenic microorganisms or any toxic substances originating from microorganisms.
- C. The products should comply with the requirements set forth by the Codex Committees on Pesticide Residues and Food Additives as referenced in the Commodity Standards.

JOINT FAO/WHO CODEX ALIMENTARIUS COMMISSION

CODEX COMMITTEE ON FOOD HYGIENE

Proposed Draft Provisional Code of Hygienic Practice
for Deep-Frozen Fruit and Vegetable Products

(Going forward to Step 5)

To be read in conjunction with the General Principles of Food Hygiene. Side-lined portions indicate material which is particular to this Code of Hygienic Practice and therefore does not appear in the General Principles of Food Hygiene.

SECTION I - SCOPE

This code of practice applies to blanched or unblanched fruit and vegetable products packed in suitable containers and which have been deep frozen either before or after packing.

SECTION II - DEFINITIONS

- A. A suitable container should be so constructed as to protect the product from contamination; be suitable for the type of product and may be of cardboard, plastic, metal, or other appropriate material, lined or coated as need be.
- B. Deep-frozen fruit and vegetable products are those as defined by the Joint ECE/Codex Alimentarius Group of Experts on Standardization of Quick (Deep) Frozen Foods.

SECTION III - RAW MATERIAL REQUIREMENTS

- A. Environmental Sanitation in Growing and Raw Food Production Areas
(1), (2), and (3) As in the General Principles of Food Hygiene.

B. Sanitary Harvesting and Food Production

(1), (2), (3), and (4) As in the General Principles of Food Hygiene.

C. Transportation

(1) and (2) As in the General Principles of Food Hygiene.

SECTION IV - PLANT FACILITIES AND OPERATING REQUIREMENTS**A. Plant Construction and Layout**

(1) Location, size, and sanitary design - as in General Principles of Food Hygiene.

(2) Sanitary facilities and controls

(a) As in General Principles of Food Hygiene.

(b) Water supply. An ample supply of hot and cold water should be available. The water supply should be of potable quality. Standards of potability shall not be less than those contained in the "International Standards for Drinking Water," World Health Organization, 1963.

(c) and (d) As in the General Principles of Food Hygiene.

(e) Plumbing and waste disposal. All plumbing and waste disposal lines (including sewer systems) must be large enough to carry peak loads. All lines must be water-tight and have adequate traps and vents. Disposal of waste should be effected in such a manner as not to permit contamination of potable water supplies. The plumbing and the manner of waste disposal should be approved by the official agency having jurisdiction.

Removal of solid or semi-solid wastes from the product preparation and processing and packaging areas should be on a continuous or near continuous basis, using water and/or appropriate equipment so that these areas are kept clean and there is not danger of contaminating the product. Also, they should be disposed of in a way that they cannot be used for human food. Waste materials should be disposed of in a place and in such a manner that they cannot contaminate food and water supplies and cannot offer harborages or breeding places for rodents, insects, or other vermin.

(f), (g), and (h) As in the General Principles of Food Hygiene.

B. Equipment and Utensils

(1), (2), and (3) As in the General Principles of Food Hygiene.

C. Hygienic Operating Requirements

(1), (2), (3), (4), (5), and (6a - 6f) As in the General Principles of Food Hygiene.

D. Operating Practices and Production Requirements

(1) Raw material handling.

(a) and (b) As in the General Principles of Food Hygiene.

(c) Water used for conveying raw material into the plant should be from a source or suitably treated as not to constitute a public health hazard and should be used only by permission of the official agency having jurisdiction.

(2), (3), (4), and (5a-5b) As in the General Principles of Food Hygiene.

(6) Preservation of finished product. In order to avoid microbial proliferation, fruit and vegetable products for deep freezing should be cooled as quickly as possible, and kept at as low temperature as possible related to the holding time before deep freezing. The product should be frozen as soon as possible thereafter to prevent deterioration. The initial drop in temperature in the freezing process must take place as quickly as possible in accordance with good manufacturing practice.

(7) Storage, transportation, and distribution. The provisions relating to storage, transportation, distribution, and re-freezing should be those being elaborated by the Joint Codex/ECE group of experts on quick-frozen foods in their General Standard for Quick-Frozen Foods.

(8) Information on label. According to the provisions contained in the General Standard for Quick (Deep) Frozen Foods being elaborated by the Joint ECE/Codex Alimentarius Group of Experts on Standardization of Quick (Deep) Frozen Foods, the packages of deep-frozen foods must bear clear indications as to the way to keep them from the time they are bought at the retailer to that of their use.

E. Sanitation Control Program

As in the General Principles of Food Hygiene.

F. Laboratory Control Methods

As in the General Principles of Food Hygiene.

SECTION V - END-PRODUCT SPECIFICATIONS

Appropriate methods should be used for sampling, analysis, and determination to meet the following specifications:

- A. To the extent possible in good manufacturing practice, the products should be free from objectionable matter.
- B. The products should not contain any pathogenic microorganisms or any toxic substances originating from microorganisms.
- C. The products should comply with the requirements set forth by the Codex Committees on Pesticide Residues and Food Additives, as referenced in the Commodity Standards.

JOINT FAO/WHO CODEX ALIMENTARIUS COMMISSION

CODEX COMMITTEE ON FOOD HYGIENE

Proposed Draft Provisional Code of Hygienic Practice
for Tree Nuts

(Going forward to Step 3)

To be read in conjunction with the General Principles of Food Hygiene. Side-lined portions indicate material which is particular to this Code of Hygienic Practice and therefore does not appear in the General Principles of Food Hygiene.

SECTION I - SCOPE

This code of practice had been specifically designed for almonds (Prunus amygdalus) and walnuts (Juglans spp.) but is generally applicable to all tree nuts, including filberts (hazel nuts) (Corylus spp.), pecans (Carya illinoensis), brazils (Bertholletia excelsa), cashews (Anacardium occidentale), chestnuts (Castanea spp.), etc.

In considering hygienic practices for tree nuts, two basic products are recognized--the inshell nut and the nut meats with specific and often different sanitation problems.

Further consideration has been given to the fact that a tree nut grower may deliver his product to the packer either in the shell or as nut meats. The code of practice has been designed to set the basic hygienic requirements for orchards, farm processing (shelling and hulling), and/or commercial shelling or inshell operations.

They cover all tree nuts and tree nut products, including the blanched, diced, ground, and similar products, but do not include products where tree nuts are a minor ingredient.

SECTION II - DEFINITIONS

Blows. "Blows" are inshell nuts which are unusually lightweight due to extensive damage from physiological, fungous, insect, or other causes and capable of removal mechanically by air flow.

SECTION III - RAW MATERIAL REQUIREMENTSA. Environmental Sanitation in Growing and Food Production Areas

- (1) Sanitary disposal of human and animal wastes. Adequate precaution should be taken to ensure that human and animal wastes are disposed of in such a manner as not to constitute a public health or hygienic hazard, and extreme care should be taken to protect the products from contamination with these wastes.
- (2) and (3) As in the General Principles of Food Hygiene.

B. Sanitary Harvesting and Food Production

- (1) Tree nut harvesting procedures generally include shaking the trees and picking the nuts off the ground. Since nuts are picked off the ground, the orchard preferably should not be used for grazing or holding cattle or other animals. If the land has been so used, the orchard should be worked immediately prior to harvesting (disced, rototilled, or soil turned in some manner) prior to harvest to lessen the hazard of faecal contamination of food products. Where the exclusion of animals and subsequent working of the land are impracticable, other steps should be taken to protect the nuts during harvesting; for example, the spreading of protective sheets below the trees.
- (2) As in the General Principles of Food Hygiene.
- (3) Sanitary techniques. Harvesting and production operations, methods procedures should be clean and sanitary. This includes the hulling and drying of nuts that are generally considered part of the harvest or farm operation. Hulling and drying equipment should be so constructed that it can be easily cleaned and maintained. When water is used in this process, it must be potable water.

- (4) Removal of obviously unfit materials. Unfit nuts should be segregated during harvesting and production to the fullest extent practicable and should be disposed of in an appropriate manner. Following hulling it is recommended that all nuts be subjected to a defect separation and quality inspection before they are delivered for further processing into human food. Nuts should not be delivered for such processing unless they are free from obvious faecal contamination, infestations, decomposition and other defects, such as broken shells, imbedded dirt, blows, etc., to an extent which would render them unfit for human consumption.
- (5) Protection of nuts from contamination. Suitable precautions should be taken to prevent the nuts from being contaminated by animals, insects, vermin, birds, chemical or microbiological contaminants, or other objectionable substances during handling and storage. The nature of the nut and the methods of harvesting will indicate the type and degree of protection required. The nuts should be moved to suitable storage, or to the processing area for immediate processing, as soon as possible after harvesting or drying. Where nuts are likely to have become infested with insects, during or after harvesting, as a preventive measure suitable treatment such as fumigation should be applied. Nuts held for processing should be stored in closed containers, buildings, or under suitable type of covering that protects them from rodents, insects, birds, debris, and dust. Fumigation methods and chemicals used should be approved by legal authorities having jurisdiction. High humidities which are conducive to proliferation of mould and elaboration of mycotoxins should be avoided.

C. Transportation

- (1) and (2) As in the General Principles of Food Hygiene except the final sentence of (2) dealing with ice.

SECTION IV - PLANT FACILITIES AND OPERATING
REQUIREMENTS

A. Plant Construction and Layout

- (1) Location, size, and sanitary design

As in the General Principles of Food Hygiene.

(2) Sanitary facilities and controls

(a), (b), (d), (e), (f), (g), and (h) As in the General Principles of Food Hygiene.

B. Equipment and Utensils

As in the General Principles of Food Hygiene.

C. Hygienic Operating Requirements

(1), (2), (3), (4), (5), (6) As in the General Principles of Food Hygiene.

D. Operating Practices and Production Requirements

(1) Raw material handling

(a) Acceptance criteria. The raw material should not be accepted by the plant if known to contain decomposed, toxic, or extraneous substances which will not be removed to acceptable levels by normal plant procedures of sorting or preparation. Particular care should be taken to avoid contaminating either inshell nuts or nut meats with either animal or human faecal material, and if it is suspected that nuts have been so contaminated, they should be rejected for human consumption. Special precautions must be taken to reject nuts showing signs of mould growth because of the danger of their containing mycotoxins.

(b) and (c) As in the General Principles of Food Hygiene.

(2), (3), (4), and (5) As in the General Principles of Food Hygiene.

(6) Preservation of finished product. The finished product of shelled nuts or nut meats shall be of such a moisture content that they can be held under normal conditions without significant deterioration by decay, mould, or enzymatic changes. Finished products may be treated with chemical preservatives at levels approved by the Codex Committee on Food Additives as referenced in the Commodity Standard, heat processed and/or packed in hermetically sealed containers, so the product will remain safe and will not spoil under normal conditions.

- (7) Storage and transport of finished product. The finished product should be stored and transported under such conditions as will preclude the development of pathogenic or toxigenic microorganisms; and protect against deterioration of the product or of the container.
- (a) All finished products should be stored in clean, dry buildings, protected from rodents, insects, birds, or other vermin.
 - (b) Optimum storage conditions for tree nuts:
 - i. For optimum conditions store at approximately 34°F (1.1°C) with a relative humidity from 60% to 70%.
 - ii. Where nut products are stored under conditions in which they may become infested by insects and mites, appropriate methods of protection should be used regularly. Nut products should be stored in such a manner that they can be fumigated in situ or so stored that they can be removed elsewhere for fumigation in special facilities (e.g., fumigation chambers, steel barges, etc.). Cold storage can be used, either to prevent infestation in localities where insects are likely to be present in ordinary storage or to prevent insects damaging the nut products.

E. Sanitary Control Procedures

As in the General Principles of Food Hygiene.

F. Laboratory Control Procedures

In addition to any control by the official agency having jurisdiction it is desirable that each plant in its own interest should have its own or access to laboratory control of the sanitary quality of the nut products processed. The amount and type of such control will vary with the different nut products as well as the needs of management. Such control should reject all nuts that are unfit for human consumption. Analytical procedures used should follow recognized or standard methods in order that the results may be readily interpreted.

SECTION V - END-PRODUCT SPECIFICATIONS

Appropriate methods should be used for sampling, analysis, and determination to meet the following specifications:

- A. To the extent possible in good manufacturing practice, the products should be free from objectionable matter.
- B. The products should not contain any pathogenic microorganisms or any toxic substance originating from microorganisms.
- C. The products should comply with the requirements set forth by the Codex Committee on Pesticide Residues and Food Additives as referenced in the Commodity Standards.

JOINT FAO/WHO CODEX ALIMENTARIUS COMMISSION

CODEX COMMITTEE ON FOOD HYGIENE

Proposed Draft Provisional Code of Hygienic Practice
for Egg and Egg Products

(Going forward to Step 3)

To be read in conjunction with the General Principles of Food Hygiene. Side-lined portions indicate material which is particular to this Code of Hygienic Practice and therefore does not appear in the General Principles of Good Hygiene.

SECTION I - SCOPE

This Code of Practice is designed to:

- A. Prevent deterioration in the quality of eggs in shell intended for processing into one or more of the following commodities.
- B. Prescribe a code of hygienic practice for the production for human consumption of:
 - (1) Pasteurised liquid whole egg
 - (2) Pasteurised frozen whole egg
 - (3) Frozen whole egg
 - (4) Pasteurised liquid egg albumen
 - (5) Pasteurised frozen egg albumen
 - (6) Frozen egg albumen
 - (7) Pasteurised liquid egg yolk
 - (8) Pasteurised frozen egg yolk
 - (9) Frozen egg yolk
 - (10) Powdered egg albumen
 - (11) Powdered egg yolk
 - (12) Crystalline egg albumen
 - (13) Dried whole egg
- C. Prescribe a code of hygienic practice relating to premises, plant, equipment, and personnel used or engaged in the production of these products.

Unless specifically stated otherwise, the word "egg" in this code relates to domestic chickens' eggs intended for processing as above.

SECTION II - DEFINITIONS

"Pasteurised liquid whole egg"	means whole eggs which have been broken out from shell, mixed together to form a pulp, heat-treated and cooled by an approved method.
"Pasteurised frozen whole egg"	means pasteurised liquid whole egg which has been subsequently frozen in a suitable container.
"Frozen whole egg"	means whole eggs which have been broken out from shell, mixed together to form a pulp, and subsequently frozen in a suitable container.
"Pasteurised liquid egg albumen"	means egg white from which egg yolk has been separated, which has been heat-treated and cooled by an approved method.
"Pasteurised frozen egg albumen"	means pasteurised liquid egg albumen which has been subsequently frozen in a suitable container.
"Frozen egg albumen"	means egg white from which egg yolk has been separated, which has been subsequently frozen in a suitable container.
"Pasteurised liquid egg yolk"	means egg yolk which has been separated from egg white and subsequently heat-treated and cooled by an approved method.
"Pasteurised frozen egg yolk"	means pasteurised liquid egg yolk which has been subsequently frozen in a suitable container.
"Frozen egg yolk"	means egg yolk which has been separated from egg white and subsequently frozen in a suitable container.

"Powdered egg albumen"	means pasteurised liquid albumen which has been spray-dried or dried by any other suitable process.
"Powdered egg yolk"	means pasteurised liquid egg yolk which has been spray-dried or dried by any other suitable process.
"Crystalline egg albumen"	means pasteurised liquid egg albumen which has been pan-dried.
"Dried whole egg"	means pasteurised liquid whole egg which has been spray-dried or dried by any other suitable process.
"Liquid egg"	means any mixture of yolk and albumen, other than reconstituted dried egg, and includes any such mixture which is frozen, chilled, or otherwise preserved.
"Premises"	means a building or part of a building and any forecourt, yard, or place of storage used in connection with the building.
"Breaking machine"	means a mechanical method of egg breaking which will permit inspection of the egg contents thus enabling such contents as are found to be unfit for processing to be rejected.
"Leakers"	means eggs in shell from which the contents are found to be leaking at any stage of handling before the breaking out process.

SECTION III - RAW MATERIAL REQUIREMENTS

A. Environmental Sanitation in Production Areas

(1), (2), and (3) As in the General Principles of Food Hygiene.

B. Sanitary Harvesting and Production of Raw Materials

(1) As in the General Principles of Food Hygiene.

(2) Sanitary techniques. To prevent deterioration in the quality of eggs intended for processing in accordance with this standard, it is essential that steps be taken to prevent:

- (a) Contamination of the shell with dirt or any other extraneous matter.
- (b) Exposures to high temperatures.
- (c) Rough handling.

Broody hens should be removed frequently to prevent fouling of nests and the spoilage of eggs due to excess warmth whilst under the hens.

Eggs should be collected not less than three times daily and should be handled as little as possible, with clean hands.

Dirty eggs should preferably be dry cleaned either with simple hand equipment or with a dry cleaning machine. Where this is not practicable, dirty eggs should be washed in water containing a suitable detergent/sterilant at an approved temperature.

- (3) Removal of obviously unfit materials. Unfit eggs should be segregated during collection to the fullest extent practicable, and should be disposed of in a manner such as will prevent contamination of other eggs or water supplies.
- (4) Protection of product from contamination. As in the General Principles of Food Hygiene but omitting last sentence and with the addition of the following:

Eggs should be stored in a cool room to which they should be taken immediately after collection. They should not be stacked or packed into boxes until they are cool, and the room should be kept free from strong smelling substances and odours. Eggs should be stored at 10-13°C (50-55°F) and at a relative humidity of 75-80 per cent.

Thin-shelled or hair-cracked eggs should be carefully handled and packed in a separate container to prevent breakage before delivery to the breaking plant.

C. Transportation

- (1) **Facilities.** As in the General Principles of Food Hygiene with the addition of the following:

Eggs should be collected from the producers' premises and delivered to the processing plant as soon as possible, and be maintained at a temperature below 13°C (55°F).

- (2) As in the General Principles of Food Hygiene.

SECTION IV - PLANT, FACILITIES, AND OPERATING REQUIREMENTS

A. Plant Construction and Layout

- (1) **Location, size, and sanitary design.** As in the General Principles of Food Hygiene with the addition of the following:

The construction and layout of the processing premises should be such as to secure a regulated flow from the arrival of the eggs at the premises to the finished product, and should provide for correct temperature storage at all stages of the process.

- (2) **Sanitary facilities and controls.**

- (a) **Separation of processes.** As in the General Principles of Food Hygiene with the addition of the following:

Separate rooms should be provided for unpacking the eggs and storing the finished product, but breaking, pasteurising, and filling may be carried out in recognised areas within the same room.

- (b), (c), and (d) As in the General Principles of Food Hygiene.

- (e) **Plumbing and waste disposal.** As in the General Principles of Food Hygiene with the addition of the following:

Drainage systems which include sumps or solid matter traps should be designed so as to allow them to be emptied and thoroughly washed out with hot water containing detergent and sterilant at the close of every working day.

- (f) **Lighting and ventilation.** As in the General Principles of Food Hygiene with the addition of the following:

The illumination in any part of a washroom should be not less than 20 foot candles, and at points requiring close examination of the product they should be illuminated at an intensity of not less than 50 foot candles. Reflector filaments should be designed to allow easy dismantling, cleaning, and reassembling.

Ventilation should be planned to allow for at least three changes of air per hour and to ensure that the direction of air flow is from the "clean" area to the "dirty" area.

(g) and (h) As in the General Principles of Food Hygiene.

B. Equipment and Utensils

- (1) As in the General Principles of Food Hygiene.
- (2) Sanitary design, construction, and installation. As in the General Principles of Food Hygiene with the addition of the following:

Wooden equipment should not be used in the unpacking, breaking, pasteurising, or filling rooms.

All pumps, pipes, vessels, and contact surfaces should be of stainless steel or other acceptable material.

Containers for shell eggs moving into the breaking room and breaking tables should be of stainless steel, aluminium, or of plastic materials. Plastic materials used for this purpose should be free from cracks and scratches and should be capable of withstanding the regular cleaning and sterilisation process.

- (3) As in the General Principles of Food Hygiene.

C. Hygienic Operating Requirements

- (1) Sanitary maintenance of plant, facilities, and premises. As in the General Principles of Food Hygiene with the addition of the following:

Whenever the process is stopped, all breaking equipment should be replaced with clean, sterilised equipment. At the same time the surfaces of breaking tables should be cleaned, liberally hosed with clean water, and wiped dry with clean disposable tissues. Cloths should not be used.

All equipment should be thoroughly cleaned and sterilised at all break points. Sterilisation should always be carried out before commencement of the day's work. Steam condensate should not be allowed to remain in any equipment. In addition, where "in-place" cleaning is carried out the plant should be completely dismantled for cleaning not less than once weekly.

The final stage of cleaning should be a thorough rinse with clean, hot water.

After sterilisation plant and equipment should be handled as little as possible. Waste materials (including empty shells and reject eggs) should be stored in such a manner as not to cause a nuisance from offensive odours, flies, or other vermin. They should be removed from the premises at least once daily. Immediately after emptying, the receptacles should be thoroughly washed out with hot water and detergent, and the paved area used for storage of waste receptacles should be thoroughly cleaned and disinfected.

- (2), (3), (4), (5), and (6) As in the General Principles of Food Hygiene.

D. Operating Practices and Production Requirements

(1) Egg processing.

General. All liquid egg should, where applicable, be pasteurised by an approved method acceptable to the official agency having jurisdiction.

(2) Pasteurised frozen whole egg.

- (a) Eggs in shell. On receipt at the plant, shell eggs should be stored in their cases in a cool, clean room and processed as soon as possible. Cases should be stored in racks off the floor to permit cleaning underneath.

Eggs should be unpacked in a room completely separated from the processing room.

Dirty eggs should be set aside for cleaning before breaking out. Egg cases and fittings should not be taken into the breaking room.

"Leakers" should be segregated into a suitable receptacle used for this purpose only and dealt with separately throughout and should be used for sub-quality melange only.

Eggs other than chicken eggs should be handled and processed separately at the end of the day's processing of chicken eggs. All equipment should be thoroughly cleaned and sterilised before the processing of chicken eggs is resumed.

Eggs should be candled before being passed into the breaking room. Where machine breaking is carried out, special care is necessary during the candling to eliminate defective eggs.

Cracked eggs, if the shell membranes are intact, should be placed in shallow stainless steel containers and should be examined carefully by experienced breakers. If they are of satisfactory internal quality, they should be processed immediately.

(b) Egg breaking.

- (i) Individually. Eggs should be broken, either by hand or machine, into cups or trays of stainless steel or other suitable materials and each egg should be inspected for odour and appearance.

Egg substance having an abnormal odour or appearance should be rejected and removed, together with any contaminated breaking equipment. Such equipment should be thoroughly cleaned and sterilised before being used again. After handling rejected egg, the breaker should immediately wash his hands with odourless soap/detergent in hot water.

Blood spots, meat spots, and shell fragments should, if the eggs are otherwise of a satisfactory internal quality, be removed from the egg content in a hygienic manner.

Egg shells should be collected in suitable containers used for this purpose only and removed regularly and frequently from the breaking room. The containers and any equipment used for consolidating the shells should be cleaned and sterilised before being returned to the breaking room. Alternatively, shells may be removed by conveyor belts or water troughs.

Shells and reject eggs awaiting daily collection from the premises should be stored so as to prevent any nuisance from offensive odours or infestation by vermin.

- (ii) Collectively. Machines used for breaking out eggs collectively should be of a suitable type and be so operated that egg contents which are unfit for processing can be readily eliminated from the liquid egg supply.

Eggs which are to be broken out in bulk crushing machines should be candled within 24 hours of processing. They should be conveyed on stainless steel rollers through a hot water bath at an approved and controlled temperature, scrubbed by rotary brushes, rinsed under hot water sprays, and afterwards air-dried before being ejected onto a stainless steel conveyor belt in the crushing section. The eggs should then be crushed to remove their contents, after which all shell fragments should be removed on the conveyor belt. At the end of each day's work, the machines should be dismantled and all parts cleaned, scrubbed with a suitable sterilant, rinsed, and wiped dry with a single service cloth or tissue.

- (iii) Generally. The egg pulp should be strained and subsequently chilled to a temperature not exceeding 3.3°C (38°F). A supply of clean, sterilised stainless steel, monel, or other suitable strainers should be available to enable frequent changes to be made.

The pulp should pass continuously through the subsequent stages of the process to the raw egg holding tank. Raw liquid egg should preferably be pasteurised as part of a continuing process, but where this is not practicable, it may be held in the storage tank for a period not exceeding two and one-half hours.

A clean, sterilised stainless steel or other suitable container should be used to collect pulp when strainers are being changed. This pulp should be added immediately to the receiving tank.

- (c) Pasteurisation. The chilled, raw liquid egg should be pasteurised by being retained at a temperature not lower than 64.4°C (148°F) for at least two and one-half minutes, and immediately cooled thereafter to a temperature below 3.3°C (38°F). Other approved methods of heat treatment and cooling may be employed provided that adequate pasteurisation is achieved.

The apparatus used should include such devices as may be necessary to ensure a constant rate of flow of liquid egg, thermostatic control of the heating of the liquid egg, and the automatic diversion of flow of any liquid egg not sufficiently heated.

A continuous recording should be made of each pasteurisation run, and charts showing pasteurisation temperatures and cooled egg temperatures should be dated and kept available for inspection.

(d) Canning and freezing.

(i) Empty cans should be stored in a clean, dry place and kept free from dust, vermin, insects, and any foreign matter. Prior to filling, they should be sterilised by steam or hot air, and if steam is used, they should be well drained before filling. They should be inspected immediately before use to ensure that they are in a satisfactory condition. Only cans ready for immediate use should be kept in the filling room.

(ii) The filling of cans should be a continuous process, and the filled cans should be immediately sealed and taken to the freezing chambers without undue delay. Care should be taken during filling to avoid spillage, and any excess egg should be removed by single service wipers.

(iii) Cans should be stacked in the freezing chambers so as to permit free circulation of air around the cans.

(iv) The rate of freezing should be sufficient to prevent deterioration of the product and completed within 24 hours of canning. After freezing, the product should be stored at a temperature not exceeding -10°C (14°F).

(e) Defrosting of frozen egg. When defrosting frozen egg, it should be brought to its liquid state as quickly as possible but with as little increase of egg temperature above 0°C (32°F) as possible.

The defrosted egg should be used immediately.

- (3) Pasteurised liquid whole egg. The standards relating to pasteurised frozen whole egg should be observed insofar as they apply to the production of a blended, strained, and chilled liquid egg.

The standards of hygiene relating to pasteurised frozen whole egg should apply to the production of pasteurised liquid whole egg with the exception of those relating to the canning, freezing, and defrosting processes. Also, pasteurised liquid egg may be held in sterilised, insulated, chilled, and covered tanks fitted with a low speed agitator and a thermometer, or in sterilised churns, provided that the temperature of the egg shall not exceed 3.3°C (38°F) during the holding period.

- (4) Road tankers, bulk egg mobile containers, and bulk egg storage tanks. Tanks or containers used for transporting liquid egg should be constructed of "food grade" stainless steel or other suitable material, be designed to facilitate cleaning, and be adequately drained. They should be refrigerated or sufficiently insulated to prevent a rise in temperature of the egg of more than 1°C (2°F) in 24 hours, and should not be used for any other purposes.

Pipes and connections used for the filling and discharge of the liquid egg should be of suitable design and materials and should be sterilised before use.

The temperature of liquid egg at the time of filling should not exceed 3.3°C (38°F) and should not rise more than 1°C (2°F) during transit.

Liquid egg should not be discharged from a road tanker or mobile container into a vessel containing liquid egg from a previous delivery.

Tankers, mobile containers, and bulk storage tanks should be cleaned and sterilised not more than two hours before being filled, and after emptying should be cleaned and sterilised as soon as practicable. Delivery of liquid egg from the compartment of a tanker should be to one point only. Pipes and connections should be sterilised before use and cleaned as soon as practicable after use.

Bulk storage tanks should be refrigerated and fitted with a slow speed agitator.

- (5) Frozen whole egg. The parts of the code relating to pasteurised frozen whole egg should be observed insofar as they apply to the production of frozen whole egg.

The parts of the code relating to pasteurised frozen whole egg should also apply to the production of frozen whole egg with the exception of those relating to the pasteurisation process and with the addition of the following point:

After straining, the egg pulp should be chilled rapidly to a temperature not exceeding 3.3°C (38°F) before filling.

- (6) Processing egg products.

- (a) The parts of the code relating to pasteurised frozen whole egg and the parts of the code relating to premises, plant, equipment, and personal hygiene should be observed insofar as they apply to the following egg products:

1. Pasteurised liquid egg albumen
2. Pasteurised frozen egg albumen
3. Frozen egg albumen
4. Pasteurised liquid egg yolk
5. Pasteurised frozen egg yolk
6. Frozen egg yolk
7. Powdered egg albumen
8. Powdered egg yolk
9. Crystalline egg albumen
10. Dried whole egg

In addition:

1. The separation of egg yolk from egg white should, where appropriate, be carried out by an approved separating device of sanitary design and construction.
2. The pasteurisation process, where applicable, should be carried out by an approved method as soon as possible. Products other than frozen egg albumen and frozen egg yolk should not be stored in an unpasteurised condition.
3. Frozen egg albumen and frozen egg yolk should be reprocessed immediately after defrosting.

- (b) In the production of powdered egg albumen, crystalline egg albumen, powdered egg yolk, dried whole egg:
1. The product should be pasteurised by an approved method before it is dried by an approved process.
 2. The de-sugaring process should, where applicable, be carried out prior to pasteurisation at a temperature not exceeding 7°C (45°F).
 3. The drying plant used for the product should include a cyclone separation system in preference to the bag type separation.
 4. The product should be continuously removed from the drying chamber, cooled, and packed as soon as possible into suitable containers and stored at a temperature not exceeding 10°C (50°F).

E. Sanitation Control Programme

As in the General Principles of Food Hygiene.

F. Laboratory Control Procedures

As in the General Principles of Food Hygiene.

SECTION V - END-PRODUCT SPECIFICATIONS

As in the General Principles of Food Hygiene with the addition of the following:

Where pasteurisation of raw liquid egg is carried out by the method described in this code, the alpha-amylase test should be used as a test of efficacy. Samples of pasteurised egg shall be deemed to have passed the alpha-amylase test if the filtrate or liquor in the solution of iodine immediately turns a blue-violet colour. For this purpose, colours more blue-violet than 3 of a standard Lovibond Comparator Disc 4/26 or of a comparable spectrophotometric standard shall be taken as satisfactory.

Bacteriological tests should also be applied, including tests for freedom from salmonellae.

JOINT FAO/WHO CODEX ALIMENTARIUS COMMISSION

CODEX COMMITTEE ON FOOD HYGIENE

Proposed Draft Provisional Code of Hygienic Practice for
Poultry and Poultry Products

(Held at Step 2)

To be read in conjunction with the General Principles of Food Hygiene. Side-lined portions indicate material which is particular to this Code of Hygienic Practice and therefore does not appear in the General Principles of Food Hygiene.

SECTION I - SCOPE

This Code is concerned with the production of all poultry and poultry products intended for human consumption, including carcasses which are unviscerated or prepared as "ready to cook"; also poultry and poultry products whether cooked or uncooked, and those intended for further processing.

It applies to all premises in which poultry is slaughtered, packed, sold, or otherwise handled in the course of preparation for sale, and all premises in which poultry products are processed, packed, sold, or otherwise handled in the course of preparation for sale.

SECTION II - DEFINITIONS

- "Poultry" means any live or slaughtered domesticated bird (chickens, turkeys, ducks, geese, or guinea-fowls).
- "Consumer package" means any container in which poultry or poultry products are enclosed for the purpose of display and sale to household consumers.
- "Dressed poultry" means poultry which has been slaughtered for human food with head, feet, and viscera intact and from which the blood and feathers have been removed.

"Giblets"	means the liver from which the bile sac (gall bladder) has been removed, the heart from which the pericardial sac has been removed, and the gizzard from which the lining and contents have been removed: <u>provided that each such organ has been properly trimmed and washed.</u>
"Immediate container"	includes any consumer package; or any other container in which poultry carcasses or poultry products, not consumer packaged, are packed.
"Poultry food product"	means any human food product consisting of any edible part or parts of poultry in combination with other ingredients.
"Poultry product"	means any ready-to-cook poultry or any food product consisting of any edible part or parts of poultry whether combined with other ingredients or not.
"Ready-to-cook poultry"	means any dressed poultry from which the vestigial feathers (hair or down, as the case may be), head, crop, trachea, oesophagus, entrails, reproductive organs, and lungs have been removed, and with or without giblets, is ready to cook without need of further processing. Ready-to-cook poultry also means any cut-up or disjointed portion of poultry or any edible part thereof, as described in this paragraph.

SECTION III - RAW MATERIAL REQUIREMENTS

A. Environmental Sanitation in Growing and Raw Food Material Production Areas

- (1) Sanitary disposal of human and animal wastes. As in the General Principles of Food Hygiene with the addition of:

Arrangements for the disposal of trade refuse and inedible offal should be approved by the appropriate official agency. A separate refuse room or other equally adequate storage facilities should be provided on the premises. All droppings, litter, scrapings, etc., from cages, crates, and vehicles should be removed in such a way as to prevent contamination and not create a nuisance.

- (2) Animal, plant pest and disease control. Where control measures are undertaken, treatment with chemical, biological, or physical agents should be done only in accordance with the recommendations of the appropriate official agency, by or under the direct supervision of personnel with a thorough understanding of the hazards involved, including the possibility of toxic residues being retained.

B. Sanitary Food Production

- (1) As in the General Principles of Food Hygiene.
- (2) Sanitary techniques. Any poultry rearing section and attendant processes should be separate from the slaughtering and poultry packing section. This applies particularly to the disposal of refuse and storage of poultry feeding stuffs.

Foot troughs containing disinfectant of prescribed strength should be provided wherever consignments of live poultry are received at the slaughtering premises. The premises should be cleared of all live poultry at least once weekly to facilitate complete and thorough cleansing. Vehicles used for transporting live birds should be cleaned and disinfected between loads. Birds should be slaughtered within 72 hours of arrival.

- (3) Removal of obviously unfit materials. On arrival and throughout the process, unfit birds should be removed as soon as possible and segregated for disposal in an appropriate manner.
- (4) As in the General Principles of Food Hygiene, but omitting the words "and the methods of harvesting."

C. Transportation

- (1) As in the General Principles of Food Hygiene, Section III C(1), but omitting the words "the harvested crop or."

SECTION IV - PLANT, FACILITIES, AND OPERATING REQUIREMENTS

A. Plant Construction and Layout

- (1) Location, size, and sanitary design.
 - (a) As in the General Principles of Food Hygiene, Section IV A (1), with the addition of the following:

Whether existing buildings are being adapted or new premises are being built, early consultation with the appropriate official agency is essential.

A proper work flow is necessary to secure good hygiene standards, and the layout and construction of premises should provide for a steady flow of carcasses and for the diversion of rejected carcasses, waste products, etc. A suitable work flow is illustrated in Fig. 1 which can be adapted according to requirements.

- (b) Roadways and yards. Roadways and yards serving the premises should have a hard, paved surface which is suitable for wheeled traffic, shall have facilities for washing down, and should be adequately drained. The walls of any part of a yard used for the storage or cleaning of crates or vehicles should be cement rendered to a height of at least 1.5 metres (5 feet).
- (c) Walls, ceiling, and floors. Walls and ceiling should be finished to a smooth, nonabsorbent, washable surface, be light in colour, and the junction between walls with ceiling and floor should be coved or splayed to facilitate cleaning.

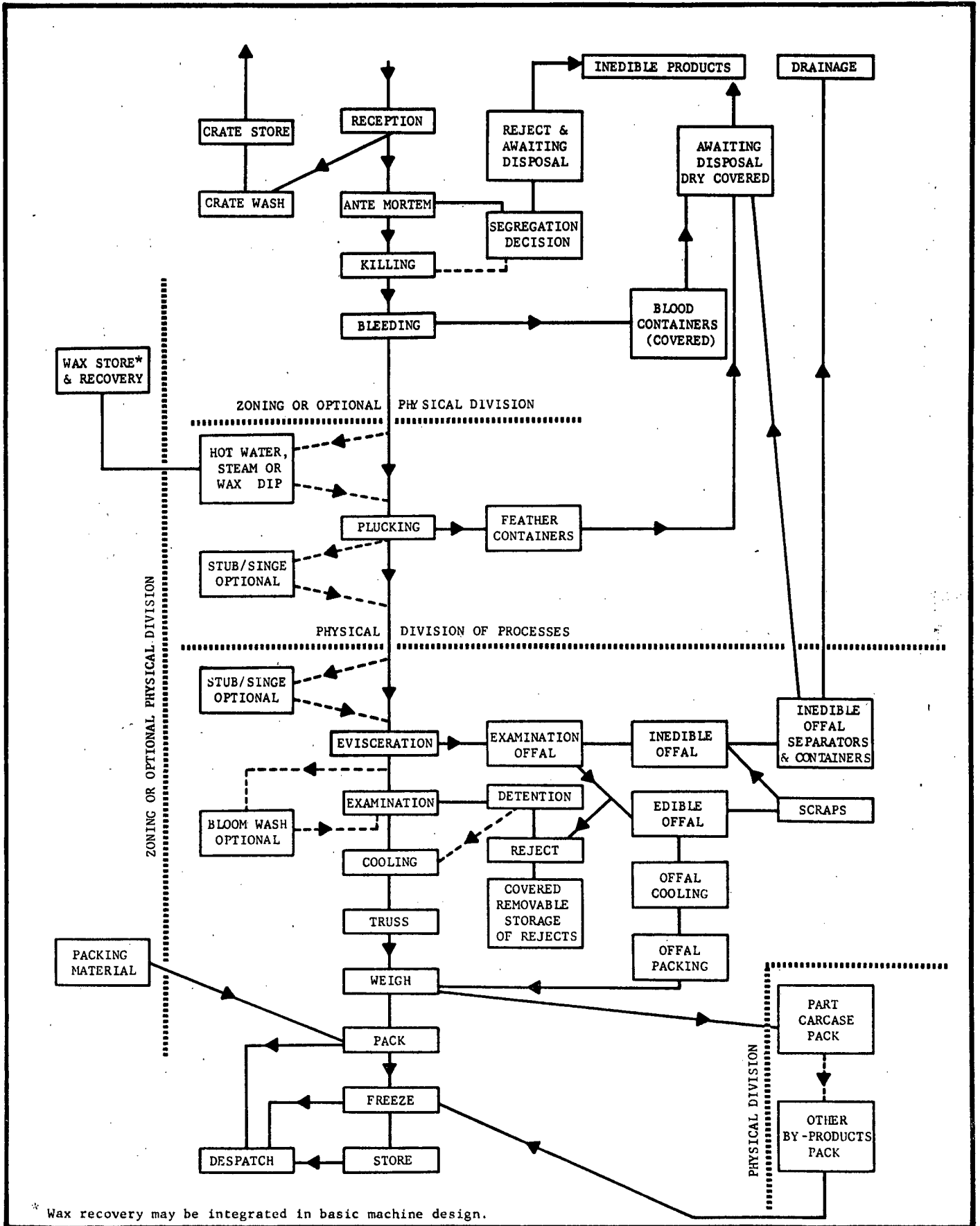
Buildings which have unlined roofs should be constructed and finished to minimize condensation, mould development, flaking, and dirt.

- (d) Woodwork, doors, and windows. Internal woodwork should be kept to a minimum, being of simple design, easy to clean, and be tight fitting to wall surfaces. Doors should, where necessary, be protected on both sides by non-corroding metal and be fitted with self-closing devices. All external doors should be equipped to exclude flying insects. Windowsills should be splayed at an angle.

(2) Sanitary facilities and controls.

- (a) As in the General Principles of Food Hygiene.
- (b) Water supply. An ample supply of both hot and cold water should be available of the potable quality referred to in the General Principles of Food Hygiene, Section IV A(2)(b). All water used for poultry processing should be hyper-chlorinated to a residual chlorine content of from five to ten parts per million.

- (c) and (d) As in the General Principles of Food Hygiene.



* Wax recovery may be integrated in basic machine design.

Fig. 1

- (e) Plumbing and waste disposal. As in the General Principles of Food Hygiene, with the addition of the following:

Sumps or solid matter traps included in the drainage system should be emptied and cleaned frequently and at the end of every working day. Every inlet into the drainage system should be trapped and no drain ventilation pipe should open into any processing room.

Any internal open channelling should be of sufficient width to allow for easy cleaning, and of minimum efficient depth. Covering grids should be easily removable for cleaning. Channels should be flushed frequently during processing and thoroughly cleaned at least once daily.

- (f) Lighting and ventilation. As in the General Principles of Food Hygiene, with the addition of the following:

Artificial lighting should have an overall intensity of not less than 30 foot candles, and in inspection areas this should be increased to not less than 50 foot candles, and be properly directed into the bird.

- (g) and (h) As in the General Principles of Food Hygiene.

B. Equipment and Utensils

- (1), (2), and (3) As in the General Principles of Food Hygiene.

- (4) Bleeding and blood collection. Bleeding equipment and blood containers should be constructed of metal or other suitable impervious material which is easy to clean. They should be thoroughly cleaned after use and at least once daily. Blood tunnels through which birds travel on a conveyor should be of metal or solid wall construction. Metal tunnels should be fitted with side and head shields easily removable for cleaning. The base trough should have a slight fall to a blood container which is easily emptied and cleaned. Tunnels of solid wall construction should be tiled or otherwise smooth surfaced with impervious material, suitably drained, and should be of sufficient width to facilitate thorough washing down and cleaning.

- (5) Processing equipment.

- (a) Tanks used for immersing carcasses in hot water (scalding tanks) should provide for the water to be circulated and replaced at regular intervals. They should be thermostatically controlled.

- (b) Plucking machines should be designed to control the scatter of feathers as much as possible. Feathers should be removed from the plucking area at least once daily in suitable clean receptacles or by other approved means.
- (c) Perforated metal draining surfaces should be reversible for cleaning purposes.
- (d) Storage containers for inedible offal should be constructed of metal or other suitable impervious material which is easy to clean, and be covered with close-fitting lids.
- (e) Evisceration troughs should be constructed of galvanized metal or other suitable material. The main water flow should be in the opposite direction to that in which carcasses are travelling so that the eviscerated carcass arrives for cooling at the point where clean water enters the trough. Additionally, trickle jets of clean water should be provided along both sides of the trough, and supplies of running water should also be provided over the trough for hand rinsing. Outlets for inedible offals should be provided in the troughs at suitable intervals where the length of the trough is more than 9 metres (30 feet).
- (f) Compounds used in immersion or spray freezing procedures should be acceptable to the appropriate official agency.

C. Hygienic Operating Requirements

- (1) Sanitary maintenance of plant, facilities, and premises. As in the General Principles of Food Hygiene, Section IV C(1), with the addition of the following:
 - (a) Cleaning routine. Recommended cleaning practices for premises and equipment are given in the following table. Where steam sterilization is mentioned, this means a method of retaining steam in contact with the equipment by using closed machines. The use of steam jet sprays is not recommended.

Equipment or area	Siting, storing, and general notes	Materials and means for cleaning and/or sterilizing	Frequency of cleaning
CRATES	Remove immediately to cleaning bay away from unloading area. Store clean crates separately from soiled crates.	Power water-jet or steam or immersion in hot water or vigorous hand scrubbing, followed by disinfection.	As soon as possible after emptying and at least daily.
FIXED EQUIPMENT			
(i) Machines	Site to permit all-round cleaning.	Steam (except for (iii) or detergent/sterilant spray or wash and scrub with hot water plus soda or other approved detergent in the right strength plus an approved sterilant for (iv)).	At least 3 times daily. (i) (ii) (iv)
(ii) Shackles			At least 3 times daily.
(iii) Overhead rails			Weekly (iii)
(iv) Internal or top surface with which carcasses or wash water come into contact			At least 3 times daily.

Equipment or area	Siting, storing, and general notes	Materials and means for cleaning and/or sterilizing	Frequency of cleaning
PORTABLE EQUIPMENT			
(i) General	-	Steam or detergent/sterilant spray or scrub in hot water plus soda or other approved detergent, then rinse in hot water 77°C (170°F) or sterilant solution.	As often as necessary, and at least daily.
(ii) Slats and shelving and hanging racks	-		
(iii) Knives and steels	Replace in purpose built racks attached to fixed equipment between uses.	Steam or scrub in detergent/sterilant solution.	Should be cleaned at the beginning and at the end of every working day. Knives should be sterilized immediately after contact with a diseased bird or carcass.
(iv) Wiping materials and cloths	Wiping cloths should not be used.	Use expendable material; e.g., disposable tissues.	Dispose immediately (in suitable containers conveniently sited).
PREMISES			
(i) Outside approaches and yards	All should be kept clean, and free from uncovered accumulations.	Water jets from taps and hose.	At least daily.

Equipment or area	Siting, storing, and general notes	Materials and means for cleaning and/or sterilizing	Frequency of cleaning
(ii) Killing and plucking rooms-- walls and floors		Hose down.	At least twice during each 8-hour work period. If blood and/or feather containers are not used, frequency of cleaning should be sufficient to prevent accumulation being carried to any other part of the building.
(iii) Remainder of process areas and buildings (containing purpose built cold stores, dry goods stores)			
(a) Floors (b) Walls		Hose down.	(a) Daily (b) Weekly
(iv) Dry goods stores (Walls) (Floors)		Sweep.	Weekly

(b) To avoid the risk of cross-contamination, blood and feathers should be kept away from the plucked carcasses as they go on for further processing.

(c) Each process should be carried out in its own clearly defined zone.

(d) Carcasses which are received rough plucked for further processing should be hung singly or arranged in single layers on racks, etc.

- (e) When finishing and cleaning dressed poultry, the vestigial feathers (hair or down as the case may be) should be removed; feed should be removed from the crop without incising the tissues and the faecal material in the cloaca should be removed by such means as will prevent contamination; e.g., by suction. These operations should be completed prior to, or during, the final washing.
- (f) Wax dipped carcasses should be handled so that set wax and removed feathers will fall into a suitable container. Only clean wax which has been stored in a clean place should be used for wax dipping. Feather separation sieves included in wax dipping machines should be removable and cleaned once daily. Reclaimed wax should be melted, skimmed, washed, and filtered or passed through a centrifugal cleaning machine and afterwards stored in a clean place.

(2), (3), (4), (5), and (6) As in the General Principles of Food Hygiene.

D. Operating Practices and Production Requirements

(1) Inspection and sorting

(a) Ante-mortem inspection

- (i) An ante-mortem inspection of poultry should be made on the day of slaughter in every establishment processing poultry.
- (ii) Facilities for ante-mortem inspection should be such that an adequate inspection can be carried out.
- (iii) Condemnation on ante-mortem inspection. Birds plainly showing any disease or condition that would cause condemnation of their carcasses on post-mortem inspection should be condemned and removed immediately from the processing line.
- (iv) Segregation of suspects on ante-mortem inspection. Birds suspected of having any disease or condition that may cause condemnation in whole or in part on post-mortem inspection should be segregated from other poultry and held for separate slaughter, evisceration, and post-mortem inspection. The inspector should be notified when such segregation lots are presented for post-mortem inspection, and inspection of such birds should be conducted separately.

(b) Post-mortem inspection

(i) Evisceration. No viscera or any part thereof should be removed from poultry which are to be inspected except at the time of evisceration and inspection. The organs and the body cavity of each carcass should be exposed for examination by the inspector.

(ii) Carcasses held for further examination. Each carcass, including all parts thereof, in which there is any lesion or disease, or other abnormal condition (on which an immediate or final decision cannot be made), should be held for further examination. The identity of such carcass, and all parts thereof, should be maintained until a final examination has been completed. An inspector may use such methods as may be approved by the appropriate official agency for the identification of products held for further examination and no product should be released for use or the means of identification removed except by the inspector in charge.

(iii) Condemnation of carcasses. At the time of evisceration, each carcass, or any part thereof, which is found to be unsound, unwholesome, or otherwise unfit for human food, shall be condemned and disposed of in accordance with the instructions of the inspector in charge.

(2) Preparation and processing

(a) As in the General Principles of Food Hygiene, Section IV D(4).

(b) Temperature and cooling and freezing procedures. Temperatures and procedures which are necessary for cooling and freezing dressed and ready-to-cook poultry, including all edible portions thereof, should be in accordance with operating practices which ensure the prompt removal of the animal heat and would preserve the condition and wholesomeness of the poultry.

(i) General cooling requirements

(1) Poultry should be cooled immediately after processing to an internal temperature of 4.5°C (40°F) or less, unless the poultry is to be further processed and packaged immediately during which time the temperature may rise to a maximum

of 13°C (55°F), after which the temperature should be promptly reduced to 4.5°C (40°F) or less. Poultry which is to be held at the plant in packaged form in excess of 24 hours should be stored at a temperature of 2.5°C (36°F) or less.

- (2) Poultry which is to be held in chilling tanks in excess of 24 hours should at the end of the 24-hour chilling period be removed from the tanks and repacked in clean ice and in clean tanks which are continually drained, or as an alternative, the tanks should be drained and re-iced and placed in a cooler which should maintain all of the poultry in the tanks at a temperature of 4.5°C (40°F) or below.
- (ii) Air chilling. In air chilling, dressed poultry should be placed in a refrigerated room with moderate air movement at a temperature which would reduce the internal temperature of the carcasses to 4.5°C (40°F) or less within 24 hours. In air chilling ready-to-cook poultry, the internal temperature of the carcasses should be reduced to 4.5°C (40°F) or less within 16 hours.
- (iii) Cooling giblets. Giblets should be chilled to 4.5°C (40°F) or lower within 2 hours from the time they are removed from the inedible viscera.
- (iv) Other chilling procedures. Any other chilling procedure which will effect chilling in a manner equal to that obtained by the procedures herein set forth may be used.
- (v) Refrigeration. Premises where packed or uneviscerated carcasses or other edible products are kept should have refrigerated storage.

Stored carcasses should be inspected at frequent intervals for mould growth or other signs of deterioration and should be stored so as to permit adequate circulation of air around them. They should not be within 18 inches of the floor and should be stored in such order as to ensure that they are despatched in strict rotation.

Cold rooms used for bulk storage should be fitted with automatic defrosting equipment. Care should be taken to avoid the transference of dirt into the rooms.

- (vi) Preservation. Poultry, poultry parts, and poultry products which are intended for preservation, e.g., freezing, quick freezing, or canning, should not be held for more than 48 hours after initial chilling.
 - (vii) Ice-pack containers. When poultry is ice-packed in barrels or other containers, the barrels and containers should be covered and should have an adequate number of drain holes to permit the water to drain out.
- (3) Packaging of finished product. As in the General Principles of Food Hygiene, Section IV D(5).
- (4) Preservation of finished product. As in the General Principles of Food Hygiene, Section IV D(6), with the addition of the following:

Quick freezing

- (i) Poultry products should be quick frozen by approved commercial methods in accordance with good commercial practice. The temperature should be lowered rapidly and low enough to prevent the development of micro-organisms and the temperature of the center of the product should pass from 0°C (32°F) to -5°C (23°F) as quickly as possible.
 - (ii) The freezer should be pre-cooled to -17.8°C (0°F) or lower before loading and should be loaded as quickly as possible.
- (5) As in the General Principles of Food Hygiene, Section IV D(7).

E. Sanitation Control Program

As in the General Principles of Food Hygiene.

F. Laboratory Control Procedures

As in the General Principles of Food Hygiene.

SECTION V - END-PRODUCT SPECIFICATIONS

As in the General Principles of Food Hygiene, Section V.