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CODEX ALIMENTARIUS COMMISSION

Fourth Session, Rome, 7-14 November 1966

CODEX COMMITTEE ON FOOD HYGIENE

Report of the Third Meeting, 31 May - 3 June 1966, Rome, Italy

1. The Third Meeting of the Codex Committee on Food Hygiene was held from 31 May to 3 June 1966, at FAO Headquarters, Rome, by the Government of the United States of America, under the chairmanship of Mr. L.R. Shelton (U.S.A.). The List of Participants is contained in Appendix I. The Agenda as proposed was adopted with a slight rearrangement of the order of items of business.

Matters referred to Codex Committee on Food Hygiene by the Third Session of the Codex Alimentarius Commission

2. After a discussion of the relevant parts of the Report of the Third Session of the Codex Alimentarius Commission, the Committee decided that its primary task would be the completion of the paper on "General Principles and Guidelines for the Development of Food Hygiene Standards". This would then become the General Principles of Food Hygiene, to be used in the elaboration of Codes of Hygienic Practice for specific categories of foods. Sections of the Codes of Hygienic Practice, such as the end product specifications, would appear not only in these Codes of Hygienic Practice, but also in the individual commodity standards for the products themselves.

General Principles of Food Hygiene

3. Document SP 10/56-GP which had been circulated to Governments for comments at Step 3 of the Commission's Procedure for the Elaboration of Standards was revised both in the light of these government comments and also in accordance with the general decisions of the Committee regarding Codes of Hygienic Practice, set out in paragraph 2 above. The revised "General Principles of Food Hygiene" adopted by the Committee are contained in Appendix GP to

this Report. Appendix GP was considered to be ready for submission to the Codex Alimentarius Commission at Step 5. The introduction to the General Principles of Food Hygiene indicates how the document is to be used by the Codex Committee in its elaboration of Codes of Hygienic Practice for the various groups of commodities.

4. In the course of the discussion of the General Principles of Food Hygiene, the Committee expressed its unanimous concern regarding the serious problem of enteric diseases, caused by the use of contaminated water for irrigation. The attention of FAO and WHO, who are already active in this field, was drawn to the fact that this was not only a national public health problem in the areas concerned, but also influenced the acceptance of the foods in international trade from such irrigated areas.

Code of Hygienic Practice for Canned Fruits, Vegetables and Related Products

5. Document SP 10/56-CF which had been sent to governments for comment at Step 3 of the Commission's Procedure for the Elaboration of Standards was revised by the Committee in the light of the General Principles of Food Hygiene and of specific comments from Governments relating to the hygienic aspects of canned fruits, vegetables and related products. The revised text of the Code of Hygienic Practice is contained in Appendix CF to this Report. The Committee decided to submit this new text to the Commission at Step 5.

Code of Hygienic Practice for Dried Fruits

6. The Committee was informed by the delegation of the U.S.A. that in response to government comments a new section for the Code of Practice had been elaborated to deal with "Drying Yards". In view of the introduction of this new section, the numerous government comments at Step 3, and the revised General Principles of Food Hygiene, the Committee decided to return the draft to Step 2. The delegation of the U.S.A. was requested to revise the draft in the light of the above, and to do so in consultation with Australia and Turkey. The delegation of the U.S.A. undertook to submit to the Chairman a new draft by 1 October 1966.

Code of Hygienic Practice for Dehydrated Fruits and Vegetables including Edible Fungi

7. The Committee considered a draft Code of Hygienic Practice for Dehydrated Fruits and Vegetables including Edible Fungi submitted by the delegation of the U.S.A. at Step 1. After consideration of the draft and its revision in accordance with the General Principles of Food Hygiene, the Committee decided that it should be sent to governments for comments at Step 3. The revised text of this Code of Practice is contained in Appendix DHF to this Report. (Attached for information only.)

Code of Hygienic Practice for Quick-Frozen Fruits, Vegetables and Related Products

8. The Codex Committee considered a request of the Joint Codex/ECE Group of Experts on the Standardization of Quick-Frozen Foods that hygiene requirements be developed to cover the harvesting, transportation and processing of foods intended for quick-freezing, as well as the handling of quick-frozen products during storage and distribution. The Committee accepted an offer of the Swiss delegation to elaborate, in collaboration with Sweden, a Code of Hygienic Practice for Quick-Frozen Fruits, Vegetables and Related Products. The Committee decided that it would be necessary to maintain a distinction between quick-frozen foods generally and quick-frozen pre-cooked foods. The Committee would consider at its next meeting both the Code of Hygienic Practice for Pre-cooked Frozen Foods elaborated by Canada and the Code for Quick-Frozen Fruits, Vegetables and Related Products to be prepared by Switzerland with the assistance of Sweden. The Swiss delegation was requested to undertake the preparation of this Code of Hygienic Practice in the light of the General Principles of Food Hygiene and the Code of Hygienic Practice for Canned Fruits, Vegetables and Related Products.

Cereal Grains

9. As requested by the Codex Alimentarius Commission at its Third Session, the Codex Committee discussed the necessity for a Code of Hygienic Practice for Cereal Grains. The Committee's attention was drawn to the importance of hygiene requirements for cereal grains used for animal feeding stuffs because of subsequent hazards which might arise in food derived from livestock fed with unsuitable feeding stuffs. In view of the priorities of work established by the Committee regarding public health hazards and also the requests from Codex Commodity Committees regarding hygienic requirements for inclusion in standards, the Committee decided to defer further consideration of the Draft Code of Hygienic Practice for Cereal Grains which had been before the Committee at its second meeting. The Committee considered that at the present time this was the most suitable course of action to recommend to the Commission, bearing in mind that the Committee should reconsider its decision should additional information be forthcoming which demonstrated a need to proceed further with the elaboration of a Code of Hygienic Practice for Cereal Grains.

Detergents and Disinfectants

10. The Codex Committee considered a request from OECD to establish a list of detergents and disinfectants which would be recognized as having no harmful effects when used in accordance with recommended procedures. This request was confined to the use of such detergents and disinfectants in the meat trade. The Committee concluded that it would not be possible even to compile a complete list of these products in view of the fact that most of these products are proprietary formulations which appear and may disappear from the market very rapidly. The Committee was of the opinion that in due

course the use of pesticides would be fully covered by the Codex Committee on Pesticides Residues. In addition, the Codex Committee on Food Additives may consider disinfectants and detergents at some time in the future in the course of reviewing processing aids used in food manufacture. Meanwhile, the Committee considered that the General Principles of Food Hygiene would adequately cover the use of detergents and disinfectants in the food industry and that it would not be appropriate at this time to consider the meat industry alone.

Items considered after the Adoption of the Report

11. The Committee requested the author countries which had prepared hygiene draft standards on certain commodities to recast these drafts in the form of Codes of Hygienic Practice. These Codes would be shorter than the original drafts as they would be based on, and should have cross-reference to, the General Principles of Food Hygiene (as in Appendix CF, attached). This format of the Codes would also serve to emphasize those points of differences where groups of commodities required special procedures to meet problems which were particular to that group. Author countries were asked to send the revised drafts to the Chairman of the Committee by 1 October 1966, with copies to the Secretariat in Rome. The commodities in question were the following: Dried Fruits (U.S.A. in collaboration with Australia and Turkey); Pre-cooked Frozen Foods (Canada); Eggs (U.K.); Fish Plants (U.K.); Molluscan Shellfish (U.K.); Tree Nuts (U.S.A.); Fruit Juices (except canned, heat-processed) (U.S.A.); and Desiccated Coconut (U.K.). With regard to the proposed Code of Hygienic Practice for Quick-Frozen Fruits, Vegetables and related Products which was to be prepared by Switzerland in collaboration with Sweden, the same consideration as above should apply.

12. There was a general discussion of a number of problems in the field of food hygiene. The Committee agreed that the attention of the Codex Alimentarius Commission should be drawn to the public health problem of Salmonella arising from animals and feedstuffs as carriers of this disease.

CODEX COMMITTEE ON FOOD HYGIENE

Third Meeting, Rome, 31 May - 3 June 1966

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DRAFT PROVISIONAL GENERAL PRINCIPLES OF FOOD HYGIENE

Submitted to the Codex Alimentarius Commission
under Step 5 of the Procedure for the Elaboration
of World-Wide Standards

INTRODUCTION

1. This document is intended to provide a basis for establishing Codes of Hygienic Practice which will ensure uniformity in the hygienic handling of individual commodities. Such Codes should conform to the recommendations, set forth in these General Principles of Food Hygiene and the detailed provisions should be amplified as necessary in respect of a particular commodity. Where no amplification is required, the provisions should be incorporated in the Code of Hygienic Practice for that commodity verbatim. Raw materials intended for extraction or other destructive refining purposes need only be covered to the extent required adequately to safeguard the hygienic quality of the end product.
2. The promulgation of requirements for food hygiene, with provision for their enforcement, is a proper responsibility of governments and should as far as possible be accomplished with consultation and advice from the food industry. In order to foster international confidence and facilitate commerce, there is a need for general agreement and understanding as to the principles followed in establishing such Codes of Hygienic Practice.
3. The food production and distribution industries should be aware of their obligation to furnish safe, sound and wholesome foods to consumers. The industries should adopt and implement policies to assist their members to reach and maintain this objective.
4. The official health agency and/or other responsible governmental agency of each country, whether of central or local government, should have adequate legal authority to regulate and inspect all aspects of food production, distribution and handling and to take appropriate action to protect the consumer.
5. No country should be regarded as having acceptable legislative requirements unless these considerations have been taken into account and the following basic elements of food sanitation are included:
 - (i) Environmental sanitation rules designed: (a) to protect food from contamination with sewage; (b) to protect the product after harvesting from weather, ravages of insects, birds or vermin, contamination by improper handling, or deterioration.

- (ii) Provision for segregation and proper disposal of food that is unfit for human consumption.
- (iii) Adequate plant facilities and arrangement to insure that finished product will not be contaminated by raw materials.
- (iv) Water of safe quality.
- (v) Personnel health and hygiene provisions designed to protect the product against contamination with infectious or toxigenic organisms.
- (vi) Equipment that contacts the food to be of non-contaminating, readily cleanable material that can be kept in a clean and sanitary condition.
- (vii) Methods of protecting the finished product which will obviate contamination, deterioration, or development of a public health hazard under anticipated conditions of storage and transportation.

SECTION I - SCOPE

The scope of each commodity Code of Hygienic Practice for a commodity or group of commodities should carefully delineate the product(s) involved and the operations to be covered.

SECTION II - DEFINITIONS

Definitions should enumerate and define those terms unique to the products included, their production and distribution. The number of definitions used should be no more than needed to assure uniform interpretation of requirements. Where possible, consistency between Codes of Hygienic Practice should be maintained.

SECTION III - RAW MATERIAL REQUIREMENTS

A. Environmental Sanitation in Growing and Food Production Areas

- (1) Sanitary disposal of human and animal wastes. Adequate precautions should be taken to insure 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 products that may be consumed without heat treatment from contamination with these wastes.

- (2) Sanitary quality of irrigation water. Water used for irrigation purposes should be safe and suitable for the purpose and should not constitute a public health hazard to the consumer when the commodity is consumed.
- (3) Animal, plant pest and disease control. Where control measures are undertaken to prevent economic loss, 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. Only approved pesticides may be used.

B. Sanitary Harvesting and Food Production

- (1) Equipment and product containers. Equipment and product containers used should be adequate for the purpose intended, and should not constitute a hazard to health. Containers which are re-used should be of such material and construction as will facilitate thorough cleaning, and should be so maintained as not to constitute a source of contamination to the product.
- (2) Sanitary techniques. Harvesting and production operations, methods and procedures should be clean and sanitary.
- (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.
- (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 product and the methods of harvesting will indicate the type and degree of protection required.

C. Transportation

- (1) Facilities. Conveyances for transporting the harvested crop or raw product from the production area, place of harvest or storage should be adequate for the purpose intended and should be of such material and construction as will permit thorough cleaning and should be so maintained as not to constitute a source of contamination to the product.
- (2) Handling procedures. All handling procedures should be such as will prevent the product from being contaminated. Extreme care should be taken in transporting perishable products to prevent spoilage or deterioration. Special equipment - such as refrigeration equipment - should be used if the nature of the product or distances involved so indicate. If ice is used in contact with the product, it should be of a sanitary quality as required in Section IV.A (2)(c).

SECTION IV - PLANT, FACILITIES AND OPERATING REQUIREMENTS

A. 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 odours, 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 prevent the entrance or harbouring of insects or birds or vermin; and should be so designed as to permit easy and adequate cleaning.
- (2) Sanitary facilities and controls.
 - (a) Separation of processes. Areas where raw materials are received or stored should be so separated from areas in which final product preparation or packaging is conducted as to preclude contamination of the finished product. Areas and compartments used for storage, manufacture or handling of edible products should be separate and distinct from those used for inedible materials. 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 not be less than those contained in the "International Standards for Drinking Water", World Health Organization, 1963.
 - (c) Ice should be made from water of potable quality and should be manufactured, handled, stored and used, so as to protect it from contamination.
 - (d) Auxiliary water supply. Should a non-potable supply be required - for such purposes as fire control - it must be carried in completely separate lines, identified preferably by colour and with no cross-connection or back-siphonage with the lines carrying potable water.
 - (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 watertight and have adequate traps and vents. Disposal of waste should be effected in such a manner as not to permit contamination of fresh water supplies. The plumbing and the manner of waste disposal should be approved by the official agency having jurisdiction.

- (f) Lighting and ventilation. Premises should be well lit and ventilated. Special attention should be given to the venting of areas and equipment producing excessive heat, steam, obnoxious fumes or vapours, or contaminating aerosols. Good ventilation of steam is important to prevent both condensation (which may drip into the product) and mold growth in overhead structures - which growth may fall into the food. Light bulbs and fixtures suspended over food in any step of preparation should be of the safety type or otherwise protected to prevent food contamination in the case of breakage.
- (g) Toilet-rooms and facilities. Adequate and convenient toilets should be provided and toilet areas should be equipped with self-closing doors. Toilet rooms should be well lit and ventilated and should not open directly into a food handling area. They should be kept in a sanitary condition at all times. There should be associated hand-washing facilities within the toilet area and notices should be posted requiring personnel to wash their hands after using the toilet.
- (h) Hand-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, where practicable, but otherwise the method of drying should be approved by the official agency having jurisdiction. 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 food products; 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) Sanitary design, construction and installation. Equipment and utensils should be so designed and constructed as will permit easy and thorough cleaning. Stationary equipment should be installed in such a manner as will permit easy and thorough cleaning.
- (3) Equipment and utensils used for inedible or contaminating materials should be so identified and should not be used for handling edible products.

C. Hygienic Operating Requirements

While additional and more specific requirements may be established for certain products, the following should apply as minimal in all food production, handling, storage and distribution:

- (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 maintained in an orderly, sanitary condition at all times. Waste materials should be frequently removed from the working area during plant operation and adequate waste receptacles should be provided. Detergents and disinfectants employed should be appropriate to the purpose and should be used as to present no hazard to public health. Only approved products should be used.
- (2) Vermin control. Effective measures should be taken to protect against the entrance into the premises and the harbourage 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 food is processed or stored.
- (4) Personnel health. The plant management should take care to ensure that no person, while known to be affected with a disease capable of being transmitted through food, or known to be a carrier of such disease, or while afflicted with infected wounds, sores, or any illness, is permitted to work in any area of a food plant in a capacity in which there is a likelihood of such person contaminating food or food-contact surfaces with pathogenic organisms.
- (5) Toxic substances. All rodenticides, fumigants, insecticides or other toxic substances should be stored in separate locked rooms or cabinets and handled only by properly trained personnel. They should be used only by or under the direct supervision of personnel with a thorough understanding of the hazards involved, including the possibility of contamination of the product.
- (6) Personnel hygiene and food handling practices.
 - (a) All persons working in a food plant should maintain a high degree of personal cleanliness while on duty. Clothing should be appropriate to the duties being performed and should be kept clean.
 - (b) Hands should be washed as often as necessary to conform to hygienic operating practices.
 - (c) Spitting, eating and the use of tobacco or chewing gum should be prohibited in food handling areas.
 - (d) All necessary precautions should be taken to prevent the contamination of the food product or ingredients with any foreign substance.

- (e) Minor cuts and abrasions on the hands should be appropriately treated and covered. Adequate first aid facilities should be provided to meet these contingencies so that there is no contamination of the food.
- (f) Gloves used in food handling should be maintained in a clean and sanitary condition; gloves should be made of an impermeable material.

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.
 - (b) Storage. Raw materials stored on the plant premises should be maintained under conditions that will protect against contamination and minimize deterioration.
 - (c) Water used for conveying raw materials, including sea water for the conveyance of fish and other marine products 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) Inspection and sorting. Immediately prior to introduction into the processing line, raw materials should be inspected, sorted or culled as required to remove unfit materials. Such operations should be carried out in a clean and sanitary manner. Only clean, sound materials should be used in further processing.
- (3) Washing or other preparation. Raw materials should be washed as needed to remove soil or other contamination. Water used for final washing, rinsing, or conveying food products should be of potable quality. Water used for such purposes should not be recirculated unless suitably treated to maintain it in a sanitary condition.
- (4) Preparation and processing. Preparatory operations leading to the finished product and the packaging operations should be so times as to permit expeditious handling of consecutive units in production under conditions which would prevent contamination, deterioration, spoilage, or the development of infectious or toxigenic microorganisms.

- (5) Packaging of finished product.
 - (a) Materials. Packaging materials should not transmit to the product objectionable substances beyond acceptable limits and should provide appropriate protection from contamination.
 - (b) Techniques. Packaging should be done under conditions that preclude the introduction of contamination into the product.
- (6) Preservation of finished product. Methods of preservation should be such as to result in protection against contamination, deterioration, or development of a public health hazard. Such methods should be approved by the official agency having jurisdiction.
- (7) Storage and transport of finished product. The finished product should be stored and transported under such conditions as will preclude the contamination with, or development of pathogenic or toxigenic microorganisms and protect against deterioration of the product or of the container.

E. 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 access to laboratory control of the sanitary quality of the products processed. The amount and type of such control will vary with the food product as well as the needs of management. Such control should reject all foods 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

Microbiological, chemical or extraneous materials specifications may be required depending upon the nature of the food. Such specifications should include sampling procedures, analytical methodology, etc. as required for the particular product.

DRAFT PROVISIONAL CODE OF HYGIENIC PRACTICE
FOR CANNED FRUITS, VEGETABLES AND RELATED PRODUCTS

Submitted to the Codex Alimentarius Commission
under Step 5 of the Procedure for the Elaboration
of World-Wide Standards

To be read in conjunction with the General Principles of Food Hygiene (Appendix GP, attached). Underlined parts in the text and 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 Hygienic Practice applies to fruits, vegetables and related products which are packed in hermetically sealed containers and which are processed by heat either before or after being filled into the containers.

SECTION II - DEFINITIONS

- A. Hermetically sealed means air-tight, will not admit air.
- B. Container means any hermetic enclosure for food including, but not limited to, metal, glass or laminated plastics.
- C. Heat processed means processed by heat to an extent which results in a product that is safe and will not spoil under normally expected temperatures of non-refrigerated storage and transportation.

SECTION III - RAW MATERIAL REQUIREMENTS

A. Environmental Sanitation in Growing and Food Production Areas

(1) Sanitary disposal of human and animal wastes. Adequate precautions should be taken to insure that human and animal wastes are disposed of in such a manner as not to constitute a public health or hygienic hazard.

(2) and (3) - As in the General Principles of Food Hygiene (Appendix GP)

B. Sanitary Harvesting and Food Production

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

C. Transportation

(1) and (2) - As in the General Principles of Food Hygiene (Appendix GP)

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 (Appendix GP)

(2) Sanitary facilities and controls.

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

(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 watertight and have adequate traps and vents. Disposal of waste should be effected in such a manner as not to permit contamination of fresh 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 harbourages or breeding places for rodents, insects or other vermin.

(f), (g), and (h) - As in the General Principles of Food Hygiene (Appendix GP)

B. Equipment and Utensils - As in the General Principles of Food Hygiene (Appendix GP)

C. Hygienic Operating Requirements - As in the General Principles of Food Hygiene (Appendix GP)

D. Operating Practices and Production Requirements

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

(6) Preservation of finished product.

(a) Heat processing.

Products packaged in hermetically sealed containers should be so processed by heat as to result in a product that is safe and will not spoil under normally expected temperatures of non-refrigerated storage and transportation.

Processing conditions for specific formulations of canned foods should be based on the recommendations of technical specialists competent in canning technology. Such processing should be supervised in the cannery by technically competent personnel and be subject to check by the official agency having jurisdiction. Processing records adequate to identify the processing history should be kept and made available for inspection.

(b) Cooling of processed containers.

Where processed containers are cooled in water, the water should be of potable quality or 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.

(c) Decrating and handling of processed containers.

After processing and cooling, containers should be handled in such a manner as to avoid contamination of the product. Rough handling of processed cans, especially while they are still wet, should be avoided. Belts, runways and other processed can-conveying equipment should be maintained in a good hygienic condition.

(d) Inspection of processed containers.

After processing and cooling, containers should be inspected and defective containers should be withdrawn.

(7) - As in the General Principles of Food Hygiene (Appendix GP)

E. 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 access to laboratory control of the sanitary quality of products processed. The amount and type of such control will vary with the food product as well as the needs of management. Such control should reject all foods that are unfit for human consumption. Analytical procedures used should follow recognized or standard methods in order that the results may be readily interpreted. For certain products it may be desirable to control the process by incubation of samples.

SECTION V - END PRODUCT SPECIFICATIONS

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

- A. To the extent possible in good manufacturing practice the products should be free from objectionable matter including: insects, or insect parts, insect webbing, soil, sand or stone fragments, faecal matter of any kind, human or animal hair, and free from fungal filaments (mold) to an extent indicative of decayed ingredients.
- B. The products should be free from any pathogen infectious to man and from any toxic substance originating from bacteria or fungi.
- C. The products should comply with the requirements set forth by the Codex Committees on Pesticide Residues and Food Additives.
- D. Products with an equilibrium pH above 4.5 should have received a processing treatment sufficient to destroy all spores of Clostridium botulinum, unless growth of surviving spores would be permanently prevented by product characteristics other than pH.

DRAFT PROVISIONAL CODE OF HYGIENIC PRACTICE
FOR DEHYDRATED FRUITS AND VEGETABLES INCLUDING EDIBLE FUNGI

Submitted to Governments for comment
under Step 3 of the Procedure for the Elaboration
of World-Wide Standards

To be read in conjunction with the General Principles of Food Hygiene (Appendix GP, attached). Underlined parts in the text and 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 undue deterioration by rot, mold, or bacterial decomposition. 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, egg plant, onions, green peas, potatoes, squash, sweet potatoes, tomato, 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 REQUIREMENTS

A. Environmental Sanitation in Growing and Food Production Areas

- (1) Sanitary disposal of human and animal wastes. Adequate precautions should be taken to insure that human and animal wastes are disposed of in such a manner as not to constitute a public health or hygienic hazard.
- (2) and (3) - As in the General Principles of Food Hygiene (Appendix GP)

B. Sanitary Harvesting and Food Production

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

C. Transportation

- (1) and (2) - As in the General Principles on Food Hygiene (Appendix GP)

SECTION IV - PLANT FACILITIES AND OPERATING REQUIREMENTS

A. 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 odours, 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 prevent the entrance or harbouring 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), (b), (c) and (d) - As in the General Principles of Food Hygiene (Appendix GP)

(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 fresh 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 harbourages or breeding places for rodents, insects, or other vermin.

(f), (g) and (h) - As in the General Principles of Food Hygiene
(Appendix GP)

B. Equipment and Utensils - As in the General Principles of Food Hygiene
(Appendix GP)

C. Hygienic Operating Requirements - As in the General Principles of Food Hygiene (Appendix GP)

D. Operating Practices and Production Requirements

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

(6) Preservation of finished product. Methods of preservation should be such as to result in protection against contamination, deterioration or development of a public hazard. Such methods should be approved by the official agency having jurisdiction. The finished product shall be of such moisture content that it can be held under normal conditions without significant deterioration by rot, mold, enzymatic changes or other causes. In addition to dehydration the finished products may be treated with chemical preservatives at levels approved by the Codex Committee on Food Additives, heat processed and/or packed in hermetically sealed containers, so the product will remain safe and will not spoil under normal non-refrigerated storage 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) The product should be stored under suitable conditions of time, temperature, humidity and atmosphere to prevent significant deterioration.
- (b) Where dehydrated products are stored under conditions in which they are likely to become infested by insects fumigable storage should be used. Otherwise cold storage should be used.

E. Laboratory Control Procedures - As in the General Principles of Food Hygiene (Appendix GP)

SECTION V - END PRODUCT SPECIFICATIONS

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

- A. To the extent possible in good manufacturing practice the products should be free from objectionable matter including: insects, or insect parts, insect webbing, soil, sand or stone fragments, faecal matter of any kind, human or animal hair, and free from fungal filaments (mold) to an extent indicative of decayed ingredients.
- B. The products should be free from any pathogen infectious to man and from any toxic substance originating from bacteria or fungi.
- C. The products should comply with the requirements set forth by the Codex Committees on Pesticide Residues and Food Additives.