

codex alimentarius commission

FOOD AND AGRICULTURE
ORGANIZATION
OF THE UNITED NATIONS

WORLD HEALTH
ORGANIZATION

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PROPOSED DRAFT CODE OF HYGIENIC PRACTICE FOR PRE-CUT RAW VEGETABLE PRODUCTS READY FOR HUMAN CONSUMPTION AT STEP 3

Background Information

During its 30th session the Codex Committee on Food Hygiene wished to develop two codes of practice on food hygiene for fresh vegetable products: one on the primary production, harvesting and packaging of fresh fruits and vegetables and the other one on pre-cut raw vegetable products ready for human consumption (ALINORM 99/13, para. 108). The 45th Session of the Executive Committee while approving the elaboration of Codes as new work (ALINORM 99/3, para. 28 and Appendix 3) noted that careful attention needed to be paid to the increasing workload of this Committee.

The present Code concerns pre-cut raw vegetable products ready for human consumption. Its development was entrusted, under France's chairmanship, to a drafting group which included Canada, Japan, Guatemala, Mexico, the Netherlands, the United Kingdom, the United States and Uruguay. A first draft of this Code was developed by France and circulated among the members of the drafting group. The present version takes into account the observations made in response. It also takes into account the comments made during the 31st session of the CCFH in Orlando (ALINORM 99/13A, paras 63-71).

The attached Proposed Draft Code must be read along with the *Recommended International Code of Practice - General Principles of Food Hygiene, CAC/RCP 1-1969, Rev. 3-1997*, whose format it follows. This code contains only complementary recommendations to the necessary General Principles in order to take into consideration the particular requirements for vegetable food products, which are considered specifically. The section of this code which deals with primary production refers to the Proposed Draft *Code of Hygienic Practice for the Primary Production, Harvesting and Packaging of Fresh Fruits and Vegetables* which should be applied to the production of the raw materials used for the end-products considered in this code.

Member governments and interested International Organizations are therefore invited to provide comments on the attached Proposed Draft Code at Step 3 of the Procedure and should do so in writing in conformity with the Uniform Procedure for the Elaboration of Codex Standards and Related Texts (see *Procedural Manual of the Codex Alimentarius Commission, Tenth Edition, pages 20-21*) preferably by an email to: Mr Ali Amjad, Staff Officer, US Manager for Codex, Food Safety and Inspection Service, US Department of Agriculture, Room 4861, 1400 Independence Avenue, S.W., Washington DC, 20250 USA, Fax: 1 (202) 720-3157, email: uscodex@usda.gov with a copy to: Secretary, Joint FAO/WHO Food Standards Programme, FAO, Viale delle Terme di Caracalla, 00100 Italy, Fax: +39 (06) 5705 4593, email: codex@fao.org **not later than 15 September 1999.**

**PROPOSED DRAFT CODE FOR HYGIENE FOR PRE-CUT RAW
VEGETABLE PRODUCTS READY TO USE FOR HUMAN
CONSUMPTION AT STEP 3**

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INTRODUCTION

This standard follows the format of the *Recommended International Code of Hygienic Practice - General Principles of Food Hygiene, CAC/RCP 1-1969, Rev. 3-1997*. The recommendations of this code which contains in each section only the specific recommendations for the products covered by the scope, should be followed in addition to the *General Principles of Food Hygiene*.

On the other hand, the section of this code which relates to primary production refers to the provisions [under development] of the proposed Code of Hygienic Practice for Primary Production, Harvesting and Packaging of Fresh Produce which should be applied to the production of the raw materials used to produce the products considered in this code.

1. OBJECTIVES

The recommendations of this standard must ensure the control of risks, biological, physical or chemical, specific to ready to use, raw, pre-cut vegetables. They are, however, designed more specifically for the control of risks of microbiological nature. They give elements that must be taken into account in the production, processing and distribution of these foods.

The application of these recommendations, which should be adapted to each installation, is such that it would ensure the control of hygienic requirements by each operator of this sector.

2. SCOPE , USE AND DEFINITION

2.1 SCOPE

2.1.1 FOOD CHAIN

This standard for hygiene applies to raw vegetable products, ready for use for human consumption, having been peeled, cut or prepared otherwise, (including being made into juice), affecting sufficiently the integrity of the product to change its evolution in relationship to the raw material from which it came, and packed in single or collective units.

The recommendations of this guide also concern the vegetable products that need seasoning or cooking before they can be consumed.

This Code does not apply to: sprouts (such as alfalfa or soybean), [aromatic herbs (mint, parsley, tarragon, etc.)] as well as preparations containing sauces, vinaigrette, etc.

Products containing vegetable products covered by the present scope and mixed foods of animal and vegetable origin, which are not separated physically, are not covered by the scope of the present Code.

2.2 USE

This standard follows the format of the *Recommended International Code of Practice - General Principles of Food Hygiene, CAC/RCP 1-1969, Rev. 3-1997*. The recommendations of this code which contains for each section only the specific recommendations for the products concerned in the scope of application, should be respected in addition to the *General Principles of Food Hygiene*.

On the other hand, the section of this code which relates to primary production refers to the provisions [under development] of the proposed Code of Hygienic Practice for Primary Production, Harvesting and Packaging of Fresh Produce which should be applied to the production of the raw materials used to produce the products considered in this code.

2.3 DEFINITIONS

In this code, the following terms and expressions are defined as follows:

Vegetable products: fruits, vegetables (including mushrooms and algae), [and aromatic herbs].

Ready to use vegetable products: raw *vegetable* products, ready for use for human consumption, which have been peeled, cut or prepared otherwise, [including transformed into juice], affecting sufficiently the integrity of the product to change its evolution as compared with the original raw material.

3. PRIMARY PRODUCTION

[Vegetable raw material can be affected by different contaminants: fertilizer residues, pesticides, environmental contaminants, heavy metals, microorganisms, miscellaneous parasites (liver fluke, for example, in aquatic plants such as watercress), etc.

Several precautions are, therefore, necessary in order to minimize the hazards for the consumer.]

These recommendations are added to those specified in section 3 of the *CAC/RCP 1-1969, Rev. 3- 1997* and in section 3 of the draft document proposing the elaboration of the proposed Code of Hygienic Practice for Primary Production, Harvesting and Packaging of Fresh Produce.

3.3 HANDLING, STORAGE AND TRANSPORT

The intrinsic fragility of ready to use raw vegetable products requires watching carefully the transport, handling, and storage operations of raw *vegetable* materials. Precautions should be taken in order to prevent the contamination and avoid the deterioration of products.

If pre-refrigeration processes (hydrocooling, vacuum cooling) are used, they should be carried out in such a way as not to induce contamination, especially through excessive water recycling and they should be adapted to the nature of the vegetables processed so as not to cause cell destruction. In the case of pre-cooling, the delay between the field and the shipping facilities should be reduced to the minimum. Transport from the shipping facilities to the processing establishment should be done in such conditions that the combination of time and temperature limits damage to the product. [For example, a temperature of less than or equal to 10 °C should be applied if the estimated delay between the shipping facilities and the processing establishment is more than 6 hours.]

3.1 PRE-REFRIGERATION PROCESS

3.1.1.1 Hydro Cooling

3.1.1.2 Vacuum Cooling

3.1.1.3 Control of transport

3.1.2 ATMOSPHERIC CONTROLS

3.1.2.1 Temperature (delicate plants)

3.1.2.2 Humidity

3.3.2.3 Storage in a controlled atmosphere

4. ESTABLISHMENT: DESIGN AND FACILITIES

[The control of design and the organization of the processing establishment represent a vital aspect in the management of the hygiene of the product.]

These recommendations are added to those specified in section 4 of the Recommended International Code of Practice - General Principles of Food Hygiene, CAC/RCP 1-1969, Rev. 3-1997

4.1 LOCATION

4.1.1 [ESTABLISHMENT

4.1.2 EQUIPMENT]

4.2.1 DESIGN AND LAYOUT

4.2.2 INDOOR STRUCTURES AND ACCESSORIES

4.3 EQUIPMENT

4.3.1 GENERAL CONSIDERATIONS

4.3.2 FOOD CONTROL AND MONITORING EQUIPMENT

4.4 FACILITIES

4.4.2 DRAINAGE AND WASTE DISPOSAL

The processing of the products covered by this code generates a large quantity of waste that can serve as food and shelter for pests. It is, therefore, very important to plan an efficient system for the systematic evacuation of waste. This system should always be maintained in good condition.

Inside the establishment, equipment and utensils used for non-edible matter and waste should be identifiable and should not be used for edible products. They should be easy to clean and to disinfect.

The equipment of the establishment should be such as to ensure that the internal temperature is compatible with adequate storage of products covered by these guidelines, irrespective of outside temperature.

4.4.6 AIR QUALITY AND VENTILATION

Pre-cut, cleaning and conveying of vegetable products during their preparation often requires a lot of water. An adequate ventilation should be planned in order to avoid risks of contamination due to condensation.

4.4.7 LIGHTING

4.4.8 STORAGE

5. CONTROL OF OPERATIONS

These recommendations are added to those specified in section 5 of the Recommended International Code of Practice - General Principles of Food, CAC/RCP 1-1969, Rev. 3-1997

5.1 CONTROL OF FOOD HAZARDS

Among the hazards connected with the consumption of the products concerned in this code, a large number is connected to a contamination during primary production. These hazards should be controlled during production. Reference should be made to section 3 of the draft document for the elaboration of the *Proposed Code of Hygienic Practice for Primary Production, Harvesting and Packaging of Fresh Produce*.

As regards the industrial processing of the products concerned in this code, the following approaches should be used in order to control the food hazards and guarantee the safety of these products:

- For chemical hazards (presence of pesticides, nitrates, heavy metals, pollution by undesirable products, etc.) and for microbiological hazards (for example verotoxic *Escherichia coli* or *Salmonella*, as well as *Listeria monocytogenes*, *Cyclospora* or *Cyclosporidium*, etc.) connected to the primary production, the industries should, on one hand make sure that the suppliers apply correctly the recommendations given in section 3 of the draft document on primary production and, on the other hand, conduct periodically tests on the consignments of raw materials in order to evaluate their hygienic quality. During the preparation operations, these risks should be controlled through proper cleaning procedures and, eventually, through disinfecting procedures with substances or methods whose toxicity should be evaluated in regard to the hazard, such as microbiological hazard, which they are intended to control.
- For physical hazards: the presence of animal, vegetable, metallic, and other foreign substances should be controlled through the use of hand search or with the aid of detectors, especially metal detectors.
- For microbiological hazards connected to a contamination during the preparation operations: apply the good practices of the General Principles Code and 5.2 below.
- For chemical hazards connected to a contamination during processing operations: the use of a disinfectant to control microbiological hazards noted above creates a chemical hazard which should be controlled through constant surveillance of the conditions of use of the substances in question. In particular, the products should be rinsed with potable water after they have been disinfected.
- For microbiological hazards connected to the growth of microorganisms during storage, transport or selling, it is necessary to control and to monitor the humidity during the packaging process and temperature of these products.

5.2 KEY ASPECTS OF HYGIENE CONTROL SYSTEMS

5.2.1 TIME AND TEMPERATURE CONTROL

The control of the room temperature in the establishment constitutes a guarantee necessary for the continuity of the cold chain.

The products should be chilled as soon as possible to a temperature that will allow them to keep [(for example 4°C or 6°C)] and should be maintained at that temperature until they are turned over to the consumer. Due to the specificity of the products concerned in this code, measures should be taken to avoid freezing.

In order to offset the difficulty of cooling products once they are packaged, because the air entrapped in the packaging creates a barrier to the penetration of cold, the products should be chilled, for example cleaning water and rinse water should be cooled to an appropriate temperature, so that the products reach their storage temperature before packaging.

In order to ensure a good control of the cold chain, frequent monitoring [and, if possible, a continuous recording] of the temperatures at key points should be undertaken.

5.2.2 SPECIFIC PROCESS STEPS

5.2.2.1 *Cleaning and disinfecting*

Although all efforts should be undertaken in order to control microbial levels through means such as the good hygiene practices and the use of low temperatures, products can be washed with water which contains a disinfectant product (chlorine or ozone for example) in order to reduce, when deemed necessary, the microbial load. Chlorination and other disinfection measures should be carried out only if it appears necessary on the basis of a thorough risk analysis, including a risk/benefit analysis. In any case, the quantity of disinfectant should be strictly limited to the necessary dose, and the danger

presented by residues and the combination molecules (such as the chloramines) should be taken into consideration. The procedure should be followed by a good rinse with sufficiently renewed water in order to limit the disinfectant content. The average contact times during disinfecting and rinsing should be validated and watched in order to optimize the procedures.

5.2.2.2 Water recycling

If recycled water is used inside of an installation, it must be treated so that its use does not increase dangers for health. When the water is recycled and reused from a « clean » point to a « less clean » point (the direction opposed to the direction of the product), the treatment of this water is not, *a priori*, necessary if it can be demonstrated that recycling does not increase the level of dangerous micro-organisms. On the contrary, if the recycled water is reused at a cleaner point or at a point of equal cleanliness as the starting point, a treatment (mechanical filtration and disinfection for example) should be applied to it. This treatment should be watched (efficacy on the microbial load, supervision of the accumulation of disinfecting product and of residue of phytosanitary products) and the recycled water should circulate in separate channels, easily identifiable.

5.2.2.3 Drying or draining [or residual water content]

Keeping quality of some of the products concerned by this code depends on their residual water content [or residual water content] ; drying or draining intended to eliminate water used for washing, is an important step in the manufacturing process. When appropriate, critical limits for the level of residual water should be established and monitored.

5.2.3 MICROBIOLOGICAL CRITERIA AND OTHER SPECIFICATIONS.

Microbiological criteria should be established according to the recommendations of the *Principles for the Establishment and Application of Microbiological Criteria for Foods (CAC/GL 21-1997)*.

5.2.4 MICROBIOLOGICAL CROSS-CONTAMINATION

6. ESTABLISHMENT : MAINTENANCE AND SANITAION

No requirements other than those specified in the Recommended International Code of Practice–General Principles of Food Hygiene, CAC/RCP 1-1969, Rev. 3-1997 are necessary.

7. ESTABLISHMENT : PERSONNEL HYGIENE.

No requirements other than those specified in the Recommended International code of Practice–General Principles of Food Hygiene, CAC/RCP 1-1969, Rev. 3-1997 are necessary.

8. TRANSPORTATION

These recommendations are added to those of section 8 of the Recommended International Code Of Practice – General Principles of Food Hygiene, CAC/RCP 1-1969, Rev. 3-1997

8.2 REQUIREMENTS

8.2.1 TEMPERATURE CONTROL

Taking into account the weak thermic conductivity of certain products covered by this standard (for example leafy vegetables), additional follow-up procedures as specified in the *Recommended International Code of Hygienic Practice - General Principles of Food Hygiene, CAC/RCP 1-1969, Rev. 3-1997* may be required. These may include, for example, additional manual procedures, which can be required in order to guarantee a constant temperatures during transport.

9. PRODUCT INFORMATION AND CONSUMER AWARENESS

No requirements other than those specified in the Recommended International Code of Practice – General Principles of Food Hygiene, CAC/RCP 1-1969, Rev. 3-1997 are necessary.

10. TRAINING

No requirements other than those specified in the Recommended International Code of Practice– General Principles of Food Hygiene, CAC/RCP 1-1969, Rev. 3-1997 are necessary.