

codex alimentarius commission



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

Agenda Item 9

CX/FAC 03/11-Add. 1
February 2003:

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON FOOD ADDITIVES AND CONTAMINANTS

Thirty-fifth Session

Arusha, United Republic of Tanzania, 17 - 21 March 2003

DISCUSSION PAPER ON THE USE OF ACTIVE CHLORINE COMMENTS

The following comments have been received from Canada, ISDC, ICGFI:

CANADA:

Canada supports in principle the suggestion that specific questions relating to the use of active chlorine in food be evaluated by JECFA and proposals for such use be endorsed by CCFAC. This is consistent with established procedures for food additives and processing aids. However, in recognition of the established anti-microbial effects of active chlorine and the known benefits of its use in food processing applications, any potential risks associated with the use of chlorine will have to be carefully considered in relation to the benefits of the use of chlorine. This will likely result in some unique challenges for CCFAC and other Codex committees and, rather than have CCFAC move forward in a unilateral fashion, it would seem appropriate to address this matter jointly with other affected Codex committees (e.g. CCFH and CCFFP).

Chlorine has been found to be effective in destroying a number of microorganisms found in water and has been widely accepted around the world. The question is then where microbiological and chemical safety can meet.

Comments

Canada has previously commented on the Codex definitions for food additives and processing aids as given in points 10 and 11 of this paper and has explained the fundamental differences between the Codex position and the Canadian one. In any case, both the Codex definition for a food additive and that for a processing aid allows for the possibility of residues of it or derivatives in the final product. This being the case, differences between the Canadian definition and the Codex one are irrelevant and Canada agrees in principle with the need for a JECFA evaluation on chlorinated disinfection by-products as needed and where appropriate.

Canada is in agreement with points 30, 31, 32, 33a-f, 34, and 35 being considered as options for discussion. Canada offers the following specific comments:

- (1) While active chlorine could be regarded as a food additive or as a processing aid (33c or 33f), surely, it, in itself, would not be regarded as a contaminant (33d).
- (2) Point 33b would suggest that CCFAC should have the last word on chlorine use. Points 31 and 32 almost suggest that the only consideration in chlorine use is the safety of chemical residues of chlorinated disinfection by-products. Canada believes that other committees, i.e. the Codex Committee on Fish and Fishery Products (CCFFP) and the Codex Committee on Food Hygiene (CCFH) should both be involved in this discussion process and further elaboration of this discussion paper and that while CCFAC might be involved in endorsement of any proposed food additive/processing aid uses or levels or any proposed contaminant MLs or guidelines that might emanate from this discussion process, endorsement of the use of active chlorine as a beneficial anti-microbial intervention measure should not be discouraged or disallowed through any measures imposed by CCFAC.
- (4) Canada agrees with the recommendations expressed in this document, particularly in para 29, 32 and 34 to adequately assess the safety of active chlorine, derived products and their by-products.
- (5) In addition, we offer the following comments:

1) Definitions

7. *Disinfectants* While these are not defined in Codex, the word “disinfection” is defined under the definitions of General Principles of Food Hygiene. There is also reference to cleaning and disinfection under Section 6 of that Code that would need to be taken into consideration especially when referring to "drainage only without rinsing". Section 6 lists the steps to be taken when cleaning and rinsing may or may not be appropriate after the use of a disinfectant, depending upon the disinfectant used.

2) Codex Committee of Food Hygiene

16. The Proposed Code of Practice for the Primary Production and Packing of Fresh Fruits and Vegetables is forwarded at Step 8 of the Codex Procedure not Step 5. The word "disinfectant" has been replaced by the word "decontaminant". In addition, there is no specific reference to the use of chlorine in the water in order to decontaminate fruits and vegetables. Therefore, the last sentence is misleading. There is no proposal regarding the use "of active chlorine as a disinfectant" in the version of 2001 and there was no reference in the version of 2000 either. Concerns were raised regarding chlorine found in potable water when that water was used to wash and rinse fruits, vegetables or seeds.

3) Options for Decisions

33 b) Since there is no reference to the use of chlorine in the document on Fruits and Vegetables, it is not clear to us upon what this recommendation is based. Perhaps the Committee could identify the exact section in which there is mention of the use of chlorine. We could then determine if this statement is still found in the present version of the document.

ISDC:

The International Soft Drinks Council (ISDC) represents the interests of the worldwide soft drinks industry that produces a variety of non-alcoholic water-based beverages. ISDC is pleased to provide comments on the Discussion Paper on the Use of Active Chlorine.

Chlorine plays a vital role in the safe production, processing, transport and preparation of foods of all varieties. In the soft drinks industry, chlorine is used as a water disinfectant to ensure the safety and quality of ingredient water. Although most bottlers, along with most other food and beverage processors, use tested and approved municipal water supplies as the ingredient water in its products, microbial problems can, and do occur, in drinking water making it necessary to further purify the water prior to its use as an ingredient. Such treatment often involves coagulation, disinfection, alkalinity reduction, filtration, and granular activated carbon purification. Treatment technologies are tailored to local water conditions. If chlorine is used in processing or is present in source water, it is removed from the ingredient water to prevent off-taste. The industry has long recognized the need to confront any risks that might be posed by disinfection by-products. Therefore, disinfectant concentrations and contact times are carefully tailored to the characteristics of water being treated. In addition, the activated carbon purification is known to be effective in reducing any chlorination by-products.

We note that the Discussion Paper includes reports on the chlorination by-products (trihalomethanes or THMs) in soft drinks. These studies are based on a limited number of samples taken by the U.S. FDA in the 1980's. Since that time, the soft drinks industry has established industry-wide practices to control disinfection by-products. In the U.S., the soft drinks industry conducted nationwide surveys in 1991 and 1992 that demonstrated the effectiveness of these practices. The data submitted to the U.S. FDA further indicated that the THM levels in beverage process waters are primarily dependent on existing THM levels in incoming municipal water supplies rather than on internal treatment processes. In addition, the data demonstrated that the industry's use of activated carbon further reduces the incoming THM levels. The data also showed that soft drink ingredient water contained only a fraction of the regulatory level of 100 ppb for THMs permitted in drinking water.

Comments on the Options for Decisions

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Concerning the proposal to request an evaluation of "active chlorine" compounds by JECFA, we note that the safety of chlorine and chlorination by-products already has been evaluated by the World Health Organization's expert groups (e.g., IPCS EHP 216, the WHO Guidelines for drinking-water quality). The conclusions of these assessments are available and are referred to in paragraph 29 of the discussion paper. We do not believe additional evaluation of "active chlorine" compounds is warranted or should be given a high priority considering the limited resources of JECFA, the long history of safe use of chlorine as a water disinfectant in food and beverage processes, safety evaluations considered by others to date, and the fact the most exposure to chlorine residues is from municipal drinking water.

33v

Concerning the proposal to include the residues and reaction products of chlorine in food in the General Standard for Contaminants, we note that the water used in foods and beverages generally is adequately regulated under potable water standards and we question the need for additional work by CCFAC on this matter.

ICGFI (The International Consultative Group on Food Irradiation)

The International Atomic Energy Agency, Vienna, at the request of the International Consultative Group on Food Irradiation (ICGFI), established under the aegis of FAO, IAEA and WHO in 1984 and of which 29 governments are current members, is forwarding the comments of ICGFI on the above matter for the consideration of the 35th Session of the CCFAC.

Subsection 2.1.(a): agreed

The 34th Session of CCFAC agreed to amend the statement in subsection 2.1(a) to include Cesium 137 as radiation source. ICGFI agrees to this. The purpose is to retain the four types of radiation sources permitted in the existing Standard as all of them are suitable for treating foods on the grounds of their inability to induce radioactivity in the treated food as recognized in the Report of a Joint FAO/IAEA/WHO Expert Committee on the Wholesomeness of Irradiated Foods, Technical Report Series 659, World Health Organization, Geneva, 1981. It is also recognized that encapsulation, handling, transport and installation of Cesium-137 source in industrial irradiation facilities is well standardised and Safety Guides have been published by the International Atomic Energy Agency. Environmental or occupational safety concerns regarding sources of ionising radiation are the responsibility of the competent national authorities for the licensing and registration of radiation facilities and sources generally.

Subsection 2.2 Absorbed Dose

The ICGFI recommends retention of the first sentence “For the irradiation of any food, the minimum absorbed dose should be sufficient to achieve the technological purpose and the maximum absorbed dose should be less than that which would compromise wholesomeness or would adversely affect structural integrity, functional properties, or sensory attributes”.

The ICGFI recommends deletion of the second sentence “In any case, the overall average dose absorbed by a food should not exceed 10 kGy except for dried aromatic herbs, vegetable seasonings and spices which require a maximum dose of 30 kGy. It is recognized that high dose irradiation has no effect on product safety”.

Rationale:

1. The ICGFI believes it would be useful to explain the concept and terminology of overall average dose of 10 kGy in the existing Standard (CODEX STAN 106-1983).

The terminology of ‘overall average absorbed dose of 10 kGy’ in the existing Standard (CODEX STAN 106-1983) was adopted from the conclusions of a FAO/IAEA/WHO Joint Expert Committee on the Wholesomeness of Irradiated Food (Technical Report Series 659, WHO, Geneva 1981), based on wholesomeness and safety considerations, the level at which toxicological safety has been established at that point of time.

It is the considered view of ICGFI that in practice this concept of overall average absorbed dose of 10 kGy lacks clarity and introduces ambiguity, since all foods cannot be subjected to an overall average dose of 10 kGy. For instance, there are many applications requiring much lower doses for achieving the intended technological objective such as sprout inhibition in tubers and bulbs, delay of ripening and/or maturation in fruits and vegetables, control of insect infestation in grains, as a quarantine measure for fresh fruits and vegetables, shelf-life enhancement and elimination of foodborne pathogens and parasites in meat, poultry, sea foods and fresh produce, etc. The more important parameters are the minimum absorbed dose to ensure efficacy of the process and the maximum dose to ensure the product is not damaged.

In the case of spices, which require higher doses for microbial decontamination, an overall average dose of 10 kGy and a maximum to minimum ratio of 3:1 under commercial processing conditions implies a minimum absorbed dose of 5 kGy and a maximum absorbed dose of 15 kGy resulting in an overall average absorbed dose of 10 kGy. In products with higher naturally occurring initial microbial load, despite good agricultural practices (GAP), the required level of microbial reduction may not be achieved at these dose ranges, therefore, many countries (Argentina, Australia, New Zealand, USA) have regulations permitting maximum doses up to 30 kGy to ensure effective microbial decontamination.

2. The ICGFI proposal to remove the upper dose limit of 10 kGy in the Codex General Standard for Irradiated Foods is based on the Report of a Joint FAO/IAEA/WHO Study Group (High-Dose Irradiation: Wholesomeness of Food Irradiated with Doses above 10 kGy, Technical Report Series, WHO, Geneva 1999), which establishes the safety of foods irradiated to doses above 10 kGy.

3. The Designated Experts of Member States of ICGFI at its 19th Annual Meeting, 12-14 November 2002 reaffirmed that the safety of high dose irradiated foods, particularly the concerns regarding the safety of cyclobutanones formed in irradiated fat containing foods, has been resolved in the light of:

(i) Position Statement of WHO at the 19th ICGFI Meeting that “ In view of the growing body of evidence, including negative Ames tests with 2-DCB, that these compounds pose no health risk to consumers, WHO has no basis to question the conclusions of several joint FAO/IAEA/WHO expert groups as well as many national expert advisory bodies that irradiated foods are safe and nutritionally adequate”, and,

(ii) Statement of the European Commission Scientific Committee on Food on a report on 2-alkylcyclobutanones expressed on 3 July 2002.

4. The ICGFI wishes to make the submission that absence of international trade or no current application above the average 10 kGy dose should not be a criteria for removal of the upper dose limit of 10 kGy as contended by some countries. On the contrary ICGFI is of the firm belief that removal of the upper dose limit in the Codex General Standard would facilitate the adoption of the same by more countries in their national regulations and eventual trade in such products. This is more than exemplified by the rapid increase in the number of countries approving food irradiation following the adoption of the Codex General Standard for Irradiated Foods by the Codex Alimentarius Commission at its 13th Session in 1979, when virtually no commercial application or trade in irradiated foods existed.

5. In several countries hospital patients, in particular immuno-compromised patients are supplied with radiation-sterilized meals and meal components because of their superior sensory qualities in comparison to thermally sterilized foods. For almost 30 years NASA has been using radiation-sterilized foods for the US astronauts, while in South Africa till recently, military units, sailing enthusiasts, and mountain climbers have been consuming similar products. It can be foreseen that food industry and consumer interest in radiation-sterilized shelf stable convenience foods that could be stored for longer periods without refrigeration, and trade in such foods would grow in the near future. The removal of the upper dose limit of 10 kGy would therefore facilitate practical application and international trade.

Sub-section 2.3.5: agreed

Sub-section 4.1: agreed

The ICGFI agrees to the text. However, ICGFI recommends addition of the sentence “The range of doses needed to process a wide variety of products for various applications should be in accordance with the Codes of good irradiation practice referred to in the Recommended International Code of Practice for Radiation Processing of Foods (CAC/RCP 19-1979, **under revision**).

Sub-section 5.3:

The ICGFI recommends deletion of this subsection. The purpose is to be consistent with the recommended Subsection 2.2 and give effect to the findings of the FAO/IAEA/WHO Study Group on High Dose Irradiation (High Dose Irradiation: Wholesomeness of Food Irradiated with Doses Above 10 kGy, Report of a Joint FAO/IAEA/WHO Study Group, WHO Technical Report Series 890, World Health Organization, Geneva 1999). These findings remain valid.

Sub-section 6.3: agreed

Sub-section 6.4: agreed