codex alimentarius commission

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

WORLD HEALTH ORGANIZATION

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Agenda Item 3 **CX/CF 09/3/3-Rev.1**
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JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON CONTAMINANTS IN FOODS

Third Session
Rotterdam, The Netherlands, 23 -27 March 2009

MATTERS OF INTEREST ARISING FROM FAO AND WHO (including JECFA)

1. This document provides information on FAO/WHO activities in the area of provision of scientific advice to Codex and Member countries, as well as other activities which are of interest for CCCF.

A. Provision of Scientific Advice from FAO and WHO

Expert Consultation on the use of 'active chlorine' in the food industry

2. CCFAC and CCFH have requested FAO and WHO to address the safety of use of 'active chlorine' in the food industry. A core group of experts has been identified and met in November 2007 to clearly define the scope and outline of the project. Working papers were prepared as basis for discussion at and international expert consultation. The Joint FAO/WHO Expert meeting on the benefits and risks of the use of chlorine-containing disinfectants in food production and food processing was held 27 - 30 May 2008 in Ann Arbor, Michigan, United States of America. The expert meeting drew from the experience of 20 experts from 13 countries and was dedicated to assess the benefits of the reduction of foodborne disease risk by reduction and control of contamination of pathogenic micro-organisms by direct treatment of food with disinfectants in various steps of food production and processing and the potential health risks from ingestion of chlorine and non-chlorine chemical disinfectants and their reaction by-products. The predominating world-wide treatment scenarios for poultry, red meat, fish and fishery products, fresh produce (fresh fruit and vegetables, including sprouts and hydroponics) and food contact surfaces were used in the assessment of the benefits and risks in a step-wise qualitative approach and conclusions and recommendations were agreed. As further extensive drafting and editing of the report is necessary, a prepublication issue of the report is only foreseen 2009. Information on the project can be found at http://www.fao.org/ag/agn/agns/chemicals_chlorine_meeting_en.asp and http://www.who.int/ipcs/food/active_chlorine/en/index.html. Further information on the findings of this Consultation can be found in the Annex to this document.

Expert consultation on melamine

3. An increased incidence of kidney 'stones' and renal failure in infants has been reported from September 2008 in China, associated with the ingestion of infant formula contaminated with melamine. Preliminary WHO risk assessments have provided many Member States with valuable information for action. To improve the preliminary assessment an independent international scientific expert meeting has been convened as part of WHO's emergency measures in this area, in collaboration with FAO and supported by Health Canada. The meeting was held 1-4 December 2008 in Ottawa, Canada, and executive summary, as well as conclusions and recommendations have been published on the WHO and FAO websites: http://www.who.int/foodsafety/fs_management/infosan_events/en/index.html and http://www.fao.org/ag/agn/agns/chemicals_melamine_en.asp

4. Besides assessments of the chemistry, analytical methods, occurrence and exposure, the meeting established a tolerable daily intake (TDI) level for melamine of 0.2 mg/kg body weight. Based on this TDI the meeting concluded that current limits in food as established by many authorities (1ppm infant formula, 2.5 ppm other foods) are health protective. The meeting also pointed out the importance of new findings of melamine in animal feed - melamine in feed can result in carry-over into human food (eggs, milk, meat etc.). The final report is in preparation and will be published on FAO and WHO websites.

Principles and Methods for Risk Assessment of Chemicals in Food

5. FAO and WHO are in the process of finalising the project to update the principles and methods for risk assessment of chemicals in food, including food additives, contaminants and natural toxins, residues of veterinary drugs and pesticides. The project has included several workshops on specific areas of risk assessment. The final draft document, intended to replace Environmental Health Criteria Documents 70 and 104, was posted on the websites of FAO and WHO for public comments in June 2008. A final expert consultation was held in Seoul, Republic of Korea to consider the entire document and all comments received. Joint efforts are being made to finalize the guidance and publish it as a new Environmental Health Criteria document in 2009.

Expert Consultation on the application of nanotechnology in the food industry

6. In response to concerns raised by member countries on the possible food safety implications of the application of nanotechnology to food and agriculture, FAO and WHO will implement an expert meeting to address this issue, to be held 1-5 June at FAO HQ in Rome. The aim of the meeting is three-fold (1) summarize actual and anticipated nanotechnology applications in the food and agriculture sectors, and develop a common view of their implications for food safety, (2) to review current risk assessment procedures and evaluate their adequacy for the assessment of nano-particles in relation to foods, (3) consider issues related to communication with all stakeholders, and overall agree on priority research to fill information gaps related to potential food safety issues and to develop guidance on the possible roles of FAO and WHO in addressing food safety issues linked to nanotechnology applications. FAO and WHO convened a meeting of a core group of experts from 14-15 May 2008 to further define the scope of the meeting and propose outlines for background papers to be prepared in advance of the meeting. A call for data and call for experts for the Joint FAO/WHO Expert Meeting on the Application of Nanotechnologies in the Food and Agriculture Sectors: Potential Food Safety Implications have been issued and are available at: http://www.fao.org/ag/agn/agns/meetings_consultations_en.asp.and, http://www.who.int/foodsafety/fs_management/meetings/nano_june09/en/index.html

Expert meeting on the risks and benefits of fish consumption

7. The 29th Session of the Codex Alimentarius Commission requested FAO and WHO to consider holding an FAO/WHO consultation on the health risks associated with methylmercury and dioxins and dioxin-like PCBs in fish and the health benefits of fish consumption based on requests from 38th Session of CCFAC.

FAO and WHO are now planning an expert consultation to give advice targeted at population subgroups at risk (e.g. women of childbearing age, the foetus, infants and small children and high fish consumers) based on the assessment of the benefits and risks associated with fish consumption. The information including call for expert and call for information will be available on the FAO and WHO websites in due time.

Joint FAO/WHO Expert Committee on Food Additives (JECFA)

8. The 72nd meeting of JECFA will be convened in November-December 2009 in Rome, Italy and will be dedicated to the evaluation of some contaminants in food. The call for data will be issued early 2009.

Follow-up of the FAO/WHO consultative process on provision of scientific advice to Codex and member countries

9. The “Consultative Process” which was initiated at the request of the 24th Session of the Codex Alimentarius Commission held in July 2001, and recommended that FAO and WHO carry out "a review of the status and procedures of the expert bodies in order to improve the quality, quantity and timeliness of scientific advice" began in earnest in 2003 and was concluded in 2007. The Framework document has now been published in English, French, Spanish, Chinese and Arabic. For details on how to obtain a copy please contact publications-sales@fao.org or proscad@fao.org.

10. Several initiatives are underway to facilitate and support the elaboration and dissemination of data from developing countries so that such data are more easily accessible to support the provision of scientific advice. More information is available in ALINORM 08/31/9G-Add 1.

B. Other activities

Establishment of the Global Initiative for Food-related Scientific Advice (GIFSA)

11. In order to specifically address the issue of sustainability of the provision of scientific advice, FAO and WHO have established a Global Initiative for Food-related Scientific Advice (GIFSA). The specific objectives of the GIFSA are:

- To increase awareness of the FAO/WHO programme of work on the provision of scientific advice,
- To mobilise technical, financial and human resources to support the provision of scientific advice in food safety and nutrition, and
- To promote the timeliness of the provision of scientific advice by FAO and WHO, while ensuring the continuation of the highest level of integrity and quality.

The main focus of GIFSA is to establish a mechanism to facilitate the provision of extrabudgetary resources for scientific advice activities. Contributions are accepted from governments, organizations and foundations in accordance with WHO and FAO rules. Two separate accounts will be maintained, one at WHO and one at FAO. An FAO/WHO Committee manages the GIFSA, and procedures have been developed to ensure that all resources provided through GIFSA will be allocated to activities in an independent and transparent manner, taking into consideration the criteria for prioritization of activities already agreed by Codex, FAO and WHO and the specific needs of FAO and WHO member countries.

For additional information and advice on the procedure for making a donation/contribution please contact Sandra Avilés, Policy Assistance and Resources Mobilization Division (Sandra.Aviles@fao.org; Tel: + 39 06 57056733) at FAO; and Jorgen Schlundt, Department of Food Safety, Zoonoses and Foodborne Diseases, WHO (schlundtj@who.int; Tel: + 41 22 791 3445).

INFOSAN and its role in food incidents

12. The International Food Safety Authorities Network (INFOSAN) was initiated in 2004 by WHO in collaboration with FAO and currently has 170 countries involved. In order to efficiently support member states in case of food emergencies of international health concern, INFOSAN emergency regularly informs members on on-going events.

13. In the case of the melamine incident, INFOSAN provided 14 emergency alerts to the entire network and 4 alerts to specific member states to facilitate the identification, assessment and management of the incident. Each country is encouraged in the case of a food emergency to contact INFOSAN at WHO. More information on INFOSAN is available at the following web-links:

http://www.who.int/foodsafety/fs_management/infosan/en/index.html and

http://www.who.int/foodsafety/fs_management/No_04_IHR_May07_en.pdf

ANNEX

Food and Agriculture Organization of the United Nations

World Health Organization

Joint FAO/WHO Expert meeting on the benefits and risks of the use of chlorine-containing disinfectants in food production and food processing

Ann Arbor USA, 27 - 30 May 2008

Executive summary

Background

The Joint FAO/WHO Expert meeting on the use of chlorine-containing disinfectants[1] in food production and food processing was held 27 – 30 May 2008, in Ann Arbor, Michigan, United States of America supported by NSF International.

The meeting was organised to provide scientific advice in response to a request made by the Codex Alimentarius Commission[2] based on proposed terms of reference prepared the 37th session Codex Committee on Food Additives and Contaminants (CCFAC)[3] and the 37th session of Codex Committee on Food Hygiene (CCFH)[4], on the safety and benefits of the use of 'active chlorine' in food processing.

The primary intended benefit of disinfection processes is the reduction of microbial food borne disease risk and of spoilage by control of contamination with pathogenic and non-pathogenic micro-organisms. Control can be through direct treatment of foods, and through management of (cross-) contamination from processing water and food contact surfaces. Disinfection treatment may lead to residues of chemicals and chemical by-products which need to be considered in a risk/benefit assessment. Whilst disinfectant chemicals will also control spoilage bacteria and hence, increase the shelf life and stability of foods, this aspect was not considered as it has no direct impact on health risks.

Results

The expert meeting considered all available data related to the benefits and risks for human health of the use of disinfection processes in the food production and food processing industry, with emphasis on chlorine-containing compounds but also considering alternative substances and methods used for disinfection of food and food contact surfaces. The main goals of the meeting were to consider the risk of chemical residues in food products (excluding environmental impact) following disinfection in food production and processing (incl. handling), versus the benefit of lowering the risk of microbial hazards. The efficacy of chlorine treatment needed to be considered, taking into account different treatment scenarios, different chlorine-containing substances and different combinations of pathogens and food commodities. These considerations focused on most common current practices in various food sectors, as well as taking into account certain proposed new practices. Considerations were given to the efficacy and feasibility of potential alternative treatments in replacement to chlorine use. Unintended consequences, such as the potential for development of tolerance to microorganisms and effects on nutritional and organoleptic qualities were also reviewed.

The main food categories considered in food production and processing (incl. handling) were:

[1] Chlorine-containing compounds include hypochlorous acid, hypochlorite ion, chlorous acid and its conjugate base chlorite ion, chlorine gas and chlorine dioxide. Chloramines, chloramine T and dichloroisocyanurate only included where of relevance in the food processing industry.

[2] ALINORM 06/29/41, paragraph 225

[3] ALINORM 05/28/12, appendix XV

[4] ALINORM 05/28/13, appendix VI

- meat and poultry

- fish and fishery products

- fresh produce (incl. hydroponics and sprouts)

- food contact surfaces

Previous work and assessments carried out on national/regional and international level formed the primary basis for the assessment, but additional information submitted in response to an open call for information was considered, as well and publicly available scientific studies and other information.

The approach taken was identification of most common disinfection practices for the food categories described above; identification of possible chemical residues in foods resulting from these treatments and estimating dietary exposure to these residues; evaluation of efficacy of treatment in reduction in the prevalence and numbers of pathogenic micro-organisms on food and possible resulting decreased health risk. The strength of the evidence was evaluated in all cases. Potential health risk from chemicals exposure was then compared to potential benefits of decreased health risk from pathogen exposure in a systematic and step-wise approach.

A number of key use scenarios for each food category were described. Sodium hypochlorite is the most widely used disinfectant, in particular in the production and processing of poultry meat, leafy greens, sprouts, hydroponics, and seafood, while the use in red meat processing is less common. Acidified sodium chlorite solutions are commonly used as an alternative to sodium hypochlorite in specific poultry processing steps. The use of chlorine-containing compounds in the fish and fishery products industry is mainly focused on disinfection prior to distribution and the use on edible portions of fish and shellfish is limited. Non-chlorine based chemical alternatives included peroxyacids in poultry production and organic acids in meat production. Physical treatments were not considered.

A number of chlorine-containing disinfectants, including by-products, and alternatives can lead to residues in foods and hence to possible health risk. The toxicology of these substances was reviewed and compared to estimated dietary intakes. The identified residues of chlorine-containing disinfectants and by-products did not raise health concerns based on estimated dietary exposures. However, the evidence for hypochlorite use in poultry, fish and shell fish was weaker, due to lack of qualitative and quantitative information on formation and presence of trihalomethanes (THMs) on the food. It was noted that, although generally conservative estimates were used, there was a high degree of uncertainty in the dietary exposure assessments as data on by-products was only available for drinking water and these data would have limited applicability to food. However, chlorine containing chemicals are unstable and it was concluded that there is a low potential for presence of by-products in foods as consumed.

Microbiological risk assessments were performed for the key use scenarios, based on available studies and risk assessments. It was concluded that the antimicrobial effects of disinfectants in food production may be overestimated by a lack of studies on an industrial scale, and by lack of including controls for the physical effects of water alone. On the other hand, the effects may be underestimated by studying processes in isolation in industries where disinfectants have already been applied in previous steps. There was evidence for reduction of pathogens on poultry carcasses and red meats by application of acidified sodium chlorite and chlorine dioxide, and by application of sodium hypochlorite in smoked fish. There was also evidence that no pathogen reduction is achieved by application of sodium hypochlorite on poultry carcasses and red meats. Limited data provided evidence for reduction of cross-contamination by the application of disinfectants (in particular sodium hypochlorite) in wash and flume waters. Effective disinfection of food contact surfaces is an important means of reducing human exposure to pathogens in food.

Regarding unintended consequences of disinfection practices, the changes in nutrient content are low relative to the normal dietary intake for these nutrients. And there is no evidence to indicate that the use of chlorine containing disinfectant and its alternatives are associated with acquired antimicrobial resistance to therapeutic agents.

Risk-benefit assessment integrates the results of two separate activities: risk assessment and benefit assessment, which can be done in a qualitative or quantitative way. Due to lack of data that would allow a quantitative assessment, the meeting developed a stepwise approach to risk-benefit assessment of chlorine containing disinfectants and other alternatives, to allow for a systematic comparison in a qualitative manner. Where scientific data were available, an assessment of risk and/or benefit was undertaken, and the meeting categorized the use scenarios per food commodity in one of the following four categories:

1. No health concern identified, nor benefits identified

2. No health concern identified, but benefits identified

3. Health concern identified, no benefits identified

4. Health concern identified, and benefits identified

The meeting identified several disinfectant use scenarios where there were no health concerns identified but for which there was a benefit. Only use scenarios, for which it was concluded that there are both health concerns and benefits were considered to need further evaluation. However, the meeting did not identify use scenarios which were of this type. The level of evidence supporting these conclusions, as well as the uncertainties, are discussed in the report.

The meeting identified important gaps in the available data. These data gaps constrained the scope of the risk-benefit assessments. Consequently, the meeting agreed a number of recommendations for further scientific studies and the development of standardized practices.

The meeting emphasized that disinfectant treatment of water used in food processing must not be used to mask poor hygienic practices. The meeting recommended that disinfectants be used within the framework of good hygienic practice, with a HACCP based system where applicable, and adequate process controls in place.