Joint FAO/WHO Expert Meeting on the
benefits and risks of the use of “Active Chlorine” in
food production and food processing

Call for Information by the FAO/WHO Joint Secretariat

Introduction

The 29th session of the Codex Alimentarius Commission has requested FAO and WHO for scientific advice, based on proposals from the 37th session Codex Committee on Food Additives and Contaminants (CCFAC) and the Codex Committee on Food Hygiene (CCFH), on the assessment of the benefits and risks of the use of ‘active chlorine’ in food processing. The advice will be elaborated during 2007 through the implementation of an expert meeting.

The primary intended benefit of disinfection processes is the reduction of food borne disease risk by control of contamination from pathogenic and non-pathogenic microorganisms from the direct treatment of foods, and the elimination or management of (cross-)contamination from food processing water and food contact surfaces. Such treatment may lead to residues of chemical by-products which need to be considered in an overall risk/benefit assessment.

FAO/WHO are planning an expert meeting to examine the health and safety benefits and possible risks from the treatment of food, food production and processing water, or food contact surfaces with different forms of chlorine-containing compounds. The risks, if any, of residues that are generated, and the potential risks that might arise if these compounds were no longer available will also be addressed. The term ‘active chlorine’ as it is used here includes hypochlorous acid and its conjugate base, hypochlorite ion, chlorous acid and its conjugate base chlorite ion, chlorine gas and chlorine dioxide. Chloramine and dichloroisocyanurate may be included if of relevance in the food processing industry. Although technically not fully correct, this term ‘active chlorine’ is used throughout for ease of reference.

A call for experts has been published separately.

The Expert Meeting is planned for late 2007.

1 ALINORM 06/29/41, paragraph 225
2 ALINORM 05/28/12, appendix XV
3 ALINORM 05/28/13, appendix VI
To assure that all relevant information on process chemistry, microbiology, effectiveness, health consequences and residues will be considered, FAO/WHO is seeking submissions of published and unpublished technical information that would be part of the database that should be examined to assure comprehensive review and appropriate and effective recommendations. In particular, FAO/WHO through this call for data would like to raise awareness about the need to make available relevant data that may not be readily available in the public domain.

Confidential and/or unpublished data

FAO and WHO recognize that some of the information and relevant data which is now required may be unpublished or of a confidential nature. With regard to unpublished information and data, this remains the property of the author for subsequent publication by the owner as original material. Unpublished confidential studies that are submitted will be safeguarded in so far as it is possible to do so without compromising the work of FAO and WHO. Specific issues relating to confidentiality should be discussed directly between the information and data owners and FAO/WHO. For these and other issues please contact FAO and WHO at the contacts provided below.

Scope of the Expert Meeting

The main goals are to consider the risk of chemical residues in products (excluding environmental impact) following the use of chlorine for disinfection purposes in food production versus the benefit of lowering the risk of microbial hazards, taking into consideration the relevance and feasibility of potential alternative approaches. The efficacy of active chlorine treatment needs to be considered, taking into account different treatment scenarios, different chlorine-containing substances and different pathogens and pathogen/food combinations. These considerations need to be based on current practices, as well as take into account proposed new practices.

The main areas to be considered relate to the treatment of irrigation water (only as it relates to hydroponic production systems and production of sprouts but not for agricultural field use), processing water, food contact surfaces as well as direct treatment of foods, with fresh produce, fish and seafood, meat and poultry as main food categories.

The effects of various treatments on the nutritional components of foods as well as organoleptic and quality changes will be reviewed.

The impact of the use of active chlorine in the different steps in the food chain, in accordance with nationally authorized practices, in the control of microbiological hazards will be considered as well as the level of chemical residues in or on the foods.

The work that has been carried out at international level in the framework of drinking water quality will also be taken into account. Previous evaluations by the Joint FAO/WHO Expert Committee on Food Additives (JECFA) and by the Joint FAO/WHO Expert Meeting on Microbial Risk Assessment (JEMRA) are also considered.

Objectives of the Expert Meeting

The Expert Meeting will assess the health and safety benefits and risks associated with the treatment of food, food production and processing water and food contact surfaces with different forms of active chlorine, including the human health risks of chlorination by-products and potential residues, as well as
the potential risks that might arise if these compounds were no longer recommended for use. As part of its mandate the expert meeting will be expected to respond to specific questions on these issues which have been raised by the relevant committees of the Codex Alimentarius Commission.

The elements that should be considered by the expert consultation include:

- The human health risk of use of active chlorine compounds and their reaction and by-products
- the health risk of increased exposure to microbial hazards or increased microbial loads associated with different types of food, process water and food processing surfaces due to insufficient hygienic practices
- the efficacy of using chlorine species in managing microbial risks, taking current practices into account
- the formation of and possible risks from chemical by-products that are generated during disinfectant processes
- consumer exposure to residues of active chlorine compounds and by-products
- risk of certain practices (e.g. reuse of chlorine-treated processing water)
- the availability of alternative technologies or treatments, their efficacy and risks (including relative cost of application in comparison to chlorine)
- potential “unintended consequences” arising from the reduction or substitution in the use of active chlorine as an antimicrobial treatment (e.g., the generation of toxic compounds due to the application of heat treatments, the emergence of antimicrobial resistance in response to alternative disinfection treatments, the growth of pathogenic micro-organisms following the (partial) removal of the initial flora by application of antimicrobial substances).

**Information on the following aspects is requested:**

- current practices under the conditions identified by the Codex Alimentarius Commission and by national governments in terms of compounds used and treatment scenarios employed in:
  - disinfection of utensils and working areas,
  - disinfection of water used in food production
  - disinfection of foods during food processing (fresh fruit and vegetables, fish and seafood, meat and poultry).

- microbiological risks and benefits of food sanitation practices
- efficacy of treatment with respect to decrease in microbial load (including consideration of different chlorine-containing substances, the physical state in which they are used and current practices), including impact of microbial load on efficacy of treatment and minimum concentrations of active chlorine compounds required
- the different susceptibility of microorganisms to disinfection treatments in different environments e.g. food contact surfaces vs. biofilms, food surfaces (when used as antimicrobial washes e.g. on meat)
- identification and quantification of chemical residues chlorination by-products
- data on human exposure assessment (with respect to chemicals and pathogens)
- toxicological data on compounds used as well as their residues and by-products resulting from the use of active chlorine compounds
- risk assessments performed relating to the use of active chlorine in food production and food processing and impacts on microbiological risks
- nutritional, organoleptic and quality (e.g. water retention in fresh meat) impact on foods of disinfection practices
- experience with practices in various countries in respect to where in the 'farm to fork' chain to focus management options to control microbiological risk, e.g. at the farm, at the slaughterhouse,
- alternative treatments/technologies for disinfection of foods, their efficacy in relation to the chlorine based disinfectants and associated risks/benefits e.g. unintentional consequences of using alternative treatments
- economics, costs, benefits of current and alternative approaches for food sanitation practices
- any other relevant information relevant to the scope of the consultation as outlined above

**Deadline**

Information/data should be sent to the Joint Secretariat by **31 May 2007** to the addresses below, electronic submissions are preferred, either via e-mail (if not too large) or on CD Rom.

**Submissions of Information**

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