



JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEx COMMITTEE ON FOOD HYGIENE

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MATTERS OF INTEREST ARISING FROM OTHER INTERNATIONAL ORGANIZATIONS

INFORMATION FROM ISO REGARDING STANDARDIZATION IN FOOD CHAIN MICROBIOLOGY

(Prepared by the International Organization for Standardization (ISO))

INTRODUCTION

The International Organization for Standardization (ISO) thanks the Codex Committee on Food Hygiene (CCFH) for the opportunity to provide this update on ISO activities in food chain microbiology relevant to CCFH and to contribute to its works.

ISO standardization in food chain microbiology is conducted by ISO/TC 34/SC 9.

PRESENTATION OF ISO/TC 34/SC 9

Sub-committee 9 (SC 9) "Microbiology" of ISO Technical Committee 34 (TC 34) "Food products" (in short SC 9) was created in 1982 and deals with the development of horizontal methods in the field of microbiological analysis of the food chain, from primary production stage to food and animal feed products, including the environment of food production and handling. The key issues are:

- to answer to the needs of harmonized methods of analysis of global relevance, and worldwide applicable;
- to define reference methods based on consensus, with the objectives:
 - o to be referenced by the Codex Alimentarius, or by national/regional (e.g. European) regulations for official controls;
 - o to be used for contract analysis by contract labs, food industries;
 - o to be used as anchor methods for validation of alternative/commercial methods;
 - o to be referenced by International Laboratory Accreditation Cooperation (ILAC) and accreditation bodies as technical references for the accreditation of labs in the field of food microbiology.

So far, 102 ISO standards (including full International standards, technical specifications and technical reports) have been published under SC 9 responsibility. SC 9 is composed of 42 Participating members (national standardization organizations, who participate in the development of the standards within SC 9 groups) and 27 observing members, from across 6 continents. To date, there are 30 working groups and 9 ad hoc groups in charge of drafting:

- Standards **reference methods** for the analysis of foodborne pathogens (bacteria, bacterial toxins and biogenic amines, viruses, yeasts and moulds, parasites, spores). In addition, SC 9 manages a comprehensive validation programme for the validation of these reference methods by interlaboratory studies (ILS): identical samples are prepared by an organizer laboratory, and dispatched to participating laboratories.
- Standards for **general aspects** related to the microbiological analysis of food products, e.g.
 - o Good Laboratory Practices (GLP), proficiency testing, culture medium, measurement uncertainty;
 - o Sampling techniques, sample preparation;
 - o Validation and verification of methods;
 - o General requirements for molecular methods.

Through its desire to harmonize as much as possible the standards published, SC 9 agreed to liaise:

- with several ISO committees with common interest;

- with international (regional) organizations: **Codex Alimentarius Commission**, European Commission, World Organization for Animal Health (WOAH), International Dairy Federation, World Health Organization, International Probiotics Association, etc.
- Last but not least, a tight partnership with TC 463 “Microbiology of the food chain” of the European Committee for Standardization (CEN), with which almost all standards are developed as common CEN/ISO Standards in the frame of the [Vienna agreement](#). The main objective is to ensure the best use of the resources available for standardization, enabling ISO and CEN to exchange information and increasing the transparency of CEN work to non-European ISO members as well as helping to make sure work does not have to happen twice at the regional or international level.

ISO STANDARDS FOR THE ANALYSIS OF FOOD-BORNE PATHOGENIC MICROORGANISMS

The following provides a list of standards developed by ISO/TC 34/SC 9 for the analysis (detection - presence/absence - quantification or characterization) of food-borne pathogenic microorganisms in the food chain relevant to recent or ongoing work in CCFH:

- *Salmonella*:
 - o Detection (ISO 6579-1, 2017), the validation of its method by inter-laboratory study (ILS) is being expanded
 - o Quantification by a miniaturized most probable number technique (MPN) (ISO/TS 6579-2, 2012)
 - o Guidelines for serotyping (ISO/TR 6579-3, 2014)
 - o Identification of monophasic *Salmonella* Typhimurium (1,4,[5],12:i:-) by PCR (ISO 6579-4, **2025**)
- *Campylobacter*:
 - o Detection (ISO 10272-1, 2017)
 - o Enumeration (ISO 10272-2, 2017)
- *Listeria monocytogenes* and *Listeria* spp.:
 - o Detection (ISO 11290-1, 2017), under revision (improvement of primary enrichment) and to be validated by ILS
 - o Enumeration (ISO 11290-2, 2017), under revision (inclusion of a method for enumeration at low numbers, < 10 cfu/g) and to be validated by ILS
- Shiga-toxin producing *Escherichia coli*: revision of ISO/TS 13136 (2012)
 - o Detection and isolation (draft ISO 13136-1)
 - o Characterization (draft ISO 13136-2)
- *Vibrio* spp.
 - o Detection of potentially enteropathogenic *Vibrio parahaemolyticus*, *Vibrio cholerae* and *Vibrio vulnificus* (ISO 21872-1, 2017), under revision
 - o Enumeration of total and potentially enteropathogenic *Vibrio parahaemolyticus* in seafood using nucleic acid hybridization (ISO/TS 21872-2, 2020), under revision
- Hepatitis A virus and norovirus using real-time RT-PCR
 - o Quantification (ISO 15216-1, 2017)
 - o Detection (ISO 15216-2, 2019)
- Hepatitis E virus: detection in liver, liver products, and meat products using real-time RT-PCR (draft ISO 25792)
- *Trichinella*: detection of larvae in meat by artificial digestion method (ISO 18743, 2015)
- *Cryptosporidium* and *Giardia*: detection and enumeration in fresh leafy green vegetables and berry fruits (ISO 18744, 2016)
- Anisakidae L3 larvae: detection in fish and fishery products
 - o UV-press method (ISO 23036-1, 2021)
 - o Artificial digestion method (ISO 23036-2, 2021)

In addition, ISO 23418 (2022) provides general requirements and guidance on the implementation of whole genome sequencing (WGS) for typing and genomic characterization of bacteria isolated from the food chain.

COLLABORATION

ISO/TC 34/SC 9 welcomes that, in the Codex Strategic Plan 2026–2031, “Codex is strengthening relationships with relevant international organizations, promoting a coordinated approach to address global challenges.” From our side, we also wish to strengthen our cooperation with CCFH, since one of the objectives of developing ISO standardized reference methods is to meet the CCFH need of reference methods at the international level. We thus welcome that ISO standardized reference methods be referenced in certain Codex documents, such as Codex guidelines dealing with the control of microorganisms.