



**Food and Agriculture
Organization of the
United Nations**



**World Health
Organization**

Joint FAO/WHO Expert Meeting on Microbiological Risk Assessment (JEMRA)

Call for data on the impact of freezing temperatures on the microbiological safety of foods

FAO and WHO are seeking data and information to support the future work of JEMRA on the microbiological safety of foods under frozen storage conditions.

In addition, FAO and WHO are requesting governments, industry, academia, consumer groups, laboratories, and other interested organizations and individuals to submit any available data and information relevant to the impact of frozen storage temperatures, including temperature thresholds and fluctuations, on the microbiological safety and quality of foods.

Background

Freezing is widely used as a food preservation method to control foodborne pathogens. International guidance, including the *Code of Practice for the Processing and Handling of Quick Frozen Foods* (CXC 8-1976), currently establishes -18°C as the reference temperature for the storage and distribution of quick-frozen foods¹.

At its 55th session in 2025², the Codex Committee on Food Hygiene (CCFH) requested FAO and WHO to consider a proposal to revise the *Code of Practice for the Processing and Handling of Quick Frozen Foods* (CXC 8-1976) and to provide scientific advice on the holding frozen temperature threshold to guarantee food safety for a range of different food commodities as indicated in CXC 8-1976.

¹ CXC 8-1976: https://www.fao.org/fao-who-codexalimentarius/sh-proxy/hu/?Ink=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252Fstandards%252FCXC%252B8-1976%252FCXC_008e.pdf

² Report of CCFH55: https://www.fao.org/fao-who-codexalimentarius/sh-proxy/en/?Ink=1&url=https%253A%252F%252Fworkspace.fao.org%252Fsites%252Fcodex%252Fmeetings%252FCXC-712-55%252FFINAL%252BREPORT%252FREP26_FHe.pdf

In recent years, interest has grown in assessing whether alternative frozen storage temperatures can provide an equivalent level of microbiological safety while supporting broader objectives related to energy efficiency and cold chain sustainability. In this context, the proposals have been made to consider an increase of -18°C.

Importantly, storage at sub-zero temperatures warmer than -18°C may affect safety with respect to parasites, but also to quality and shelf life, which are relevant to the overall management of frozen foods.

The outcome of this work will support the development of FAO/WHO scientific advice to inform Codex Alimentarius discussions related to the possible revision of CXC 8-1976¹ and other relevant documents.

Objectives

The objective of this call is to obtain globally representative data and information on the microbiological safety implications of freezing and frozen storage temperatures. If relevant data on the effects of sub-zero temperatures on food quality are available, they are welcome as well.

Request for relevant information

FAO and WHO want to ensure that all available and relevant information/data are collected, and are requesting governments, the food industry, academia, consumer groups, laboratories, health care providers, and any other interested organizations and individuals to submit any available data on the specific areas indicated above. These data may be published or unpublished. Reference should be made to related published studies, where applicable.

List of data and information requirements

Data and information on the following aspects are requested:

- **Microbiological behaviour of bacterial pathogens during freezing and frozen storage**
 - Data on the survival, persistence, or growth inhibition of bacterial foodborne pathogens during freezing and frozen storage, and thawing.
 - Comparative data on different frozen storage temperatures (e.g. -18°C, -15°C, -12°C, -5°C or others).
 - Information on pathogen behaviour in different food matrices under frozen conditions.
 - Data on the influence of freezing rate, facilities, and method on microbiological outcomes.
- **Effects of time: temperature (sub-zero temperatures warmer than -18°C) combinations on the viability of parasites in meat, fish, seafood, fruits and vegetables**
 - Data on the effectiveness of specific sub-zero temperatures on the viability of nematodes in fish, seafood and meat.
 - Data on cold tolerance of protozoa (e.g. *Cyclospora* spp.) and soil-transmitted helminth eggs that may contaminate frozen fruits or vegetables.
- **Temperature thresholds and temperature fluctuations**
 - Information on temperature thresholds relevant to bacterial growth inhibition under frozen and near-frozen conditions.
 - Data on the impact of temperature oscillations during frozen storage, transport, and retail.
 - Monitoring data describing real-world temperature profiles along the frozen food cold chain.

- **Food chain context and control measures**
 - Information on the role of freezing within the broader food safety system, including interaction with pre-freezing hygiene and process controls.
 - Data on relevant control points along the food chain that influence microbiological safety under frozen storage.
 - Verification, validation, and corrective actions related to frozen storage temperature control.
- **Impact of temperature on food quality**
 - Chemical indicators such as lipid oxidation rates, enzymatic degradation, pH changes.
 - Nutrient degradation kinetics.
 - Physical parameters: texture, colour, viscosity.
 - Sensory quality/flavour.
- **Other relevant information**
 - Molecular data that provide insights into the persistence or survival of bacterial pathogens under frozen conditions.
 - Any additional information relevant to the microbiological safety of foods stored under frozen conditions.
- **Data provider:** Please provide the name, title, and full contact details of the contact person for potential follow-up and further details, if needed.

Confidential and/or unpublished data

FAO and WHO recognize that some of the information and relevant data requested may be unpublished or confidential. 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 submitted will be safeguarded to the extent possible 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 provided contacts.

Deadline

Please submit any relevant information electronically either via e-mail (if not too large) or on a USB stick, in any official United Nations language (English, French, Spanish, Arabic, Chinese, Russian), and with title and short description of the content in English, to the addresses below at your earliest convenience, but no later than **15 April 2026**.

Data submissions in response to the call for data should be sent to:

Kang Zhou

Agrifood Systems and Food Safety Division
 Food and Agriculture Organization of the United Nations
 Viale delle Terme di Caracalla 00153 Rome, Italy
 Email: jemra@fao.org

Akio Hasegawa

Department of Nutrition and Food Safety
 World Health Organization
 20 Avenue Appia, Geneva, Switzerland
 Email: jemra@who.int