

codex alimentarius commission



FOOD AND AGRICULTURE
ORGANIZATION
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CX 5/105

CL 2007/35-QFF
September 2007

TO: Codex Contact Points
Interested International Organizations

FROM: Secretary, Codex Alimentarius Commission,
Joint FAO/WHO Food Standards Programme,
Viale delle Terme di Caracalla, 00153 Rome, Italy

SUBJECT: **Request for comments on the
PROPOSED DRAFT RECOMMENDED INTERNATIONAL CODE OF PRACTICE
FOR THE PROCESSING AND HANDLING OF QUICK FROZEN FOODS
(AT STEP 3)**

DEADLINE: **31 DECEMBER 2007**

COMMENTS: **To:**
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BACKGROUND

1. The 29th Session of the Codex Alimentarius Commission (2006) considered¹ the *proposed draft Recommended International Code of Practice for the Processing and Handling of Quick Frozen Foods* at Step 5. Noting that extensive work done by correspondence had not succeeded in resolving a few outstanding issues, i.e., whether certain quality provisions could be better identified as hygienic/safety provisions and the inclusion of Defect Action Points (DAPs) Analysis in the Code, the Commission agreed to establish an *Ad-Hoc* Intergovernmental Task Force on the Processing and Handling of Quick Frozen Foods to finalize the Code within a period of two years time with one session of the Task Force. The Commission accepted the invitation of Thailand to host the Task Force. The Commission also noted the willingness of the United States to assist Thailand in the practical operation of the Task Force.

2. A Circular letter 2007/06-QFF was issued in February, 2007, requesting comments on the Code which had been revised by Thailand, with the assistance of the United States. The Code had been revised to: a) delete the term "Defect Action Point" (DAP) and DAP analysis, as it was controversial, but retained the concept of essential quality provisions; b) combine Section 4 (Cold Chain Control: Safety Aspects) and Section 5 (Cold Chain Control: Quality Aspects) as suggested by several countries to avoid confusion in interpretation of safety and quality aspects and to avoid overlap; c) delete original Annexes 1 and 2 since HACCP is well understood and specific examples are unnecessary and the DAP analysis had been deleted; d) delete many of the definitions since they were terms commonly understood; e) incorporate portions of original Annex 3 into the main document while continuing to retain most of the content as a separate Annex; and, f) otherwise edit and streamline the document. Further, CL 2007/06-QFF asked for comments on four specific areas, as follows:

¹ ALINORM 06/29/41, paras. 116-119.

- (a) The removal of the Defect Action Point Analysis concept in the Code and its replacement by reference to essential quality provisions;
- (b) Whether the safety and quality provisions are adequately addressed in the Code, keeping in mind that the safety provisions are supplemental to those in the *International Recommended Code of Practice: General Principles of Food Hygiene*;
- (c) The necessity of retaining the content of Annex 1 (Specific Information on Temperature Monitoring and Control in the Food Chain) and if retained, whether the content should remain as an Annex, be incorporated into the Code in its entirety or partially; and
- (d) Any other outstanding issues.

3. Responses to CL 2007/06-QFF were received from 9 Member Countries, one Member Organization, and two international organizations (Australia, Brazil, Canada, Cuba, European Community, Japan, Malaysia, Mexico, Thailand, The United States, CIAA and IIR). Comments were received both with respect to the four areas asked in the Circular Letter and with respect to specific provisions of the Codex.

4. With respect to the four areas raised in CL 2007/06-QFF, the comments received can be summarized as follows.

- There was consensus that removal of the Defect Action Point (DAP) concept and replacement by reference to essential quality factors was satisfactory.
- There was general agreement that the Code adequately addressed safety and quality factors, keeping in mind that the Code needed to be read in conjunction with the *Recommended Code of Practice: General Principles of Food Hygiene*.
- There was general agreement that the information contained in the Annex of the Code (Specific Information on Temperature Monitoring and Control in the Food Chain) should be retained in the Code although there were somewhat mixed views as to whether the material presented was too prescriptive and more flexibility was needed to meet changing technologies, and on whether the material should be moved into the main body of the Code. The Task Force will need to consider these issues.
- There were no additional major issues brought forward although many specific comments were received (see below).

5. With respect to comments regarding specific provisions of the Code, these comments were incorporated to the extent possible. However, comments were not taken when significantly different views were expressed on a provision (e.g., storage temperature), when the comment related to an issue of major significance either technically or organizationally (e.g., reformatting to follow the *Recommended Code of Practice: General Principles of Food Hygiene*; incorporation of the Annex into the main text), or when the comment appeared to represent legislation that was specific to a single country or region. It was felt that decisions on these items should be made by the Task Force.

6. In regards to those comments suggesting that the Code should be reformatted to follow the *Recommended Code of Practice: General Principles of Food Hygiene* (GPFH), it may be helpful to note that this Code is a Code of Practice, not a Code of Hygienic Practice. Codes of Practice (e.g., *Code of Practice for Fish and Fishery Products*), do not normally follow the format of the GPFH.

REQUEST FOR COMMENTS

7. A revised version of the *proposed draft Recommended International Code of Practice for the Processing and Handling of Quick Frozen Foods* incorporating many of the specific comments submitted is provided in Appendix I. The revised text is based on the document as contained in CL 2007/06-QFF and the comments submitted in response to this Circular Letter. Comments submitted at Step 3 in response to CL 2007/06-QFF are compiled in original language in Appendix II for information.

8. Codex Members and Observers are invited to submit further comments on the Code, both of a general or specific nature, including comments in regard to questions raised previously (see paragraph 2).

**PROPOSED DRAFT RECOMMENDED INTERNATIONAL CODE OF PRACTICE
FOR THE PROCESSING AND HANDLING OF QUICK FROZEN FOODS
(AT STEP 3)**

INTRODUCTION

This *Code of Practice for the Processing and Handling of Quick Frozen Foods* is a revision of the Recommended International Code of Practice for the Processing and Handling of Quick Frozen Foods (CAC/RCP 8-1976), and its Annexes.

This Code is intended to assist all those who are engaged in the processing and handling of quick frozen foods and/or are concerned with their storage, transportation, export, import and sale in attaining safe food products of appropriate quality.

The Code has been revised to incorporate the Hazard Analysis and Critical Control Point (HACCP) approach described in the HACCP Annex to the *Recommended International Code of Practice: General Principles of Food Hygiene* (CAC/RCP 1-1969), which is termed GPFH hereafter. A prerequisite programme is described in the Code, covering essential requirements of hygiene in the production of quick frozen foods that should be in place prior to the application of HACCP.

The food hygiene provisions of this document are supplemental to, and must be used in conjunction with of the GPFH. The Code should also, as appropriate, be used in conjunction with other Codex texts, including the *General Standard for the Labelling of Prepackaged Foods* (CODEX STAN 1-1985), codes of hygienic practice (e.g., *Code of Hygienic Practice for the Transport of Food in Bulk and Semi-Packed Food* (CAC/RCP 47-2001) and *Code of Hygienic Practice for Meat* (CAC/RCP 58-2005), and codes of practice (e.g., *Code of Practice for Fish and Fishery Products - CAC/RCP 52-2003*). Reference can also be made, as appropriate, to Codex quick frozen food standards and/or provisions in relevant Codex texts.

1. SCOPE AND OBJECTIVE

This Code applies to the receiving, preparation, processing, handling, storage, transport, distribution, and retailing of quick frozen foods including fruits and vegetables, fish, meat, poultry and their products. The Code does not apply to edible ices.

The objective of this Code is to provide guidance for the processing and handling of quick frozen food to help ensure product safety and other aspects of the production of quick frozen foods including, as appropriate, essential product quality, composition and labelling provisions of pertinent Codex commodity standards. The guidance incorporates good hygienic and good manufacturing practices and the application of HACCP, emphasizing proper cold chain management.

In addition, the Code may be used for training of employees of the quick frozen food industry. The application of this Code by countries is likely to require modifications and amendments, taking into account local conditions and specific consumer requirements.

2. DEFINITIONS

The definitions listed below are for the purpose of this Code only:

Cold chain	A term embracing the continuity of successively employed means to maintain the temperature of foods, as appropriate, from receiving through processing and retailing.
Prerequisite programme	Programme required prior to the application of the HACCP system to ensure that any component of the cold chain is operating according to the GPFH, appropriate Codex codes of practice, and other appropriate food safety legislation.
Quick freezing process	A process which is carried out in such a way that the range of temperature of maximum ice crystallization is passed as quickly as possible. The quick freezing process shall not be regarded as complete until and unless the product temperature has reached -18°C or colder at the thermal centre ¹ , after stabilization of the temperature.

¹ The point within a piece of food which has the highest temperature at the end of a quick freezing process.

Quick frozen food	Food which has been subjected to a quick freezing process, and maintained at -18°C or colder in the cold chain, subject to permitted temperature tolerances, and labeled as such.
Tolerances	Short term fluctuations of temperature of the product in the cold chain, within limits permitted in this Code and which do not affect safety and quality.

3. PREREQUISITE PROGRAMME

In conjunction with the application of HACCP to any segment of the quick frozen food chain, that segment should be supported by prerequisite programmes based on good hygienic practice and good manufacturing practice. Prerequisite programmes should be specific within an individual establishment, and should be periodically evaluated to ensure their continued effectiveness.

While prerequisite programmes are usually associated with food safety, properly operating prerequisite programmes will also contribute to product quality.

Reference should be made to the GPFH and relevant Codex codes of hygienic practice and codes of practice for further information to assist with the design of the prerequisite programmes for a processing facility.

In addition to the provisions of the GPFH the following additional prerequisite provisions shall apply:

3.1 ESTABLISHMENT: DESIGN AND FACILITIES

3.1.1 Location

Processing facilities should, to the extent possible, be located close to the source of raw materials so as to minimize changes that might lead to quality or safety concerns for raw materials of quick frozen foods prior to freezing.

3.1.2 Process Plant Design

The food processing facility should be designed for the rapid processing, freezing and storage of food products. The processing facility should include a product flow that is designed to minimize process delays and prevent cross-contamination that could affect food quality and safety.

3.1.3 Cold Store Design

The cold store walls, floor, ceiling, and doors should be properly insulated in order to help maintain appropriate product temperatures. It is important that the design of the cold store ensures that:

- adequate refrigeration capacity that should provide and maintain a product temperature of -18°C [or colder];
- air is distributed uniformly around the stored foods;
- temperatures are controlled and recorded on a regular basis;
- loss of cold air and introduction of warm and humid air are avoided; and
- leaks of any refrigerant are prevented. In case of a leak, immediate corrective action ought to be applied in order to eliminate the problem.

3.1.4 Equipment Design and Construction

The equipment should be designed and constructed in such a manner that physical damage to the raw materials and product is minimized, e.g., by ensuring there are no sharp inside corners or projections and that chemical or biological hazards are not introduced into the product. Freezers should be designed and constructed so that, when properly operated, they meet the requirements of a quick freezing process.

3.1.5 Facilities

3.1.5.1 Electricity

In the case of power losses, the facility should have a contingency plan to provide an alternative power source in order to maintain the temperature of the quick frozen foods.

3.2 CONTROL OF OPERATION

3.2.1 Recall Procedures

Recall procedures should be in place to ensure timely withdrawal of products that may pose a risk to human health.

3.2.1.1 *Traceability/Product Tracing*²

The traceability/product tracing system should:

- enable withdrawal of products that may pose a risk to consumer health by appropriate recall procedures;
- be designed and implemented according to the *Principles for Traceability/Product Tracing as a Tool within a Food Inspection and Certification System* (CAC/GL 60-2006).

3.3 ESTABLISHMENT: MAINTENANCE AND SANITATION

3.3.1 Maintenance Regimes

Proper maintenance and repair of any damage to the cold store and its infrastructure (e.g., prevention of rust, water leaks, ice accumulation, etc.) should be ensured so that insulation and refrigeration performance is maintained.

3.4 TRAINING

Staff should have the skills and knowledge appropriate to their work to ensure that safety and quality of foods is not adversely affected during handling. Staff should also be aware of the importance of maintaining temperature control for frozen foods to maintain the quality and safety of the foods. Training programs should be in place (either formal training courses or training provided whilst working) to ensure that staff have these skills and knowledge.

4. COLD CHAIN CONTROL

As appropriate, both safety and quality aspects should be considered for each operation of the cold chain.

With respect to food hygiene, this Code should be used in conjunction with the GPFH and other relevant Codex texts. With respect to food safety, a HACCP plan should be developed, as appropriate, for each operation in the cold chain.

Cold chain control is also important with respect to food quality. Essential quality provisions³ can apply at various points in the processing and handling system. While control of essential quality provisions may be considered optional, control of food safety hazards through prerequisite programs and a HACCP plan should be used, as appropriate, to ensure safety.

4.1 RAW MATERIALS

Raw materials used should be safe, sound and suitable for further processing.

Procedures should be in place to ensure quality and safety of incoming materials. Freezing cannot improve quality, and it is necessary to use raw materials of optimum quality. Many raw materials and food products are highly perishable and should be handled carefully to maintain their quality until the freezing process is initiated.

Initial microbial levels in raw materials to be frozen should be kept as low as possible, both for food safety and quality reasons. Temperatures and duration of storage should be appropriately controlled to minimize adverse microbial effects. Most quality deterioration, including the development of off odours and flavours and changes in colours and texture are due to microbial growth or enzymatic activity.

Producers of quick frozen food should as far as practicable implement measures to control physical, biological and chemical hazards in raw materials to levels that do not present a threat to human health according to the recommendations of the relevant sections of the GPFH and other relevant Codex texts.

² See Definitions for the Purposes of the Codex Alimentarius, Procedural Manual of the Codex Alimentarius Commission.

³ Essential quality provision is a provision (e.g., temperature control) which should be applied to ensure the specified quality of the product.

Producers should have appropriate procedures in place for sorting and segregating raw materials that are unsuitable for further processing. Raw materials for processing and quick freezing should be prepared without delay and appropriate temperature control should be applied in order to minimize possible microbiological, chemical or biochemical changes that might affect safety and quality. To minimize deterioration, raw materials should be cooled and stored under appropriate conditions (e.g., pre-cooling) or transported and frozen in the shortest time possible.

For highly perishable products, product temperature control at receiving may be considered a critical control point (CCP). Additionally, the receipt temperature may also be considered an essential quality provision.

4.2 PROCESSING BEFORE FREEZING

Raw materials may be processed in many ways before freezing, e.g., cleaning, sorting, cutting, slicing, blanching, conditioning, ageing, scalding, filleting and heating. Whether such processes should be regarded as CCPs depends on the type of raw materials and the actual conditions, especially on how much time the raw materials and the resulting product spend at temperatures that could result in pathogen growth. It is particularly important that the time spent in the critical temperature zone (i.e. between 10°C and 60°C) be as short as possible. Consideration should also be given to any of these processes as to whether or not they should be regarded as an essential quality provision.

Blanching is often used in the production of frozen vegetables and other products to inactivate enzymes that would cause quality problems (taste, colour) during frozen storage. The blanching schedule should be determined to ensure the desired quality outcome, and may be an essential quality provision.

Glazing⁴ may be used to limit dehydration during frozen storage. Such dehydration may affect the appearance and other quality parameters of the food and the impact of glazing should therefore be assessed and addressed as appropriate.

If storage of intermediate ingredients (e.g., a QFF vegetable that is to be combined with other QFF vegetables or other ingredients into a final product) is necessary prior to further processing, the storage conditions, especially temperature, should be appropriate to the foodstuff concerned and if necessary, take into account future use or further processing of the food.

The heat treatment of many pre-cooked foods, e.g., prepared meals, should be sufficient to ensure inactivation of pathogens of concern. In certain cases, based on the hazards and controls specified for an operation, the time-temperature treatment and subsequent cooling may be considered as CCPs.

If frozen raw materials are used and a thawing process is included, the thawing method should be clearly defined and the thawing schedule (time and temperature parameters) should be carefully monitored. Selection of the thawing method should take into account the thickness and uniformity of size of the products in particular. Thawing should be done in a manner such that the growth of microorganisms is controlled. Thawing time and temperature parameters may be a CCP and/or an essential quality provision.

4.3 QUICK FREEZING PROCESS

The quick freezing process should be performed in such a manner so as to minimize physical, biochemical and microbiological changes, by taking into account the freezing system or process and its capacity, nature of the product (conductivity, thickness, form, initial temperature) and volume of production. With most products this is best achieved by ensuring that the product passes quickly through the temperature range of maximum ice crystallization, usually -1°C to -5°C at the thermal centre of the product. The quick freezing process step may be considered an essential quality factor.

During freezing operation it is important to provide spaces or channels permitting air circulation between the cartons or the pieces of food, respectively. This is especially the case when large lots of food are frozen or where the food consists of large pieces (e.g., whole turkeys). If such air channels are not provided, the very mass of the food may be such that in spite of rapid air blast and low air temperatures, the inner parts of the lot chill and freeze slowly. It is important that the thermal centre of the product is chilled as quickly as possible to prevent the outgrowth of pathogenic microorganisms or the production of microbial toxins. Freezing may be a CCP.

⁴ The application of a protective layer of ice formed on the surface of a frozen product by spraying it with, or dipping it into, potable water, or potable water with additives adopted by the Codex Alimentarius Commission, as appropriate.

The quick freezing process should not be regarded as complete until the product temperature has reached -18°C or colder at the thermal centre. On exit from the freezing apparatus, the product should be maintained at -18°C and not be exposed to warm temperatures and should be moved to a cold store as quickly as possible. The same applies to products that are retail packed after the quick freezing process (see Section 4.7).

4.3.1 Impact of Quick Freezing on Microorganisms

Freezing should not be considered as a lethal treatment for microbiological contamination in foods. However, freezing may result in the death of certain microorganisms and will inhibit the growth of others.

In products intended for raw consumption or not fully cooked prior to consumption, freezing can be used to control hazards in fish from live helminth (nematode, trematode, cestode) parasites, such as anasakine nematodes and trichinae in pork. Freezing may serve as a control mechanism when developing HACCP plans for marinating, pickling, or other final preparations which do not supply sufficient heat from cooking to inactivate any potentially harmful parasites. The conditions required for effective parasite control using freezing include the final temperature and time of holding in the frozen state. These parameters vary depending on a number of factors which may include the host species, species of parasite, thickness of the product, and arrangement of product in the freezer. The use of freezing as a food safety control measure should, as with all food safety control measures, be appropriately validated to ensure that the measure is capable of controlling the hazard⁵.

4.4 PACKAGING AND LABELLING

In general, the packaging should:

- protect the product against dehydration;
- protect the food against microbial and other contamination that could adversely affect safety and quality;
- protect the sensory and other quality characteristics of the food; and
- not add to the food any substance that may influence the safety and quality of the food.

The packaging or re-packing of quick frozen foods should be carried out in such a manner that an increase in temperature, within the authorized tolerances of the quick frozen foods, does not adversely affect the safety and quality of the product.

The labelling of packaged quick frozen foods should comply with the requirements of the *General Standard for the Labelling of Prepackaged Foods* (CODEX STAN 1-1985).

4.5 FROZEN STORAGE

Cold stores should be designed and operated so as to maintain a product temperature of -18°C [or colder] with a minimum of fluctuation, see Section 3.1.3 The temperature of the cold store may be an essential quality provision and/or a CCP to avoid a critical temperature abuse situation that may jeopardize food safety.

Stock should be placed in the cold room in such a manner that the circulation of cold air is not impeded to the extent that the product temperature is adversely affected.

Stocks should be rotated to ensure that the products leave the cold store on a “First in-First out” basis.

4.6 TRANSPORT AND DISTRIBUTION

The product temperature during transport and distribution may be an essential quality provision and/or a CCP to avoid a critical temperature abuse situation that may jeopardize food safety. The transport of quick frozen foods (e.g., from cold storage warehouse to cold storage warehouse) should be carried out in suitably insulated equipment that ideally maintains a product temperature of -18°C [or colder].

Vehicle compartments or containers should be pre-cooled prior to loading. Care should be taken not to impair the efficiency of temperature control or reduce the refrigeration capacity.

The user of the vehicle or container should ensure:

- adequate supervision of product temperatures at the moment of loading;
- effective stowage of the load in the vehicle or the container to protect the cargo against heat entering from outside;
- efficient operation of the refrigerating unit during transit, including the correct thermostat setting;

⁵ See *Guidelines for the Validation of Food Safety Control Measures* (under development).

- an appropriate method of unloading at the points of arrival (particularly the frequency and duration of door openings);
- proper maintenance of the insulated body and the refrigeration system; and
- proper cleaning of the vehicle or container.

Distribution of quick frozen foods to retailers should be carried out in such a way that any rise in product temperature warmer than -18°C be kept to a minimum within, as appropriate, the limit set by national legislation and should not in any case be warmer than -12°C in the warmest pack to ensure quality of the products.

Loading into and unloading from vehicles and loading into and unloading from cold stores should be as fast as practicable and the methods used should minimize product temperature rise.

After delivery, the product temperature should be reduced to -18°C as soon as possible.

4.7 TRANSFER POINTS

Attention should be paid to moving quick frozen foods as rapidly as is reasonably practicable from cold store to vehicle/container or from vehicle/container to holding store or from holding store to display cabinets. Often, transfer of responsibility occurs at the same time.

- Quick frozen foods should not be left for any significant length of time at ambient temperature.
- Procedures should be established for dispatching loads and for immediate storage of food upon arrival, in order to minimize exposure to humidity, elevated temperatures or other adverse conditions.
- It should be established that all personnel are following such procedures.
- The temperature of quick frozen food should be checked as it is received or dispatched and a record of these measurements retained for a period that exceeds the shelf-life of the product.
- Operations (such as casing, order assembly, palletizing, etc.) should be carried out in the cold store or in a suitably temperature-controlled area.

4.8 RETAIL SALE

Quick frozen foods should be offered for sale from freezer cabinets designed for the purpose. Cabinets should be capable of maintaining and be so operated as to maintain a product temperature of -18°C . A rise in product temperature may be tolerated for short periods, with any rise warmer than -18°C kept to a minimum, within, as appropriate, the limit set by national legislation, and should not in any case be warmer than -12°C in the warmest pack.

Temperature in the cabinet may be an essential quality provision and/or a CCP to avoid a critical temperature abuse situation that may jeopardize food safety.

Display cabinets should:

- be equipped with an appropriate temperature measuring device (see Annex 1, Section 1.4);
- be located so that the open display area is not subject to draughts or abnormal radiant heat (e.g., direct sunlight, strong artificial light or in direct line with heat sources); and
- never be stocked beyond the load line.

Cabinets requiring defrosting should have the defrost cycle programmed in such a way that, to the extent possible, defrosting takes place outside peak shopping periods. If necessary to avoid detrimental effects due to warming or thawing, quick frozen foods should be moved during defrost cycles to a suitable cold store.

Stocks should be rotated to ensure that the products are sold on a "First in-First out" basis. In no case, should products be stored beyond their specified shelf-life.

The retail establishment should have an appropriate back-up storage for quick frozen foods that allows products to be kept at a temperature of -18°C .

5. TEMPERATURE MANAGEMENT IN THE COLD CHAIN

Inadequate food temperature control is one of the most common causes of food borne illness. Inadequate food temperature control may also result in an adverse effect on product quality, including food spoilage. Temperature management systems should be in place to ensure that the temperature along the cold chain is controlled and monitored effectively. Details on temperature control and temperature monitoring are provided below and in Annex 1.

5.1 TEMPERATURE MONITORING

Operators should ensure that appropriate tamper-proof systems are in place to monitor air temperatures during the freezing process and to monitor temperature along the cold chain in order to ensure that quick frozen foods are maintained at an appropriate temperature.

In general, operators have a choice of monitoring systems for quick frozen products, which either include measurement of operating air temperatures of the refrigerating systems or direct/indirect measurement of product temperature. Additional approaches also exist (see Section 5.1.3).

5.1.1 Air Temperature Monitoring

In air temperature monitoring, fixed temperature sensors are used to monitor the air temperature in the refrigerated system.

Air temperature monitoring permits:

- the use of fixed temperature sensors, which are normally protected from damage during commercial activity;
- diagnosis of problems occurring in the system; and
- process management using data storage on computers, which can be linked to other operating information such as defrost cycles, door openings, energy consumption and production batch codes.

5.1.2 Product Temperature Monitoring

Product temperature may be measured directly or indirectly. Direct measurements of product temperature may be undertaken destructively or non-destructively.

Although product temperature measurement can give more confidence than air temperature monitoring that temperature requirements are being complied with, this approach is often not practical during busy production and distribution periods.

5.1.3 Additional Approaches

Additional approaches to temperature monitoring include:

- use of a simulated food product;
- use of temperature probes and/or recorders, as appropriate, placed between packages or in a load;
- use of a non-contact thermometer; and
- use of temperature indicators and time-temperature indicators.

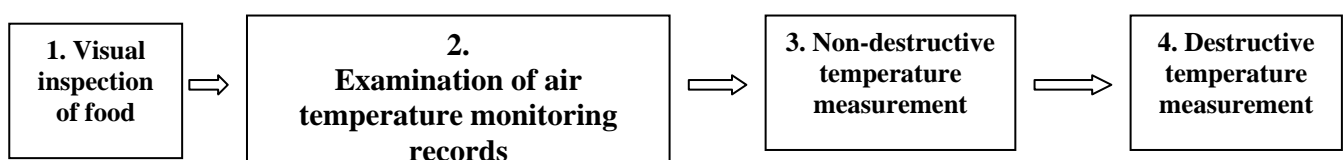
5.1.4 Temperature monitoring equipment

The selection of temperature monitoring equipment should take into account:

- appropriate accuracy and resolution (depends on the construction of the equipment and its use);
- ability to withstand vibrations, shocks or movement (for mobile system);
- coverage of temperature range adequate for quick frozen foods; and
- need for calibration and periodic checks to ensure proper functioning.

5.2 STEPWISE APPROACH TO TEMPERATURE CONTROL

When quick frozen foods are being inspected in the cold chain, either before loading or during unloading, a stepwise approach is recommended.



1. Before loading and during unloading, a visual inspection is recommended in order to verify the condition of the foods (e.g., for signs of damage, abuse, defrosting, etc.).
2. First, the air temperature monitoring records and other temperature readings noted in the documentation following the foods should be examined. If the loading temperature was correct and the refrigeration system functioning correctly, and there are no irregularities in the temperature difference between the air leaving the refrigeration unit and the air return, no further action need be taken.
3. If there is a doubt about any of the above aspects or no records are available then a non-destructive product temperature measurement could be carried out. This should involve a between carton or between pack temperature reading (see Annex, Section 2.1.3). If the non-destructive measurement indicates that the food temperature is within the tolerance authorized by national legislation, the inspection may stop at this point.
4. Only if the non-destructive product measurement is outside the tolerance or legal limit should a destructive temperature measurement be undertaken (see Annex, Section 2.1.4). This operation must be carried out after placing the cargo in refrigerated environments or after protecting the load in order to avoid increasing the temperature of the food.

Whenever this stepwise approach indicates a temperature violation, the procedure in Section 5.3 should be followed.

5.3 TEMPERATURE VIOLATION

Loads or parts of loads that are warmer than the temperature required for quick frozen food should be identified and sorted immediately. Delivery, and sale of these loads or parts of loads should be suspended. It is the responsibility of the person in possession of the food to ensure that its temperature is brought down immediately, and, more generally, to take any necessary measures for preserving the food. An assessment should be made as to whether the safety or the quality of the product has been compromised and action taken accordingly. Destruction of the product may be necessary, especially if safety provisions are compromised. In cases of compromised safety or quality, the supplier, as well as the buyer (if known) should be informed of the incident. In the case of compromised safety the official body having jurisdiction should also be notified.

5.4 RECORD KEEPING

Records of these measurements should be kept for a period that exceeds the shelf-life of the product or as required by specific national legislation.

ANNEX

SPECIFIC INFORMATION ON TEMPERATURE MONITORING AND CONTROL IN THE COLD CHAIN

1. AIR TEMPERATURE MONITORING

1.1 AIR TEMPERATURE MONITORING EQUIPMENT

Electronic thermometers consist of a sensor (placed in the cold air), and a read-out or recording system. The sensor can be located far from the read-out or recording system or incorporated in it. A recorder is able to store the data, usually electronically, although chart recorders are still widely used for cold stores and containers.

- Air temperature thermometers should be accurate to within $\pm 2^{\circ}\text{C}$ and have a resolution of 1°C . The response time, i.e. the time taken for readings to stabilize, depends on the construction of the equipment and its use. Also if the system is mobile, it should be able to withstand vibrations, shocks or movement. Normally, accuracy of the electronic component of the recorder is less than $\pm 0.3^{\circ}\text{C}$.
- The sensor can consist of a thermocouple (Type K or Type T), thermistor or platinum resistance device. All of these will provide an acceptable performance and cover a temperature range adequate for quick frozen foods.
- Systems are checked and calibrated during manufacture. It is important that once installed, periodic checks are carried out to ensure proper functioning. This is normally undertaken by checking against a calibrated thermometer placed in an equilibrated ice bath.

1.2 AIR TEMPERATURE MONITORING OF COLD STORES

Sensors should be placed in the chamber in the warmest positions. The recorders can be placed more conveniently outside the cold store or in control offices.

Sensors should be located high up and well away from the cooler fans and well away from the entry and exit doors, to avoid exaggeratedly low temperatures or wide fluctuations.

Small cold stores (less than 500 m^3) may need only one sensor, whereas, those with a volume of less than $30,000\text{ m}^3$ should be equipped with two sensors. Stores with a volume from $30,000\text{ m}^3$ to $60,000\text{ m}^3$ will require 4 sensors, and those with a volume above $60,000\text{ m}^3$ should be equipped with 6 sensors.

Retail stores with a volume of less than 10 m^3 can be equipped with only a visible thermometer.

[Alternative language proposed by the EC]:

[Sensors should be placed high up, in indicative locations within the cold store, away from all positions causing uncontrolled temperature fluctuations such as cooler fans, the entrance or the exit (if different from the entrance) in order to enable precise recording. The position of the sensors should be chosen taking into account the cold air circulation and in such a manner to give an accurate determination of the temperature conditions. Sensor recorders are recommended to be placed outside the cold stores in a convenient location selected for this purpose.]

As far as the number of sensors concerned, each food business operator should, as a component of the validation of the HACCP plan, evaluate its processes and make a documented decision on the number of sensors required. As indicative figures, small cold stores (less than 500 m^3) may need only one sensor, those with a volume of less than $30,000\text{ m}^3$ may require two sensors, those with a volume from $30,000\text{ m}^3$ - $60,000\text{ m}^3$ may require four sensors, and those with a volume greater than $60,000\text{ m}^3$ may require 6 sensors. Retail stores with a volume less than 10 m^3 can be equipped with only a visible thermometer.]

1.3 AIR TEMPERATURE MONITORING DURING TRANSPORT

Measurement of the return air temperature to the cooling unit will give a good indication of the load temperature, provided adequate air flow is achieved throughout the length of the vehicle.

In long vehicles (above 6 m), air ducting is recommended to ensure that sufficient cold air reaches the rear of the vehicle. Two sensors are recommended to be fitted in the compartment: one measures the return air temperature, and the other is placed two thirds to three quarters the length of the vehicle mounted in the ceiling ducts. The difference between these two temperatures should be an indication of how well the refrigeration is functioning. If the difference is large or variable it may indicate insufficient pre-cooling, incorrect stowage of pallets, or unnecessary delay in closing the doors.

The recorder can be placed in the vehicle cabin or mounted on the outside, usually near the refrigeration controls.

1.4 AIR TEMPERATURE MONITORING IN DISPLAY CABINETS

- Display cabinets should be equipped with an accurate thermometer or temperature measuring device that is easily readable.
- In open cabinets, the temperature should be measured in the return air, at the load line level, or at the warmest place.

2. PRODUCT TEMPERATURE MONITORING

2.1 DIRECT TEMPERATURE MEASUREMENT

2.1.1 Specification of Measuring System

The temperature measuring device used to measure product temperature should be of better accuracy than that used for air temperature monitoring. The following specifications are recommended for the system, i.e. sensor and read-out:

- the system should have an accuracy of $\pm 0.5^{\circ}\text{C}$ within the measuring range -20°C to $+30^{\circ}\text{C}$;
- the response time should achieve 90% of the difference between initial and final readings within three minutes;
- the display resolution of the read-out should be 0.1°C ;
- the measuring accuracy must not change by more than 0.3°C during operation in the ambient range -20°C to $+30^{\circ}\text{C}$;
- the system should be calibrated or otherwise verified prior to use and at specified intervals against measurement standards traceable to international or national measurement standards;
- the accuracy of the system should be checked at regular intervals;
- the system should be robust and shock proof; and
- the electrical components of the system should be protected against undesirable effects due to condensation of moisture.

2.1.2 Pre-cooling of the Probe

- The probe should be pre-cooled to a temperature as close to the product temperature as possible before measurement.
- After inserting the probe, the temperature should be read when it has reached a stable value.

2.1.3 Non-destructive Temperature Measurement

Non-destructive testing is rapid and can be done without unduly disturbing the load. However, because the outside temperature of the pack or carton is being measured this may result in up to 2°C difference between the true product temperature and the reading obtained.

Product surface temperature measurement undertaken non-destructively should:

- measure the temperature between cases on a pallet or between packs inside a carton;
- use sufficient pressure to give good thermal contact, and sufficient length of probe inserted to minimize conductivity errors; and
- use a probe with a flat surface to give good surface thermal contact, low thermal mass, and high thermal conductivity.

2.1.4 Destructive Temperature Measurement

Temperature probes are not designed to penetrate quick frozen foods. Therefore it is necessary to make a hole in the product in which to insert the probe. The hole is made by using a pre-cooled sharp pointed metallic device such as an ice punch, hand drill or an auger. The diameter of the hole should provide a close fit to that of the probe. The depth to which the probe is inserted will depend on the type of product:

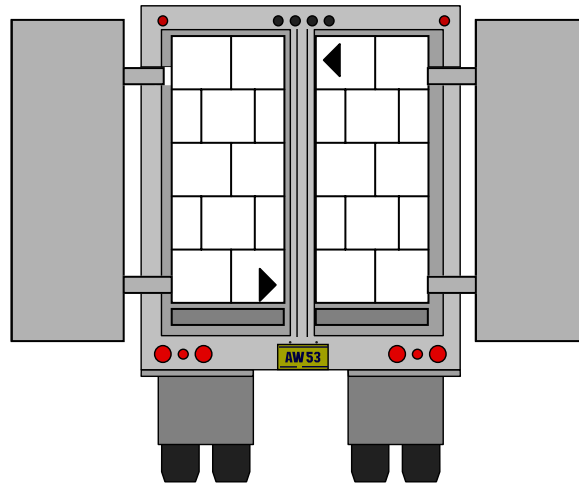
- where product dimensions allow, insert the probe to a minimum depth of 2.5 cm from the surface of the product.

- where this is not possible because of the size of the product, the probe should be inserted to a minimum depth from the surface of 3 or 4 times the diameter of the probe.
- where it is not possible or practical to make a hole in certain foods because of their size or composition, e.g., diced vegetables, the internal temperature of the food package should be determined by insertion of a suitable sharp-stemmed probe to the centre of the pack to measure the temperature in contact with the food.
- in order to measure the centre temperature in large products after the quick freezing process it may be necessary to insert the probe to a depth of more than 2.5 cm.

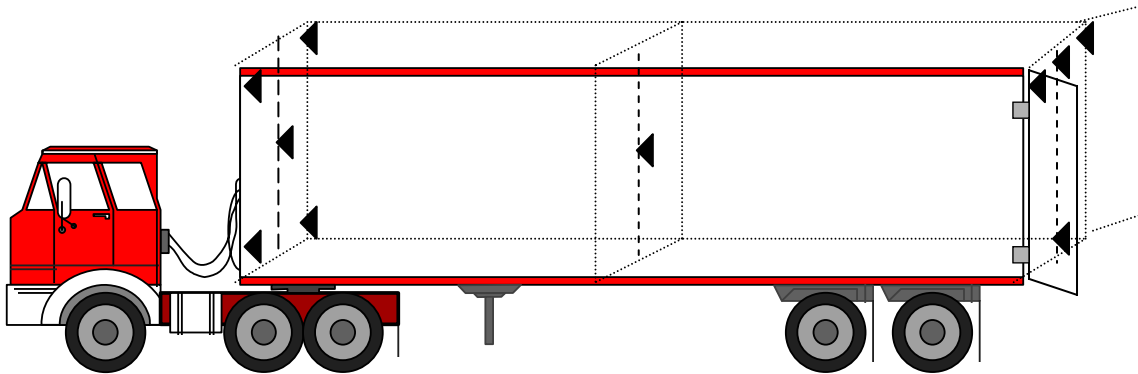
2.2 SAMPLING OF PRODUCTS FOR TEMPERATURE MEASUREMENT

2.2.1 During Transport

- A non-destructive temperature measurement should be taken of the product being loaded into the vehicle and a record entered in the documents.
- A destructive product temperature measurement is required if there appears to be a problem. If it is necessary to measure product temperatures during transport whilst the vehicle is loaded, samples should be selected from the top and bottom of the consignment adjacent to the opening edge of each door or pair of doors (see top of figure).
- If product temperature measurement is necessary, after the vehicle is unloaded and the cargo placed in a properly cooled environment, four samples should be selected from within the transport vehicle from amongst the following points, carefully noting the location of the load within the transport vehicle (see bottom of figure):



◀ Sampling positions for a loaded vehicle



◀ Sampling positions for an unloaded vehicle

- top and bottom of the consignment adjacent to the opening edge of the doors;
- top and far corners of the consignment (as far from the refrigeration unit as possible);
- centre of the consignment;
- centre of the front surface of the consignment (as close to the refrigeration unit as possible);
- top and bottom corners of the front surface of the consignment (as close as possible to the air return inlet).
- When samples are selected, a non-destructive temperature measurement should in general be carried out first before deciding whether a destructive measurement should be carried out. A total tolerance of 2.8°C should be applied (2°C for limitations of methodology and 0.8°C tolerance for the system). If a destructive measurement is carried out, the tolerance of 2.8°C is not applicable.

2.2.2 At Retail

If it is necessary to measure the temperature of quick frozen foods in retail display cabinets, one sample should be selected from each of three locations representative of the warmest points in the cabinets. The positions will vary with the different types of retail display cabinets used.

3. OPTIONAL APPROACHES TO TEMPERATURE MONITORING: INDIRECT TEMPERATURE MEASUREMENT

3.1 SIMULATED PRODUCT

When air temperature monitoring is difficult, e.g., during the freezing process it is possible to use a simulated food sample. This is a device that has a similar shape and is made of a material that has similar thermal properties and gives a similar cooling factor to the food being monitored. Materials such as nylon, polystyrene, polyvinyl chloride, perspex and polytetrafluorethylene have thermal properties similar to certain foods. Sensors can be embedded permanently into such a device and it can be packed along with the food packages and measured when required. The simulant may also be incorporated into a temperature recording device.

3.2 RECORDERS BETWEEN PACKAGES

Small temperature recorders may be placed between packages or in a load, e.g., in cartons, in order to record the temperature over long periods. Such recorders may be programmed and the measurements retrieved by means of computerized devices.

3.3 NON-CONTACT THERMOMETERS

These devices measure the temperature of the food by sensing the infrared radiation emitted by the food. The amount of radiation varies with different materials, which absorb and reflect and transmit radiation differently. Infrared thermometers can be portable and are usually “pistol shaped” sometimes with a laser sighting aid. Target size can be important, since the instrument averages all the radiation in its field of vision. Care must be taken in interpreting results from these devices with quick frozen foods because a package rapidly picks up radiation from its surroundings, there can be a difference between surface temperature and interior temperature. In addition the type of packaging will affect the radiation. Laminated foil packaging in particular can give large errors because it reflects radiation more efficiently than cardboard. Also available are devices which compensate for this type of error and measure the radiation through a window.

Fixed video camera-type infrared thermometers are also used. These can give thermal images, which permit industrial control of heating or cooling processes to ensure even processing. This is also true of the freezing process. Therefore it is possible to scan large numbers of products and pick out “hot-spots”, followed up by more accurate temperature measurements.

3.4 TEMPERATURE INDICATORS (TIS) AND TIME-TEMPERATURE INDICATORS (TTIS)

These devices give a colour change, either when a specific temperature has been exceeded (TIs), or when the integrated exposure to a temperature over a period of time has been exceeded (TTIs). There has been a reluctance to use TIs and TTIs on retail packs for a number of reasons, in particular because they are on the surface of packs and not inside the food, and because of their possible conflict with durability dates. However, TIs and TTIs may be used on the outside of cartons or pallets to detect temperature abuse during distribution from cold stores to holding stores at retail, and they can monitor transfer of quick frozen foods where monitoring records may not be available.

ORIGINAL LANGUAGE
LANGUE ORIGINALE
IDIOMA ORIGINAL

COMMENTS SUBMITTED IN RESPONSE TO CL 2007/06-QFF

Comments from governments and interested international organizations submitted at Step 3 in response to CL 2007/06-QFF are given below. The comments are presented in original language. They are arranged by countries followed by international organizations in alphabetical order.

AUSTRALIA / L'AUSTRALIE

General Comments

These comments are in response to the three specific questions in the circular letter.

a) The removal of Defect action Point Analysis concept in the Code and its replacement by reference to essential quality provisions.

- In previous comments Australia suggested that DAP-HACCP sections should be integrated as separation of safety and quality aspects leads to confusion in interpretation and repetition. The current version of the Code, which integrates safety and quality, resolves some of the ambiguity and repetition observed in the previous version. However further clarification is needed on the following:
 - There is a danger that the document has become so general in its advice that it will not guide industry in deciding what is important to control. Frozen foods represent a very broad category including those where food safety issues are very important eg frozen meals, to those where they are less so e.g., some frozen vegetables such as peas, with similar though different priority for quality.
 - The integration of safety and quality provisions could lead to confusion regarding what is optional and what is mandatory. The text needs to convey that while essential quality provisions are optional, provisions relating to food safety are not optional if required to make a safe product. We suggest inserting text in Section 4 Cold Chain Control after the paragraph that starts 'Cold chain control is also important....' to read '*While control of essential quality provisions may be considered optional, control of food safety hazards through prerequisite programs and a HACCP plan is necessary to ensure safety*'.
 - The definition of 'essential quality provisions' in the footnote to page 5 is unclear. Does it refer to the 'qualities' of the product required by the customer in the product specification provided to the freezing company? How they are different to 'quality' provisions? For example six 'essential quality provisions' are identified in the document including; processing before freezing, receiving, thawing time and temperature parameters of raw materials, the temperature of the cold store, the product temperature during transport and distribution and temperature in the retail cabinet. Are these the only provisions 'essential' to obtaining quality product or those likely to be in the product specification? This could imply that temperature during the quick freezing process and raw material quality are not essential quality provisions.

b) Comments on whether the safety and quality provisions are adequately addressed in the Code, keeping in mind that the safety provisions are supplemented to those in the International Recommended Code of Practice: General Principles of Food Hygiene (GPFH).

- There could be some improvement in ensuring that, where the text that makes a specific recommendation, it is clear whether this recommendation is a quality and/or a safety provision. For example, in Section 4.6, the first sentence recommends a product temperature of -18C without indicating whether this is a quality provision. For transport, -18C would be a quality provision. Similarly with the fourth paragraph and the references to -12 and -18C. Therefore, to improve clarity, the second sentence of the paragraph could be moved to the beginning of the paragraph followed by information on transport. This would indicate the general principle regarding transport i.e. that product temperature is important, and provide a link with the second paragraph as to type of transport. (See specific comments).

- A number of safety provisions specified in the GPFH are included in the Code without adding additional content; resulting in duplication. For example both the GPFH and the Code have provisions relating to recalls.
- c) **Comments on necessity of retaining the content of Annex 1 (specific Information on Temperature Monitoring and Control in the Food Chain) and if retained, whether the content should remain as an Annex, be incorporated into the Code in its entirety or partially.**
- The Annex is useful. However, as the Code progresses, care should be taken that the Annex does not duplicate provisions in the Code, but only adds details or further explanation.
- d) **Any other outstanding issues**
- The introductory material to section 4 Cold Chain Control should be expanded to explain that this section is developing control measures for safety and quality aspects that are not controlled through prerequisite programs covered under section 3. Importantly, there should be clear explanation in the introductory remarks of the importance of time and temperature and hygiene prior to freezing in regards to safety and quality. Once frozen and maintained frozen, the significance of time and temperature is a quality factor and should not be confused with safety.
 - Although the information in the Code is generally sound, the Code could be improved by separating the general principles for ensuring quality and safety from the plain language explanation of the principle and again from the recommendation on how the principle could be achieved. For example, In section 4.1 RAW MATERIALS which is about establishing control measures for safety and quality of raw materials, the principle may¹ be that ‘Measures must be in place to ensure quality and safety of incoming materials’. The fourth paragraph gives explanation of this ‘Producers of quick frozen foods etc’. Recommendations are given in the other paragraphs (though there is a mixture of explanation and recommendations which requires sorting). This approach has been successfully adopted in other Codex Codes of Practice for example, the Codex Code of Hygienic Practice for Milk and Milk Products (CAC/RCP 57-2004) and the draft Code of Hygienic Practice for Eggs and Egg Products at Step 8.

Specific Comments in addition to above

Section and sentence/paragraph	Type of change	Reason for proposed change	Proposed changes
Introduction	Editorial	If the Introduction is to be a part of the Code, then it need not mention the revision process.	Delete first paragraph. In second paragraph, replace “This Code” with “This <i>Code of Practice for the Processing and Handling of Quick Frozen Foods</i> ”. Third paragraph, replace “The Code has been revised to incorporate” with “The Code incorporates”.
1. Scope and objective Paragraphs 1 and 2	Clarification	To clarify that all stages are covered. The section could be better structured to ensure that all text covering application is in one paragraph and text for objectives in another. For consistency	Insert the word ‘preparation’ before processing. For example, move the last sentence to the first paragraph

¹ The wording of principles should be consistent through out the document and this is not necessarily the preferred option.

Section and sentence/paragraph	Type of change	Reason for proposed change	Proposed changes
	Editorial		Delete “of Practice” in first sentence of first paragraph (elsewhere in the document, it is simply referred to as “the/this Code”).
3. Prerequisite programme	Editorial	In the manner in which the guidance in the Code is structured, the business must put in place the prerequisite programmes before addressing the controls in section 4 onwards.	“In conjunction with the application of HACCP to any segment of the quick frozen food chain, that segment should must be supported by prerequisite programmes based on good hygienic practice and good manufacturing practice. Prerequisite programmes should be specific within the individual establishment, and should contain requirements for monitoring and evaluation to ensure their continued effectiveness”
3.1.1 Location	Clarification	The meaning of ‘quality changes that might lead to safety concerns’ is unclear. If the purpose of locating processing facilities near to the source of raw materials is to minimise transport times and delays then this is not apparent.	Delete section 3.1.1.or state as explanation what the reason is for the requirement.
3.1.3 Cold Store Design	Clarification	3 rd Bullet: The reference to ‘recorded on a regular basis’ is unclear as to the intent. Is this a reference to an activity or to providing equipment in the cold store to enable recording of temperature for example, data loggers? If the latter – this is onerous.	Delete “temperature are recorded on a regular basis’ – it is addressed in Section 5.1 and is not a “cold Store Design” issue.
3.1.5.1 Electricity	Clarification	It is unclear whether the contingency plan is for an alternative electricity supply or other measures to prevent loss of temperature for example, some cold stores will retain temperature for a time without power if doors not opened etc...	In the case of power losses, there should be contingency plan to provide an alternative power source to the facility.
3.2.1.1 Traceability/Product Tracing	Removal of repetition	Delete reference to recalls as already covered in GPFH section “5.8 Recall Procedures”	Delete dot point 1. Reference the <i>Principles for Traceability/Product Tracing as a Tool within a Food Inspection and certification System</i> CAC/GL 60-2006

Section and sentence/paragraph	Type of change	Reason for proposed change	Proposed changes
			<ul style="list-style-type: none"> • “Not add to the food any substance that may influence the safety and quality of the food”. Retain the rest of the information and cross reference to the GPFH
4.5 Frozen storage	Technical	<p>Temperature of the cold store is a CCP for safety. The control measure is that it does not rise to a point where the food thaws. For quality reasons the -18C is important. This section illustrates the general comment that the principles for safety and quality at these points should be articulated first- then the recommendations.</p> <p>Although the point is made in 3.1.3 that cold stores should be designed in such as way that cold air is able to circulate uniformly to all parts of the cold room, there should be a recommendation here that food is placed in the cold room in such a way that circulation of air is not impeded.</p>	<p>Suggest that design of cold stores is moved to 3.1.3. The principle for frozen storage should be expressed in terms of ensuring that the operation (rather than any design or construction requirements). Perhaps the key point here is in terms of monitoring and emergency procedures if temperature starts to rise...</p> <p>Add text “ Stock should be placed in the cold room in such a manner that the circulation of cold air is not impeded to the extent that product temperature is adversely affected”</p>
4.6	Rearrange text	The principle should be stated before providing recommendations.	<p>Amend text to read:</p> <p>“The product temperature during transport and distribution may be an essential quality provision and/or a CCP to avoid a critical temperature abuse which may jeopardise food safety. Product should be maintained frozen to maintain safety and at a consistent temperature to ensure quality.</p> <p>The transport of quick frozen foods should be carried out in suitably insulated equipment”.</p> <p>The recommended temperature is - 18C or colder for quality reasons.”</p>
4.7 Retail Sale 4.8 Transfer points	Rearrangement of sections	Retail sale occurs after transfer therefore rearrangement of sections will mirror production process.	Make Transfer points section 4.8 and Retail Sale section 4.7.

Section and sentence/paragraph	Type of change	Reason for proposed change	Proposed changes
5.4 Record Keeping	Clarification		Add “or as required by specific country legislation” to the end of the sentence.

BRAZIL / LE BRÉSIL / BRASIL

General Comments

Brazil congratulates the Working Group on the development of the document and proposes that the base-line structure of the document be harmonized with the *Recommended International Code of Practice - General Principles of Food Hygiene* (CAC/RCP 1-1969, Rev. 4 – 2003), from the Section IV.

Brazil suggests to adopted the following text, when there were not any complementary provisions to the *Recommended International Code of Practice - General Principles of Food Hygiene* (CAC/RCP 1-1969, Rev. 4 – 2003): “*No specific requirements beyond those contained in the Recommended International Code of Practice-General Principles of Food Hygiene, CAC/RCP 1 - 1969, Rev. 4, 2003 are needed*”, as example of the Code of Hygienic Practice for Milk and Milk Products (CAC/RCP 57–2004).

Brazil suggests to delete in the document the references of the steps considered as Critical Control Point (CCP), once the designing of the HACCP plan should be to each specific processing and individual food processor according to the fifth paragraph, item Guidelines for the Application of HACCP System, page 34, Annex: *CAC/RCP 1 – 1969, Rev. 4, 2003*.

Introduction (Page 3)

It is suggested to insert some information about biological hazards that can occur or be introduced in quick frozen foods, which can be adapted from the second paragraph, item 4.3.1.

Rationale: In order to follow the same pattern of other Draft standards in development at Committee Codex on Food Hygiene – CCFH and assist at the hazard characterization.

1. Scope and Objective (Page 3)

It is proposed to modify the third paragraph of this item, as follows:

In addition, the Code may be used for training of employees of the quick frozen food industry. The application of this Code by countries is likely to require ~~modifications and amendments, taking into account local conditions and specific consumer requirements~~ **guidelines applied to commodity specific products as annex in this document.**

Rationale: The text should not encourage amendments in the document approved by Codex Alimentarius based on local conditions and specific consumer requirements, once code of practices has the purpose to assure that food is safety and suitable for human consumption and fair practices in internationally traded food.

2. Definitions (Page 3)

It is suggested to include the footnote *thermal centre* as a definition, according to the suggestion below:

Thermal centre	The point within a piece of food which has the highest temperature at the end of a quick freezing process.
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Rationale: The expression is adopted in other items of the document and it is considered important its inclusion in the definition in order to clarify the comprehension of the text.

3. Prerequisite Programme (Page 4)

It is suggested to delete the three first paragraphs of this item, since that these provisions were also mentioned in the Introduction.

~~3. PREREQUISITE PROGRAMME~~

~~In conjunction with the application of HACCP to any segment of the quick frozen food chain, that segment should be supported by prerequisite programmes based on good hygienic practice and good manufacturing practice.~~

~~Prerequisite programmes should be specific within an individual establishment, and should contain requirements for monitoring and evaluation to ensure their continued effectiveness.~~

~~While prerequisite programmes are usually associated with food safety, properly operating prerequisite programmes will also help ensure product quality.~~

~~Reference should be made to the GPFH and relevant Codex Codes of Hygienic Practice and Codes of Practice for further information to assist with the design of the prerequisite programmes for a processing facility.~~

3.1.4 Equipment Design and Construction

It is proposed to join with the item 3.1.3 and modify the wording in the second bullet, as follows:

3.1.4 Equipment Design and Construction

The equipment should be designed and constructed in such a manner that physical damage to the raw materials and product is minimized, e.g. by ensuring there are no sharp inside corners or projections. Freezers should be designed and constructed so that, when properly operated, they meet the requirements of a quick freezing process.

The cold store walls, floor, ceiling, and doors should be properly insulated in order to help maintain product temperatures. It is important that the design of the cold store ensures that:

- adequate refrigerating capacity provides and maintains a product temperature of -18°C or colder;
- air is distributed uniformly around the stored foods;
- temperatures are controlled and recorded on a regular basis;
- loss of cold air and introduction of warm and humid air are avoided; and
- leaks of any refrigerant are prevented.

Rationale: The first proposal is to facilitate the comprehension of the document and considering that the subject included in the item 3.1.3 is related to the item 3.1.4, since cold store is a kind of equipment.

4. Cold Chain Control

It is suggested to exclude the first three paragraphs of this item, since it is noted that the provisions included in these paragraphs are mentioned in the item Introduction.

~~As appropriate, both safety and quality aspects should be considered for each operation of the cold chain.~~

~~With respect to food safety, this code should be used in conjunction with the GPFH and other relevant Codex~~

~~texts. With respect to food hygiene, a HACCP plan should be developed, as appropriate, for each operation in the cold chain.~~

~~Cold chain control is also important with respect to food quality. Essential quality provisions³ can apply at various points in the processing and handling system.~~

4.1 Raw Materials (Page 5)

It is proposed to delete all the content of this item, replacing by the text below:

“No specific requirements beyond those contained in the Recommended International Code of Practice - General Principles of Food Hygiene, CAC/RCP 1 - 1969, Rev. 4, 2003 are needed”

Rationale:The provisions are the same as the established in the *Recommended International Code of Practice - General Principles of Food Hygiene* (CAC/RCP 1-1969, Rev. 4 – 2003) and it is opposing the fourth paragraph, page 71, Procedural Manual, 15th Edition.

4.2 Processing before Freezing (Page 6)

It is suggested to define the expression “intermediate ingredients”, fourth paragraph, since it were not found this definition in other Codex document.

If storage of **intermediate ingredients** prior to further processing is necessary, the storage conditions, especially temperature, should be appropriate to the foodstuff concerned and if necessary, take into account future use or further processing of the food.

4.4 Packaging and Labelling (Page 6)

It is proposed to exclude the first three bullets, since these provisions are included in the *Recommended International Code of Practice - General Principles of Food Hygiene* (CAC/RCP 1-1969, Rev. 4 – 2003) and it is opposing the fourth paragraph, page 71, Procedural Manual, 15th Edition.

It is suggested to modify the position from the last paragraph to the first paragraph, considering that the content of the last paragraph is a reference to the general standard for the labelling.

The labelling of packaged quick frozen foods should comply with the requirements of the Codex General Standard for the Labelling of Prepackaged Food (CODEX STAN 1-1985).

In general, the packaging should:

- protect the product against dehydration;
- ~~• protect the food against microbial and other contamination that could adversely affect safety and quality;~~
- ~~• protect the sensory and other quality characteristics of the food; and~~
- ~~• not add to the food any substance that may influence the safety and quality of the food.~~

The packaging or re-packing of quick frozen foods should be carried out in such a manner that an increase in temperature, within the authorized tolerances of the quick frozen foods, does not adversely affect the safety and quality of the product.

4.5 Frozen Storage (Page 7)

It is proposed to insert in the last paragraph the sentence, *depending on the shelf life, as below:*

Stocks should be rotated to ensure that the products leave the cold store on a “First in-First out” basis, **depending on the shelf life.**

Rationale:This is a parameter that should be observed to provide assurance that food is safe and suitable for human consumption.

4.7 Retail Sale (Page 7)

It is proposed to include in the third paragraph the sentence, *Quicken frozen foods should be transferred to a cold store or in a suitable temperature-controlled area during defrost cycles and the expression, of cabinets, as suggestion below:*

Quicken frozen foods should be transferred to a cold store or in a suitable temperature-controlled area during defrost cycles. Defrost cycles **of cabinets** should be programmed in such a way that, as far as possible, defrosting takes place outside peak shopping periods.

Rationale:This is a parameter that should be observed to provide assurance that food is safe and suitable for human consumption.

It is suggested to include in the fourth paragraph the sentence, *depending on the shelf life, as proposed below:*

Stocks should be rotated to ensure that the products leave the cold store on a “First in-First out” basis, **depending on the shelf life.**

Rationale: This is a parameter that should be observed to provide assurance that food is safe and suitable for human consumption.

4.8 Transfer Points

It is suggested to include in this item provisions to the defrost process, since the quick frozen food should be stored in other place with controlled temperature, during the process.

5.2 Stepwise Approach to Temperature Control (Page 9)

It is suggested to organize the flow chart as a decision tree, including corrective actions when irregularities are detected.

This document is proposed to establish risk management options, and then it should be a guide to assist in the detection of the damage in the quality and security of the quick frozen foods and the corresponding corrective actions.

5.3 Temperature Violation (Page 9)

It is suggested that these corrective actions be incorporated in the decision tree, as proposed above.

This document aims at establishing risk management options, and then it should be a guide to assist in the detection of the damage in the quality and security of the quick frozen foods and the corresponding corrective action.

Annex

2.1.1 Specification of Measuring System (Page 10)

It is proposed to differentiate the concepts of calibration and verification used in the fifth bullet.

CANADA / LE CANADA / CANADÁ

General comments

Canada thanks Thailand and the USA for revising the proposed draft Code. We believe that significant improvements have been made to the document. In particular, we agree with the deletion of some unnecessary prescriptive provisions. We also believe the text is more applicable to the various quick frozen food commodities.

In response to the specific questions raised in Paragraph 8 of CL 2007/06-QFF, we have the following comments/observations to offer:

(a) The removal of the Defect Action Point Analysis concept in the Code and its replacement by reference to essential quality provisions;

We support the removal of the Defect Action Point (DAP) Analysis from the Code. The DAP concept originated and was well understood by one specific commodity group, but its application to other food commodity proved difficult. We support its replacement by reference to “essential quality provisions”.

(b) Whether the safety and quality provisions are adequately addressed in the Code, keeping in mind that the safety provisions are supplemental to those in the International Recommended Code of Practice: General Principles of Food Hygiene;

While we are generally of the view that safety and quality provisions have been improved and are more adequately addressed, we have a number of suggestions identified in our specific comments.

(c) The necessity of retaining the content of Annex 1 (Specific Information on Temperature Monitoring and Control in the Food Chain) and if retained, whether the content should remain as an Annex, be incorporated into the Code in its entirety or partially; and

Although useful information is provided in the Annex, we are of the view that some recommendations may be too specific to certain technologies and too prescriptive. The Annex should be further reviewed to remove overly prescriptive recommendations. We believe that the content could be retained as an Annex, however, we would be willing to consider proposals for its inclusion into the Code.

(d) Any other outstanding issues.

We have no other outstanding issues to raise.

Specific comments

It is stated that the Draft Recommended Code complements and should be used in conjunction with the General Principles of Food Hygiene (GPFH). The present text is a “code of practice”, which includes provisions that extend beyond hygiene. We suggest the numbering system should be consistent with the one of the General Principles of Food Hygiene (GPFH) document, at least for the hygiene provisions. Consistent numbering systems will facilitate the use of this Code, in conjunction with GPFH.

The Code covers different commodities, from fruits and vegetables to meat and poultry, etc. Storage and handling conditions for these different foods before they are processed and frozen needs to be adequately addressed in order to maintain optimum quality and to ensure food safety. We feel some sections of the Code should be strengthened in this regard, and have specific comments outlined below.

1. SCOPE AND OBJECTIVE

2nd Paragraph - last sentence

“Proper cold chain management” can be accomplished either through good manufacturing practices or the application of HACCP. Hence, it should not be presented as a separate element in the last sentence. We suggest redrafting the sentence as follows:

“The guidance incorporates good hygienic and good manufacturing practices, the application of HACCP, with an emphasis to proper cold chain management.”

3. PREREQUISITE PROGRAMS

1st Paragraph - last sentence

It is stated that requirements for “monitoring and evaluation” should be specified for Prerequisite programs. Generally, the terms monitoring, verification and validation are used in the General Principles of Food Hygiene (GPFH) and its HACCP guidelines. We feel it is important to clarify what is meant by evaluation, e.g., is this a different term to address verification and/or validation?

2nd Paragraph

We suggest modifying the end of sentence as follows:

“...properly operating prerequisite programmes will also ~~help ensure~~ contribute to maintain product quality.”

4th Paragraph

We suggest to modify the end of the sentence as follows:

“...the following ~~specific~~ additional prerequisite provisions...”

3.1.2 Process Plant Design

The product flow should contribute to minimize processing delays, as well as minimize cross-contamination as the products move forward. Hence, we suggest adding the following text to the last sentence:

“The processing facility should include a product flow that is designed to minimize process delays and prevent cross-contamination that could affect food quality and safety.”

3.1.3 Cold Store Design

As this section deals with maintaining product temperature of -18 °C or colder, we question whether the title of the section be changed from Cold store design to Freezer design. If this is agreed, the occurrences of the term “cold store” should be replaced by “freezer” in this section.

First sentence

We suggest to add the word “appropriate” as follows:

“...to help maintain appropriate product temperatures.”

First bullet

It refers to “adequate refrigeration capacity provides and maintains a product temperature of -18 °C or colder.” We suggest it should more appropriately refer to “freezing capacity” instead of “refrigeration capacity”.

3.2.1 Recall Procedures

We suggest adding the following text just underneath 3.2.1:

“Recall procedures should be in place to ensure timely withdrawal of products that may pose a risk to human health.”

We further suggest 3.2.1.1 could be adjusted as follows:

“The traceability/product tracing system should:

- facilitate the timely identification of product suspected to be the source of a problem and the whereabouts of other product that may be similarly affected;
- facilitate linkage of the suspect product to the production/manufacturing history (one step forward, one step back) in order to identify the source of any problem, should one exist, and apply corrective measures, as appropriate.”

4. COLD CHAIN CONTROL

2nd Paragraph

The first sentence makes reference to “food safety” and the need for using the code in conjunction with GPFH. The second sentence refers to “food hygiene” and the possible development of a HACCP plan. We find this paragraph confusing as it separates “food safety” from “food hygiene”, and seems to imply that HACCP plans are developed to deal with “food hygiene” only. We think the paragraph could be redrafted as follows:

“This Code should be used in conjunction with the GPFH and other relevant Codex texts. A HACCP plan should be developed, as appropriate, for each operation in the cold chain.”

3rd Paragraph

One key change in the revised draft code is the replacement of “Defect Action Points (DAP)” by a reference to “Essential Quality Provisions (EQP)”. In this paragraph, the term “Essential quality provision” is introduced and further explained through a footnote (no. 3), which provides a definition for the term. We feel that since EQP is an important new concept in this code, the footnote (i.e., definition of EQP) should be moved under SECTION 2. DEFINITIONS

4.1 Raw materials

1st Paragraph

We suggest modifying the end of the sentence as follows:

“...sound and suitable for ~~freezing~~ further processing.”

3rd Paragraph - 2nd sentence

Since the duration of raw materials storage before processing has a significant impact on microbial growth, we suggest modifying the sentence as follows:

“Temperature and duration of storage of raw materials should be appropriately controlled to minimize ...”

6th Paragraph - last sentence

We suggest to further explain why receiving may be considered a CCP. We suggest reference be made to “product temperature control...” in the last sentence.

4.2 Processing before freezing**1st Paragraph - 2nd sentence**

We suggest to modify as follows:

“Whether such processes should be regarded as CCP depends on the actual conditions. It is particularly important that the time spent in the critical temperature zone (i.e., between 10 °C and 60 °C) be as short as possible.”

3rd Paragraph

We are not clear what is meant by “should be addressed” in this sentence.

5th Paragraph

We suggest to delete the word most as follows:

“...should be sufficient to ensure inactivation of pathogens of ~~most~~-concern.”

4.3 Quick Freezing Process**1st Paragraph - last sentence**

This recommendation (passing quickly through the temperature range of maximum ice crystallization) is one which contributes significantly to the “quality” of product. Hence, we suggest text be added at the end of the sentence that it may be considered as an “essential quality provision” as follows:

“...at the thermal centre of the product, and this may be an essential quality provision.”

2nd Paragraph - last sentence

We are of the view that the freezing step itself is a CCP and suggest redrafting as follows:

“Freezing may be considered as a CCP.”

3rd Paragraph - 2nd sentence

We suggest modifying as follows:

"...to warm temperature and should be moved to a ~~cold store~~-freezer as quickly as possible...".

4.5 Frozen Storage

In line with previous comments, we suggest replacing the words of “cold store” by “freezers” in the 1st Paragraph.

4.6 Transport and Distribution**4th Paragraph**

We suggest to delete the reference to “...within the limit set by national legislation...” There could be situations where national legislation would not prescribe such limit.

6th Paragraph

We suggest the following change:

“After delivery, the product temperature should be ~~cooled~~ reduced to -18 °C as soon as possible.”

4.7 Retail Sale**1st Paragraph - 1st sentence**

We suggest to replace the word “refrigerated” with “freezer” as follows:

“Quick frozen foods should be offered for sale from ~~refrigerated~~ freezer cabinets designed for the purpose”.

1st Paragraph - 3rd sentence

We suggest to delete the reference to “...within the limit set by national legislation...”. There could be situations where national legislation will not prescribe such point.

1st Paragraph - 4th sentence

“...Temperature in the cabinet may be an essential quality provision and/or a CCP to avoid a critical temperature abuse situation that may jeopardize food safety.”

As the paragraph states that temperature should never exceed -12 °C, we question whether this could be considered a CCP. Even if the temperature was to raise up to (-12 °C), microorganisms would not grow, hence not affecting food safety.

4.8 Transfer Points

Consistent with previous comments, we suggest replacing “cold store” by “frozen storage” in the first sentence.

5. TEMPERATURE MANAGEMENT IN THE COLD CHAIN**5.1 Temperature monitoring****2nd Paragraph - last sentence**

The link between this sentence and further explanation of additional approaches should be made, hence we suggest editing as follows:

“Additional approaches also exist (see Section 5.1.3)”.

5.2 Stepwise approach to temperature control**Bullet no.1**

We suggest to add at the end of the sentence:

“...to verify the condition of the foods, e.g., for signs of damage, abuse, defrost.”

Bullets no 3 and no 4

The reference should be to the Annex of the Code, not to Annex 3.

ANNEX - SPECIFIC INFORMATION ON TEMPERATURE MONITORING AND CONTROL IN THE COLD CHAIN**1.1 Air Temperature Monitoring Equipment**

The first paragraph refers to “electronic” thermometers. We question whether this implies it is the only type/technology recommended for use in monitoring temperatures.

2nd bullet

This bullet refers to thermocouple, thermistor or platinum resistance as type of “sensor” recommended. We question whether this may limit the application of new technology that may become available in the future. A suggestion would be to present these devices as “examples” of recommended types of sensor.

2.1.1 Specification of Measuring System

Some of the specifications provided are very detailed and could usually be found in “text book”. We question in particular whether the first four bullets are necessary.

CUBA / LE CUBA

El documento tuvo una amplia circulación entre las empresas relacionadas con el tema y sus especialistas consideran que el **Anteproyecto de Código** es muy completo, ya que no solo contempla elementos de PMA, BPH, HACCP y del seguimiento y control de toda la cadena de frío, sino también está referido a toda la gama de productos pre-elaborados, y elaborados.

Consideramos que:

En 8:

- a) De acuerdo con la eliminación del concepto de análisis de puntos de corrección de defectos y su sustitución mediante la referencia a las disposiciones esenciales de calidad.
- b) Consideramos que **sí** se abordan adecuadamente las disposiciones de calidad e inocuidad.
- c) Mantener el Contenido del Anexo I "Información específica sobre la vigilancia y el control de la temperatura en la cadena alimentaria" e incorporarlo al cuerpo del Código y no como un Anexo.

En 5.3 Temperatura indebida

Proponemos agregar en la última oración del punto 5.3 después de “se debe informar sobre el incidente al **proveedor, al comprador y a las autoridades sanitarias y determinar el fallo en la cadena de frío.**”

**EUROPEAN COMMUNITY
LE COMMUNAUTÉ EUROPÉEN
COMUNIDAD EUROPEA**

General comments

The European Community and its 27 Member States (ECMS) wish to commend Thailand and the United States for the revision of the Code of Practice for the Processing and Handling of Quick Frozen Foods and are pleased to provide their comments in reply to Circular Letter CL 2007/06-QFF.

First of all, the ECMS appreciate the new structure of the document which is clearer, shorter, more focused and more universal. This is fully in line with the objective to establish a horizontal code of practice with essential principles of the quick freezing process and distribution of quick frozen foods for which the cold chain is the only element which guarantee their preservation and where several steps of transport/storage can occur before the products reach the consumers.

However, at many occasions, the provisions are optional ("may be") when the ECMS would have preferred a more prescriptive approach ("should be").

In response to the points raised in CL 2007/06-QFF, the ECMS:

- a) Approve the deletion of the terms "Defect Action Point" (DAP) and DAP analysis and support the concept of "essential quality provisions" (EQPs). EQPs are associated with CCPs at the main steps of the process; this represents a huge improvement;
- b) Support the new section 5 which merges the original section 4 (Cold Chain Control: Safety Aspects) and section 5 (Cold Chain Control: Quality Aspects);
- c) Agree with the deletion of original annexes 1 and 2 which described practical examples of quick freezing (chicken nuggets).

Specific comments

INTRODUCTION

The ECMS support direct reference to the Hygiene, Labelling and vertical Codex texts to avoid repetitions of what already exist in other Codex standards and related texts. It would however be necessary to be as exhaustive as possible and therefore add the following wording at the end of last paragraph : "*...and all other Codex codes related to hygiene and other codes related to commodities, in particular quick frozen products*".

1. SCOPE AND OBJECTIVE

In order to avoid confusions, it would be useful to add that this code does not cover edible ices, by adding the following sentence at the end of the first paragraph: "*It does not apply to edible ices*".

2. DEFINITIONS

- The definition for "*Quick frozen foods*" should precise that the temperature should apply in all points in all cold chain. In addition, tolerances are foreseen in the text of the code and do not need to appear in the definition. The text of the definition could therefore be as follows: "*Quick frozen food: Food which has been subjected to a quick freezing process and maintained at -18°C or colder at all points in the cold chain, ~~subject to permitted tolerances,~~ and labelled as such.*"

- In keeping with the Codex General Principles of Food Hygiene (GPFH), the definition of "Prerequisite programme" relates to HACCP, so reference to "quality" aspects need to be removed from this definition as follows: "*Prerequisite programme: Programme required prior to the application of the HACCP system to ensure that any component of the cold chain is operating according to the GPFH, appropriate Codex Codes of Practice, and other appropriate food safety ~~and quality~~ legislation.*"

- A definition for "*Glazing*" is introduced in footnote 4 ("*The application of a protective layer of ice formed on the surface of a frozen product by spraying it with, or dipping it into, potable water, or potable water with additives adopted by the Codex Alimentarius Commission, as appropriate.*"). It would be more logical to include this definition in section 2.

3. PREREQUISITE PROGRAMME

"Prerequisite programme" is hygiene / safety related and not quality. Therefore, references to quality aspects should be deleted from this section. For example, the second paragraph could be amended to: "*Prerequisite programmes are associated with food safety*".

The ECMS suggest adding the following paragraph after the first paragraph: "*All prerequisite programmes must be initially verified and validated and appropriate preventive measures and a monitoring system should be in place. Whereas a deviation from the limits set for the monitoring of prerequisites occurs, a proper corrective action should be applied and addressed under the HACCP plan.*"

3.1 ESTABLISHMENT: DESIGN AND FACILITIES

3.1.2 Process Plant Design

The title for the sub-section could be simplified to be "*Plant Design*" as it applies to plants in general.

Sub-sections 3.1.5 (*Facilities*) and 3.1.5.1 (*Electricity*) should be included in 3.1.2 as they relate to plants. In addition, original section 3.1.5.1 should be complemented to foresee a contingency plan concerning all premises and covering not only power losses but also various failures of the equipment. It could read as follows: "*It is necessary to foresee a contingency plan allowing maintaining the temperature of quick frozen foods in case of interruption of cold production*".

3.1.3 Cold Store Design

In this paragraph, a temperature inferior or equal to -18°C is recommended. Appropriate storage is a key step to maintain the quality of products. It is therefore important that storage temperature be stable, as low as possible, and inferior to -18°C. The first bullet could then be modified as follows: "*adequate refrigerating capacity provides and maintains a stable temperature as low as possible and inferior to ~~of~~-18°C ~~or colder~~.*"

3.1.4 Equipment Design and Construction

This paragraph only refers to physical hazards whereas equipment should be conceived to minimise other hazards, such as chemical and biological hazards. The first sentence could then be modified as follows: "*The equipment should be designed and constructed in such a manner that all types of physical damages (physical, biological and chemical) to the raw materials and product ~~is~~ are minimized, e.g. by ensuring there are no sharp inside corners or projections. ...*"

3.2.1.1 Traceability/Product Tracing

In the first bullet, the ECMS suggest that the term 'recall' be deleted from the text so that it reads, "... by appropriate procedures". This is because there is possibility of confusion of using both terms "withdrawal" and "recall" in the same sentence, especially as there is no qualification of what is meant by these terms in this bullet. If the term "recall" were to be retained in this bullet, there needs to be an explanation of the context in which it is used.

4. COLD CHAIN CONTROL

4.1 RAW MATERIALS

For coherence reasons in the order of operations, the 5th paragraph "*Producers should have appropriate procedures ... shortest time possible.*" could be moved after the second paragraph.

In the last sentence of the original 3rd paragraph, it is mentioned that most quality deterioration is due to microbial growth when enzymatic activity can also be the reason; the sentence could then be modified as follows: "*Most quality deterioration, including the development of off odors and flavours and changes in colors and texture is due to microbial growth and enzymatic activity.*"

4.2 PROCESSING BEFORE FREEZING

As paragraphs 4 and 6 are not currently included in the General Principles of Food Hygiene, they should remain in this document; one should consider their introduction in the GPFH as they concern the overall food industry.

4.3 QUICK FREEZING PROCESS

This paragraph should be structured in two parts, first the process, and second the impact of quick freezing on micro-organisms and parasites.

4.3.1 Process

The second paragraph only foresees the case of large lots when this should apply in all cases:

~~"When large lots of food are frozen or where the food consists of large pieces (e.g. whole turkeys)~~ ***During the quick freezing operations, it is necessary to provide spaces or channels permitting air circulation between the cartons or the pieces of food, respectively. If such air channels are not provided, the very mass of the food may be such that in spite of rapid air blast and low air temperatures, the inner parts of the lot chill and freeze slowly. It is important that the thermal centre of the product is chilled as quickly as possible to prevent the outgrowth of pathogenic microorganisms or the production of microbial toxins. Freezing time may be a CCP.***"

The following paragraph should be more precise on the necessity to maintain the cold chain, and the last sentence regarding the retail sale should be moved to 4.7. It could then be amended as follows: "*The quick freezing process should not be regarded as complete until and unless the product temperature has reached -18°C or colder at the thermal centre after thermal equilibration. On exit from the freezing apparatus, the product should be maintained at a temperature inferior or equal to -18°C and not be exposed to warm temperatures and/or high moisture conditions and should be moved to a cold store as quickly as possible. ~~The same applies to products that are retail packed after the quick freezing process.~~*"

4.3.2 Impact of Quick Freezing on Microorganisms and Parasites

The first paragraph could be amended as follows to be more accurate: "*Freezing should not be considered as a lethal treatment for microbiological contamination in foods. However, freezing may result in the death of certain parasites ~~microorganisms~~ and will inhibit the growth of ~~others~~ certain microorganisms.*"

4.4 PACKAGING AND LABELLING

Page 7, second line, "*authorized tolerances*" are mentioned without clarifying by whom these tolerances are granted. The ECMS would welcome a clearer text by replacing "*authorized tolerances*" by "*within the tolerances authorized by national legislation...*".

The ECMS propose to introduce the following, specific sentence, at the end of paragraph 4.4 Packaging and labelling:

- *"The word "Quick frozen" shall be added to the sale name.*
- *In addition to the date of minimum durability, the period during which quick frozen products may be stored by the purchaser and the storage temperature and/or type of storage equipment required should be indicated.*
- *The label of any quick frozen food stuff must bear a clear message of the type "Do not refreeze after defrosting".*

Editorial correction:

In section 4.4, third paragraph: the reference to GSLPF should read "... *Codex General Standard for the Labelling of Prepackaged Foods* ...".

4.6 TRANSPORT AND DISTRIBUTION

The EC legislation does not allow a raising of temperature up to -12°C, however as reference is made to national legislation provisions which should be complied with, the ECMS could accept to keep these provisions.

Editorial correction:

In section 4.6, first sentence of fourth paragraph should read: "... *any rise in product temperature warmer than -18°C*".

4.8 TRANSFER POINTS

In order to follow the logical order of operations, it would be more logical to move this paragraph before "4.7 Retail sale".

In addition, bullets 1 and 5 both relating to handling could be merged.

5. TEMPERATURE MANAGEMENT IN THE COLD CHAIN

The ECMS support the new section 5 "Temperature management in the cold chain", in particular the reference to new monitoring techniques such as computerised temperature recorders.

5.1 TEMPERATURE MONITORING

The ECMS suggest that a further, new point is made here in respect of the first paragraph of section 5.1 "Temperature Monitoring". Namely, that previously, this section specified the temperature that quick frozen foods should be held at, i.e. -18°C but acknowledged that national tolerances may apply. This concept remains valid and we suggest that the text of first paragraph of section 5.1 "Temperature Monitoring" is changed to read "... *are maintained at -18°C or colder. Tolerances to this temperature may apply in accordance with national legislation*".

5.2 STEPWISE APPROACH TO TEMPERATURE CONTROL

In the second box of the flowchart, it would be more exact to replace "*Inspection of food*" by "*Inspections of boxes*".

The ECMS would like to stress that temperature monitoring records are generally not immediately available and that temperature should therefore be routinely checked when it is only recommended in the document in case of doubts. In addition, operators and official services should always have the possibility to carry out a destructive temperature measurement when they judge it appropriate.

5.3 TEMPERATURE VIOLATION

Third sentence of this paragraph should be amended as follows "*It is the responsibility of the person in possession of the food to ensure that **any measures for protecting the consumer's health and preserving the food are taken, which according the gravity of the violation could be e.g. lowering the temperature, immediate consumption or destruction** ~~its temperature is brought down immediately, and, more generally, to take any necessary measures for preserving the food.~~*" to reflect the fact that it is not always conceivable to just lower the temperature in order to correct the violation.

Last sentence could also be amended in order to foresee the information of all involved parties: "*In cases of compromised safety or quality, the supplier, as well as ~~the buyer (if known)~~ **all involved parties**, should be informed of the incident.*"

ANNEX: SPECIFIC INFORMATION ON TEMPERATURE MONITORING AND CONTROL IN THE COLD CHAIN

The details provided in Annex are considered to be of great importance. For this reason, the Annex should be retained and incorporated in the text of the Code of practice; we consider that air and product temperature monitoring during the cold chain are essential to guarantee the integrity and quality of the quick frozen products. The same applies for the sampling procedure.

1.2 AIR TEMPERATURE MONITORING OF COLD STORES

The amount of sensors stated here seems to be quite high. In some companies with for example a storage capacity of 200,000 m³ only two sensors are needed at present. According to these new provisions, there would have to be a minimum of six sensors. The ECMS would suggest that the minimum amount of sensors is not an absolute requirement but a recommended figure.

The following text is proposed in replacement of 1.2:

"Sensors should be placed high up, in indicative locations within the cold store, away from all possible positions causing uncontrolled temperature fluctuations such as cooler fans, the entrance or the exit (if different from the entrance) in order to enable precise recording.

The position of sensors must be chosen in such a way as to take under consideration the cold air circulation and furthermore to give as accurately as possible the temperature conditions of the cold store. Recommended locations can be in the beginning, the middle and the end of the cold store.

The sensor recorders are recommended to be positioned outside the cold stores in a convenient place, chosen for this reason.

As far as the number of sensors is concerned, each food business operator should evaluate its processes and make a documented decision on the number of sensors required, as part of the validation of the HACCP plan. As indicative figures, it could be considered that small cold stores (less than 500 m³) may need only one sensor, whereas, those with a volume of less than 30,000 m³ may require two sensors. Stores with a volume from 30,000 m³ to 60,000 m³ may require 4 sensors, and those with a volume above 60,000 m³ may require 6 sensors. Retail stores with a volume of less than 10 m³ can be equipped with only a visible thermometer."

2.2 SAMPLING OF PRODUCTS FOR TEMPERATURE MEASUREMENT

2.2.1 During Transport

The last bullet mentions that the operator should carry out a non-destructive measurement prior to any destructive measurement. The ECMS are of the opinion that the possibility to carry out directly a destructive measurement should be left to the operator, in which case the tolerance would not apply. This last bullet could then be amended as follows:

*"When samples are selected, a non-destructive temperature measurement should **in general** be carried out first **before deciding whether a destructive measurement should be carried out**. A total tolerance of 2.8°C should be applied (2°C for limitations of methodology and 0.8°C tolerance for the system) ~~before deciding whether a destructive measurement is necessary~~. However the operator could decide to carry out directly a destructive measurement, in which case the tolerance of 2.8°C is not applicable."*

3. OPTIONAL APPROACHES TO TEMPERATURE MONITORING: INDIRECT TEMPERATURE MEASUREMENT**3.3 NON-CONTACT THERMOMETERS**

A new sentence could be added at the end of the first paragraph to warn users when carrying out measurements from short distance:

"Measurements carried out from a short distance to the product must be done with caution as this can affect the validity of the results."

3.4 TEMPERATURE INDICATORS (TIs) AND TIME-TEMPERATURE INDICATORS (TTIs)

It seems appropriate to underline the lack of reliability at this stage of TIs and TTIs. The ECMS therefore suggest to amend this paragraph as follows:

"These devices give a colour change, either when a specific temperature has been exceeded (TIs), or when the integrated exposure to a temperature over a period of time has been exceeded (TTIs). There has been a reluctance to use TIs and TTIs on retail packs for a number of reasons, in particular due to their lack of reliability because they are on the surface of packs and not inside the food, and because of their possible conflict with durability dates. However, TIs and TTIs may be used on the outside of cartons or pallets to detect temperature abuse during distribution from cold stores to holding stores at retail, and they can monitor transfer of quick frozen foods where monitoring records may not be available."

JAPAN / LE JAPON / JAPÓN

We generally support the revised proposed draft which is annexed to CL 2007/06-QFF.

As regards the issues specified under REQUEST FOR COMMENTS in CL 2007/06-QFF, we would like to provide the comments as follows:

- (a) We agree to the removal of the DAP analysis concept in the Code and its replacement by reference to essential quality provisions.
- (b) We consider that the safety and quality provisions are adequately addressed in the revised proposed draft Code.
- (c) We consider that it is necessary for the Code to include the content of Annex 1. For ease of reference to the issues included in Annex 1, it should remain as a separate annex.

MALAYSIA / LA MALAISIE / MALASIA**4.1 RAW MATERIALS**

Para. 4

Malaysia is concerned that the use of the phrase "contaminants, fertilizers, veterinary drugs, pesticide residues, industrial contaminants, etc." in paragraph 4 is too narrow. Hence, Malaysia proposes to replace the phrase with "physical, biological and chemical hazards" by which these terms are more generic and cover a large range of hazards. The new paragraph should read as follows:

"Producers of quick frozen food should as far as practicable implement measures to control ~~contaminants, fertilizers, veterinary drugs, pesticide residues, industrial contaminants, etc.~~ physical, biological and chemical hazards in raw materials according to the recommendations of the relevant sections of the GPFH and other relevant Codex texts."

4.3 QUICK FREEZING PROCESS

Sentence 3 Para. 3

Malaysia is of the view that quick frozen products should not be exposed to warm temperatures at any time to avoid any deterioration to the products. Therefore, Malaysia proposes to delete the words "should not be exposed to warm temperatures and" from sentence 3 of the para. 3 to stress the urgency of the following action i.e. "should be moved to a cold store as quickly as possible." Hence, the proposed sentence incorporates the following changes: "On exit from the freezing apparatus, the product ~~should not be exposed to warm temperatures and~~ should be moved to a cold store as quickly as possible."

4.4 PACKAGING AND LABELLING

Sentence 2 Para. 2

AND**5.2 STEPWISE APPROACH TO TEMPERATURE CONTROL**

Sentence numbered 3

Malaysia is concerned that the terms “authorized tolerance” in Section 4.4, sentence 2, paragraph 2 and “legal tolerance” in Section 5.2 sentence numbered 3 are quite ambiguous and not referring to a specific reference. Hence, we would like to seek further clarification on these terms.

5.2 STEPWISE APPROACH TO TEMPERATURE CONTROL

Sentence numbered 3 and 4

Malaysia notes that Annex 3 no longer exists in this revised proposed draft and has been replaced with only one supporting document titled “Annex”. Therefore, Malaysia proposes the following:

(see Annex, Section 2.1.3) - in sentence numbered 3 and,

(see Annex, section 2.1.4) - in sentence numbered 4

Sentence numbered 4:

Malaysia considers the phrase “reheating the foods” is more appropriate to be replaced by “any increase in temperature” which reflects any temperature abuse activity done to the quick frozen foods. Therefore, the proposed sentence should read as follows:

4. *“... This operation must be carried out after placing the cargo in refrigerated environments or after protecting the load in order to avoid ~~reheating the foods~~ any increase in temperature.”*

ANNEX**SPECIFIC INFORMATION ON TEMPERATURE MONITORING AND CONTROL IN THE COLD CHAIN****2.1.2 Pre-cooling of the Probe**2nd Bullet

Malaysia proposes the word “steady” to be more appropriately replaced by “stable” and proposed the following changes:

- *“After inserting the probe, the temperature should be read when it has reached a steady stable value.”*

MEXICO / LE MEXIQUE / MÉXICO

México agradece la oportunidad de poder hacer comentarios a la carta circular CL 2007/06-QFF “Petición de Observaciones sobre el Anteproyecto de Código Internacional Recomendado de Prácticas para la Elaboración y Manipulación de Alimentos Congelados Rápidamente”.

Al respecto, nos permitimos emitir las siguientes observaciones:

Petición de observaciones (a) La eliminación del concepto de análisis de puntos de corrección de defectos y su sustitución mediante la referencia a las disposiciones esenciales de calidad.

Se considera que las referencias a las disposiciones de calidad son adecuadas ya que es menos abstracto, por lo que se está de acuerdo con eliminar el concepto de análisis de puntos de corrección de defectos, sin embargo, sería importante incluir el término “Disposiciones Esenciales de Calidad” dentro de las definiciones del documento y no sólo como nota al pie. Lo anterior, siempre y cuando no haya confusión al utilizar el término calidad, ya que la calidad sanitaria se relaciona con la inocuidad y también existe la calidad comercial.

Petición de observaciones (b) Si las disposiciones de inocuidad y calidad se abordan adecuadamente o no en el Código.

Se hace una relación adecuada de las disposiciones de la inocuidad y calidad, ya que con los controles establecidos, se puede dar seguimiento de las condiciones sanitarias y comerciales del producto congelado.

Petición de observaciones (c) La necesidad de retener el contenido del Anexo I (Información específica sobre la vigilancia y el control de la temperatura en la cadena alimentaria) y, si se retiene, el hecho de si el contenido debiera o no mantenerse como un anexo o ser incorporado en el Código, ya sea total o parcialmente.

La información contenida en el Anexo I es importante, y se considera que se debe retener como anexo y no ser incorporada en el Código, ya que son disposiciones sobre los parámetros que intervienen en el proceso de los productos congelados rápidamente y por ser relevantes es conveniente hacer indicaciones extras.

Finalmente, es importante considerar que la abreviatura referente a las Primeras Entradas Salidas “PEPS”, se señale en español y no en inglés “FIFO”, para que sea congruente con el idioma del documento.

THAILAND / LA THAÏLANDE / TAILANDIA

Comments on the specific questions of CL 2007/06-OFF

(a) We agree with the replacement of the Defect Action Point Analysis concept by Essential Quality Provisions as proposed in the document. The essential quality provision concept provides to the quick frozen food Operators a flexible, performance-based guidance which results in the outcome of essential quality.

(b) We support the format of Section 4 that combined the previous Section on Safety Aspects and Quality Aspects into one section. The current Section 4 of the code addresses adequate safety and quality provisions and also is a practical, user-friendly guidelines for the quick frozen food operators.

(c) We are of the view that the Section on Temperature Management in the Cold Chain should includes only the principles and performance-based guidelines. (Eventhough the specific information provided in the Annex of the current Code includes useful information, we feel that it is too detailed to be included in Codex Code of Practice.) As for the contents providing so much specific information in the Annex, they are useful but very specific based and a bit too particularized. Basically, this kind of information is generally available to illustrate an implementation regarding the involved aspects. We therefore are of the opinion that since a Codex Standard or any Codex Code of Practice is supposed to be performance-based one, this Code of Practice might not need to have these components included. The current texts in Section 5 provide sufficient guidance to the users of this code and provide opportunities for new technologies in the future. We, therefore, would like to suggest deletion of the Annex of the current Code and keep Section 5 remained.

Specific comments on the Proposed Draft Code

4.1 Raw Materials

4th paragraph : The term ‘**fertilizers**’ is not clear whether it is a hazard itself or its use can result in contaminants in raw materials. We would like to amend the sentence to be in line with the Section 3.2 of the GPFH to read :

“Producers of Quick Frozen Food should as far as practicable implement measures to control contaminants from different sources including fertilizers, veterinary drugs, pesticide residues, industrial contaminants, etc. in raw materials...”

4.6 Transport and Distribution

The term ‘**transport**’ and ‘**distribution**’ are not clearly distinguished to explain the different level of transportation of quick frozen foods. We suggest the inclusion of few words as existing in the previous version of the Code, CAC-RCP 8-1976 , into the 1st and 4th paragraph as follows :

“The transport of quick frozen foods **from warehouse cold store to warehouse cold store** should...”

and

“Distribution of quick frozen foods **to retailers** should...”

**UNITED STATES OF AMERICA
LES ETATS-UNIS D'AMÉRIQUE
ESTADOS UNIDOS DE AMÉRICA**

GENERAL COMMENTS

The United States appreciates the work of Thailand in revising the *Recommended International Code of Practice for the Processing and Handling of Quick Frozen Foods*. We believe the revisions substantially improve the Code.

Recognizing that different views exist with respect to the use of the Defect Action Point (DAP) concept, the United States can accept its removal and replacement by reference to essential quality factors. We believe the use of essential quality factors retains the importance of these provisions while not creating a system that might unnecessarily limit trade.

Taking into account the specific comments we have on the Code as noted below, we believe that the Code adequately addresses the safety and quality provisions required for safe and suitable quick frozen foods.

The United States has no difficulty in retaining Annex 1 (Specific Information on Temperature Monitoring and Control in Food Chain) as it is currently developed, recognizing that various approaches to inclusion of this information are possible.

SPECIFIC COMMENTS

Definitions

Quick Freezing Process

We note that the word “thermal” when used in the phrase “thermal centre” (referring to the point at which heat penetration takes the longest) is different than the use of the word in the phrase “thermal stabilization” (referring to the time or point at which an equal temperature is reached throughout the product). The two different uses of the term “thermal” could be confusing to the user of the Code. We suggest either replacing “after thermal stabilisation” with “after stabilisation of the temperature” or, alternatively, clarifying the different uses of thermal with explanatory text in brackets following each use of the word “thermal”.

3. Prerequisite Programme

3.1.3 Cold Storage Design

First bullet point: We believe that maintaining a temperature of -18°C is normally adequate and the bullet should be rewritten as “adequate refrigerating capacity that should provide and maintain a product temperature of -18°C. If this change is made, consequential changes in other sections will need to be made (i.e., Section 4.5, first paragraph; Section 4.6, first paragraph; Section 4.7, last paragraph).

3.2.1 Recall Procedures and 3.2.1.1 Traceability/Product Tracing

We believe that recall procedures are adequately addressed in the *International Code of Practice: General Principles of Food Hygiene* and that no specific additional reference is needed. However, if the Task Force wishes to make specific reference to Traceability/Product Tracing, then appropriate reference should be to the recently adopted Codex *Principles for Traceability/Product Tracing as a Tool within a Food Inspection and Certification System* and to the definition for traceability/product tracing given in the *Codex Procedural Manual*. No additional text should be needed.

4. Cold Chain Control

2nd Introductory Paragraph

The reference to food safety and food hygiene are reversed in this paragraph. The paragraph should read as follows:

“With respect to ~~food safety~~ food hygiene, this code should be used in conjunction with the GPFH and other relevant Codex texts. With respect to ~~food hygiene~~ food safety, a HACCP plan should be developed, as appropriate, for each operation in the cold chain.”

3rd Introductory Paragraph, Footnote 3

Delete the example as temperature control can be both an essential quality factor as well as food safety-related CCP.

4.1 Raw Materials

We note that the intent of many of the provisions of this paragraph, particularly those of the first four paragraphs of this section, are generally covered by the GPFH and would ask the Task Force to consider how much redundancy is required in the Code and whether the first four paragraphs might be deleted.

5th Paragraph, second and third lines: Change “must” to “should” and delete “if required” to better reflect appropriate production practices.

6th Paragraph: To better clarify the intent of this paragraph, we suggest rewording of the paragraph to read:

“For highly perishable products, temperature control at receiving may be considered as a critical control point (CCP). Additionally, the receipt temperature may also be considered an essential quality provision.”

4.2 Processing Before Freezing

5th Paragraph: Delete the last sentence. While the statement may be true, it is not true in all cases with the determination of CCPs based on the hazard and controls determined for a specific operation. An alternative would be to replace “such” with “certain cases based on the hazards and controls specific for an operation”.

6th Paragraph: The last two sentences imply that the thawing process is a CCP, which is not necessarily the case. We suggest rewording the next to last sentence and deleting the last sentence. The reworded sentence would read as follows: “Thawing should be done in a manner such that the growth of microorganisms is controlled.”

4.4 Packaging and Labelling

2nd Paragraph: This paragraph, referring to the *Codex General Standard for the Labelling of Prepackaged Foods*, could be deleted as it redundant to Section 9.3 of the GPFH.

4.6 Transport and Distribution

1st Paragraph, first sentence: Insert “ideally” before “maintains” to recognize that temperature increases do occur.

4th Paragraph: For clarity, at the end of the sentence add the words “to ensure quality of the products”.

5. Temperature Management in the Cold Chain

5.1.3 Additional Approaches

Second bullet: Rewrite to read: “use of temperature probes and/or recorders, as appropriate, placed between packages or in a load” recognizing that is the probe that is placed between packages, not recorders.

5.2 Stepwise Approach to Temperature Control

Boxed diagram:

The first box should read: “1. Visual Examination of Food”;

The second box should read: “2. Examination of air temperature monitoring records” as box 1 covers the visual examination/inspection of food.

Item number 4, second sentence: replace “reheating” with “increasing the temperature of”.

5.3 Temperature Violation

Second sentence: Delete the words “removal and” since “removal” does not fit this situation.

Annex**1.2 Air Temperature Monitoring of Cold Stores**

Paragraph 2: In all instances change “will require” to “should be equipped with”.

2.1.1 Specification of Measuring System

First sentence: This sentence should be deleted unless clarification can be provided as to why devices to measure product temperature should be of better accuracy than those used for air temperature monitoring.

2.2.1 During Transport

Second bullet, first sentence: For consistency with Section 5.2, item 4, insert the word “destructive” before product.

Third bullet: Presumably this bullet refers to sampling points within the transport vehicle. Additionally, a further guidance point is needed to permit a precise determination of the sampling points. We suggest a rewriting of this bullet as follows with changes shown in bold:

“Similarly, if product temperature measurement is necessary, after the vehicle is unloaded and the cargo placed in refrigerated environments, four samples should be selected **from within the transport vehicle** from amongst the following points, **carefully noting the location of the load within the transport vehicle**:

Fourth-eighth bullets: These are sub-bullets of the third bullet and should be indented accordingly.

**CONFEDERATION OF THE EUROPEAN FOOD AND DRINK INDUSTRIES (CIAA)
CONFÉDÉRATION DES INDUSTRIES AGRO-ALIMENTAIRES EUROPÉENNES (CIAA)
CONFEDERACIÓN DE INDUSTRIAS EUROPEAS DE ALIMENTOS Y BEBIDAS**

Point 3 : Prerequisite Programme**3.1.3: Cold Store Design**

CIAA would suggest that the last point reads as follows (changes highlighted in bold):

- *Leaks of any refrigerant are prevented. **In case of a leak, immediate corrective actions, documented under the HACCP plan, ought to be applied, in order to eliminate the event.***

Point 4: Cold Chain Control**4.6: Transport and Distribution**

In view of the fact that - 15°C is the maximum allowed temperature provided by the EC Directive 89/108 for transport and distribution up to the point of retail sale (i.e. -18°C with possible brief upward fluctuations of no more than 3°C), CIAA believes that paragraph 4 should read as follows (changes highlighted in bold):

*“Distribution of quick frozen food should be carried out in such way that any rise in product temperature warmer than - 18°C should be kept to a minimum, within a limit set by national legislation, and **under no circumstances be warmer than - 15°C in the warmest pack.**”*

Annex 1: Specific Information on Temperature Monitoring and Control in the Cold Chain**1.2: Air Temperature Monitoring of Cold Stores**

The amount of sensors stated here is quite high. In some companies with for example a stockage capacity of 200.000 m³ only two sensors are needed at present. According to Codex Alimentarius, there would have to be a minimum of six sensors. We request that the proposed amount of sensors be lowered in order to avoid an increase in energy costs, which would be the outcome of this proposal. Depending on the cold store dimensions and hence storage capacity, sensors can number from one to four.

CIAA would also recommend that the position of sensors should be chosen in such a way as to take cold air circulation into consideration and furthermore to reflect as accurately as possible the temperature conditions of the cold store.²

It is also recommended that the sensor recorders be positioned in a convenient place outside the cold stores.

**INTERNATIONAL INSTITUTE OF REFRIGERATION (IIR)
L'INSTITUT INTERNATIONAL DU FROID (IIF)
INSTITUTO INTERNACIONAL DEL FRÍO (IIF)**

We do not have any more comments at this stage on the proposed draft at Step 3 of the revised Code of Practice for the Processing and Handling of Quick Frozen Foods.

The International institute of Refrigeration (IIR) will certainly be represented at the special Task Force meeting in Bangkok, Thailand, February 25-28 on this topic.

² Sensors should be placed high up within the cold store, away from all possible areas of uncontrolled temperature fluctuations such as near cooler fans, the entrance or the exit, in order to enable precise recording.