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Cold chain management of frozen fish and seafood

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Foreword

This Technical Reference (TR) was prepared by the Working Group on Cold Chain Management of Frozen Fish and Seafood under the direction of the Food Standards Committee (FSC). The FSC endorsed the TR on 18 March 2016.

This TR is developed to meet the increasing demand by consumers for frozen fish and seafood, in terms of safety, quality and availability. It aims to set best practices in cold chain management for raw and minimally processed frozen fish and seafood to ensure the safety, quality and wholesomeness of frozen fish and seafood, safeguard public health and reduce unnecessary food waste.

The TR provides guidelines on developing, implementing and maintaining the cold chain so as to ensure the safety and quality of frozen fish and seafood products.

This TR is targeted at producers, importers, logistics and cold store operators, distributors, retailers and regulatory authorities. It aims to achieve widespread adoption by the fish and seafood industry thus benefitting the participants in the cold chain and consumers.

This TR is a provisional standard made available for application over a period of two years. The aim is to use the experience gained to update the TR so that it can be adopted as a Singapore Standard. Users of the TR are invited to provide feedback on its technical content, clarity and ease of use. Feedback can be submitted using the form provided in the TR. At the end of the two years, the TR will be reviewed, taking into account any feedback or other considerations, to further its development into a Singapore Standard if found suitable.

In preparing this TR, reference was also made to the following publications:

1. Australian Cold Chain Guidelines for Food 2013 – For the Handling, Storage and Transport of Refrigerated Foods: Fresh, Chilled and Frozen (including Ice Cream) for Sale in Retail and Food Service Outlets, 2013, Australian Food and Grocery Council

2. CAC/RCP 1 – 1969, General Principles of Food Hygiene, Revision 4 – 2003, CODEX Alimentarius

3. CAC/RCP 52-2003, Code of Practice for Fish and Fishery Products, Revision 6 – 2011, Amendment 2 – 2013, CODEX Alimentarius

4. CODEX STAN 190-1995, General Standard for Quick Frozen Fish Fillets, Amendment 3 – 2014, CODEX Alimentarius

5. CODEX STAN 193-1995, General Standard for Contaminants and Toxins in Food and Feed, Revision 4 – 2009, Amendment 5 – 2015, CODEX Alimentarius

6. Fish and Fishery Products Hazards and Controls Guidance, Fourth Edition - April 2011, U.S. Department of Health and Human Services, Food and Drug Administration – Center for Food Safety and Applied Nutrition

7. Meat and Poultry Labelling Terms, United States Department of Agriculture, Food Safety and Inspection Service, Updated 10 Aug 2015, Extracted from website: http://www.fsis.usda.gov/wps/portal/fsis/topics/food-safety-education/get-answers/food-safety-fact-sheets/food-labeling/meat-and-poultry-labeling-terms/meat-and-poultry-labeling-terms

8. Morrison. 1992. Fish & Shellfish. In Frozen Food Technology. (Ed. Mallett, C. P.). London: Blackie Academic & Professional.

9. Reefer Container Fleet, CMA CGM Group, Extracted from website: https://www.cma-cgm.com/products-services/reefer/containers-fleet

10. Sale of Food Act, Chapter 283, Section 56 (1) – G.N. No. S 264/ 2005 Food Regulations, 30 Nov 2005, Agri-Food and Veterinary Authority of Singapore

11. Singapore Standard CP 95: 2002 Code of practice for cold chain management – Milk and dairy products

12. Wholesome Meat and Fish (Transportation of Meat Products) Rules, Chapter 349A, Section 42 – G.N. NO.S557/99, Revised 2001, Agri-Food Veterinary Authority of Singapore

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1. Food and Agriculture Organization of the United Nations (FAO) – The views expressed in this TR do not necessarily reflect the views or policies of the FAO.

2. U.S. Department of Health and Human Services, Food and Drug Administration – Center for Food Safety and Applied Nutrition.

Acknowledgement is made for the use of information from the above publications.

Cold chain management of frozen fish and seafood

0 Introduction

Singapore imports frozen fish and seafood from around the world. Fish and seafood are highly perishable as they are prone to quality (i.e. freshness and wholesomeness) deterioration which is accelerated with increasing temperature, leading to enhanced microbial growth, enzymatic activity and oxidative reaction in the fish and seafood. Such spoilage starts from the time the fish and seafood are caught and continues throughout the supply chain. Hence, it is critical to preserve the safety and quality of fish and seafood products. Careful handling and proper storage is needed at all points in the supply chain, from the fishing boat or farm to the points of retail, wholesale or to the processing plant and until these products reach the consumers.

A cold chain is one of the most critical requirements to ensure the safety and quality of fish and seafood. It implies a temperature-controlled supply chain to maintain the ideal storage conditions for perishable and temperature-sensitive products, from the point of origin to the point they reach the consumers. Time and temperature plays an important role in the cold chain management. Low temperature conditions can slow down the spoilage of fish and seafood during handling, storage and transportation, thus ensuring high standards of safety and quality for consumers.

The fish and seafood industry, together with SPRING Singapore, collaborated to develop a Technical Reference (TR) for cold chain management of frozen fish and seafood. This TR covers the proper cold chain management of raw and minimally processed frozen fish and seafood in a single entity. The primary links of an efficient and practical integrated cold chain in the fisheries based communities include the following essential five elements:

- Post-harvest handling;
- Storage / holding / transfer;
- Packing and re-packing;
- Distribution and transportation and
- Retail / re-export.

1 Scope and objectives

1.1 Scope

This TR covers the application and observance of temperature controls for the cold chain management of raw and minimally processed frozen fish and seafood, covering the stages of post-harvesting handling, packing/re-packing, storage, distribution, transportation and retail.

1.2 Objectives

The TR aims to set best practices in cold chain management for raw and minimally processed frozen fish and seafood to ensure the safety, quality and wholesomeness of such frozen fish and seafood, safeguard public health and to reduce unnecessary food waste.

2 Normative references

There are no normative references cited in this TR.