

E355 : Cold Chain Management

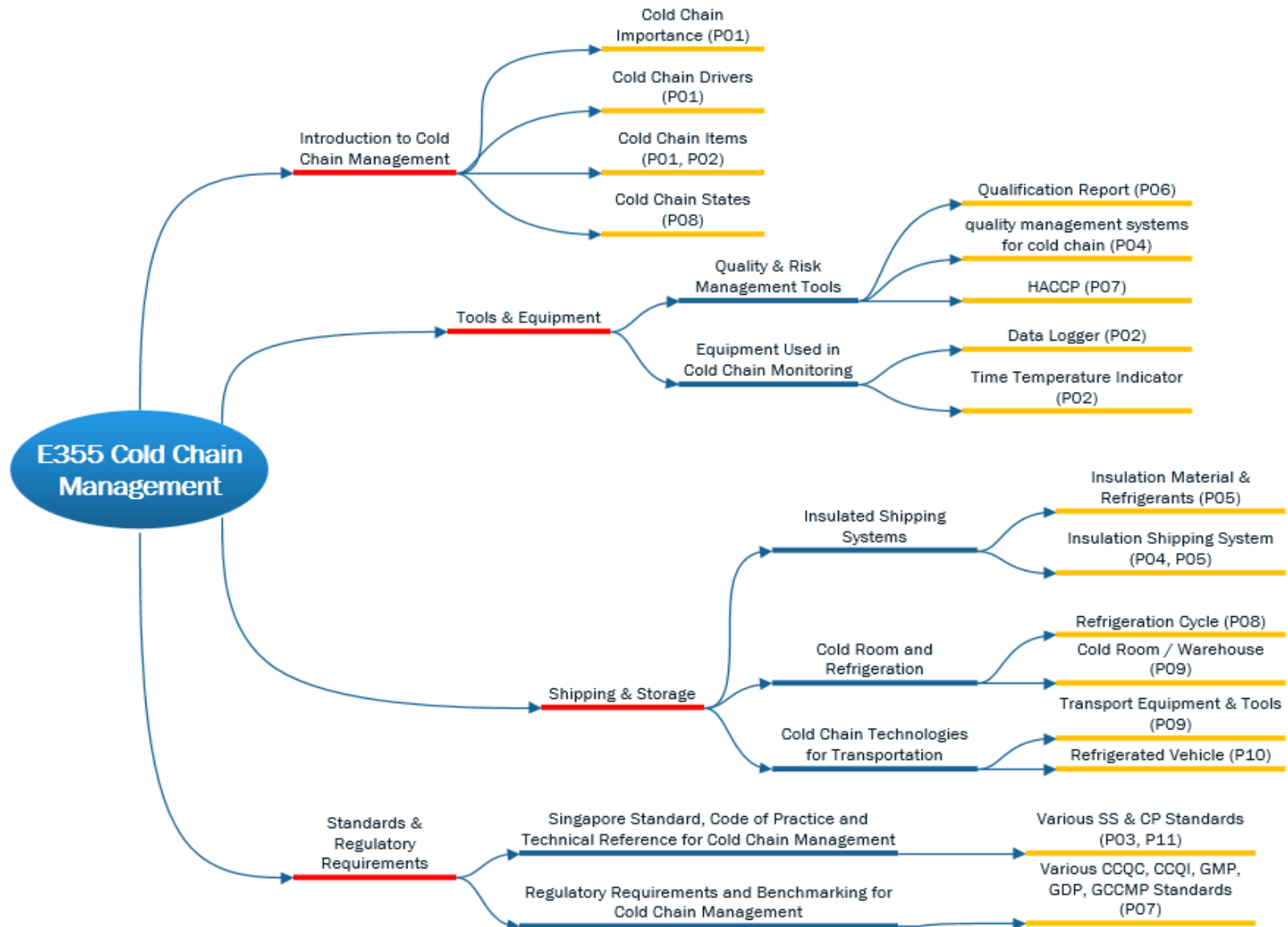
Problem 12

Set the Quality and Standard

- Best practices in Cold Chain Management
- Cool Chain Quality Indicator (CCQI) Standard and Process of Certification

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E355 Cold Chain Management - Topic Tree



Why Benchmark Cold Chain Management?



A Cool Chain is described as a logistics process where temperature-sensitive cargo will maintain integrity through multi-modal movement and kept in ambient facilities to ensure 100% quality, freshness and customer satisfaction

Perishable growth has been on the increase for industry share of airfreight commodities

Above 50% of retail priced perishable items is supply chain cost

Up to 30% waste in perishables industry

**Need for uniform
global standards
for consumers
safety**

Cool Chain Quality Indicator (CCQI)

Industry Standard



- **CCQI** is an industry standard and yardstick for reliability, quality and proficiency in perishable and temperature sensitive products (PTSP) logistics
- The goal of CCQI is to provide a quality measure for first class perishable and temperature sensitive products (PTSP) **logistics companies**
- **CCQI** is an open and auditable industry standard that employs a **benchmarking system** to establish transparent and comparable quality measures
- The CCQI Industry Standard is developed by CCA (Cold Chain Association) and GL (Germanischer Lloyd) Certification

Cool Chain Quality Indicator (CCQI)

Industry Standard



This standard is a Quality Management System consisting of two main parts:

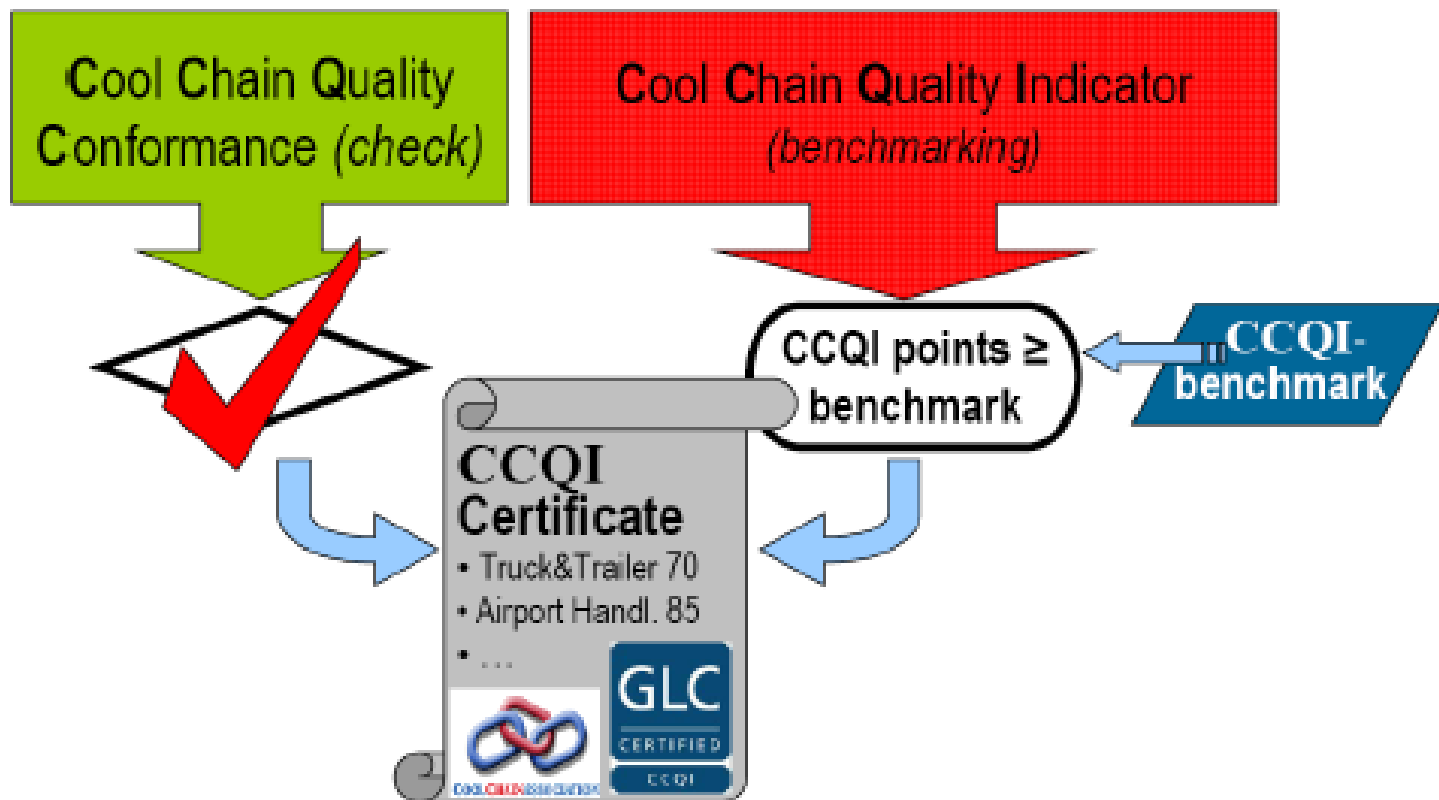
1. **Cool Chain Quality Conformance (CCQC)** checks for conformity of mandatory practices and requirements of CCQI standards are fulfilled. E.g. The organization accepts frozen PTSPs only if qualified cooling equipment is available
2. **Cool Chain Quality Indicators (CCQI)** – CCQI points
 - Evaluation with a result range (poor / ... / good) used for comparison of different companies with the same operations.
 - Benchmarking based on CCQI master tables , defining the level of quality

Cool Chain Quality Indicator (CCQI)

Industry Standard



- Both parts together are setting an incentive to improve the cool chain operation to high quality standards allowing at the same time a comparison of different organizations performing the same type of operation.



CCQC Requirements



1. **Policy** - Top management shall ensure that a cool chain policy is established and known by all cool chain relevant employees
2. **Mandatory Practices** - the organization shall demonstrate mandatory practices including
 - a. Acceptance of PTSP only with temperature range instructions. These instructions must be on record.
 - b. The organization provides all subcontractors with the relevant temperature and/or temperature range instructions (cool order) for the handling of PTSP
 - c. Acceptance points or steps are defined and documented

CCQC Requirements



2. Mandatory Practices (Continued...)

- d. At acceptance points the organization performs
 - temperature measurements of the commodity (unless prohibited by law, cargo is sealed or prohibited by practicality) and records them
 - Visual inspection for damages
 - Check on all supplied documents
 - Deviations from prescribed conditions shall be reported to the Cool Chain Manager and be recorded.
- e. The organization accepts frozen PTSPs only if qualified cooling equipment is available
- f. Warehouse temperature is recorded whilst PTSP are stored in short or long term storage.

CCQC Requirements



3. **Training** - The organization shall provide and maintain a list of all its personnel related to the cool chain at its locations and operations. Personnel shall be competent on basis of appropriate education, training, skills and experience
4. **Responsibility and Authority** - Top management shall appoint a member of management as “Cool Chain Manager”
5. **Cool Chain Related Subcontractors and Suppliers** - The organization shall select cool chain related subcontractors and suppliers based on their ability to supply adequate cool chain related services
6. **Claims, Non-Conformities and Customer Complaints** - Cool Chain related claims, Non-Conformities and customer complaints shall be recorded, analyzed to determine causes and appropriate preventive action

CCQC Requirements



7. **Control of Documents** - The cool chain related documented management system (documents) of an organization shall be controlled, temperature records shall be kept for 12 months, other records for 3 years.
8. **Internal Audit** – Internal audits shall be conducted on an annual basis prior to each management review in order to determine whether the Cool Chain Quality Management System conforms to the requirements
9. **Management Review** - Top management shall review the organization's Cool Chain Quality Management System (CCQM) on a minimum annual basis prior to each external audit

CCQI Master Tables



- The CCQI assessments are based on a **risk based approach** taking into consideration relevant hazards to PTSPs.
- It offer comparison of different Cool Chain Operations of same type
- Show development of quality over time (improvement of Cool Chain Quality)
- The organization has to identify which operations to consider, number of associated locations and number of cool chain related employees.
- CCQI are calculated for each Cool Chain Operation by using CCQI Master Tables
- CCQI Master Tables are completed by the organization / company itself

CCQI Master Tables – Cool Chain Operations

CCQI Industry Standard

Cool Chain Quality Indicator benchmarking

Cool Chain Quality Indicator conformance check

Pre-cooling

Truck & Trailer Transport

Long-Term Storage

Short-Term Storage & Distribution

Retail Stores

Air Transport

ULD-Services

Apron Handling at Airport

Container Line

Container Ship

Container Terminal

Reefer Containers

Reefer Ship Line

Reefer Ship

Sea Port Terminal

Preconditions of CCQI certification



To qualify for CCQI certification it is a precondition that

1. The overall CCQI points awarded per operation matches or exceeds the benchmark level defined (right)

2. All elements of the standard specified for the Cool Chain Quality Conformance are implemented.

Operation	CCQI Benchmark
Pre-cooling	65
Truck & Trailer Transport	60
Long Term Storage	60
Short Term Storage / Distribution Center	65
Retail Store	60
Aircraft Transport	65
ULD Services	65
Apron Handling at Airport	55
Container Line	70
Container Ship	70
Container Terminal	70
Reefer Containers	70
Reefer Ship Line	75
Reefer Ship	60
Sea Port Terminal	70



By aiming to obtain the CCQI certification, the organization fulfills:

- the customer's quality requirements
- regulatory requirements, while aiming to enhance customer satisfaction
- achieve continual improvement of its performance in pursuit of these objectives

Guidelines, Best Practices and Certification in the Cold Chain Industry



- IATA Perishable Cargo Regulations (**PCR**) – an essential reference guide for all parties involved in the packaging and perishables for air transportation
- Good Manufacturing Practices (**GMP**) – a guideline for manufacturers to ensure quality of product
- Good Distribution Practices (**GDP**) – a guideline to ensure products are stored, transported and handled in suitable conditions
- Good Cold Chain Management Practices (**GCCMP**) – a set of good storage and shipping practices for temperature-controlled products
- Hazard Analysis and Critical Control Point (**HACCP**) - It is a management system in which food safety is addressed through the analysis and control of hazards throughout the food chain

CCQI Versus HACCP



CCQI

- Based on a risk based approach taking into consideration relevant hazards to PTSPs
- Industry standard and yardstick for reliability, quality and proficiency in PTSP logistics
- Applicable for logistics companies with any of the fourteen operations listed in the master tables.
- Ability to show development of quality over time, based on CCQI scores

HACCP

- Management system in which food safety is addressed through the analysis and control of hazards (biological, chemical and physical) throughout the food chain
- For prevention of food safety issues through identification and focus on CCPs
- Applicable to all companies managing food along the supply chain

Today Problem



- PHL's CCQI score for Transportation is 56.6, which is below the required 60. The company should improve on the transportation operations through training, instructions etc.
- The CCQI score for Distribution center is 72, which exceeds the required 65, meets the industrial standards but there is room for improvement, such as hygienic maintenance.
- PHL also needs to look into conformance to the CCQC requirement to be CCQI certified.

Today Problem



Cool Chain Quality Indicator (CCQI) for Short Term Storage / Distribution Center		
A. Organization (max 40)		
A.1 Instructions and equipment for store keepers (max 12)		12
A.2 Availability of services (max 4)		2
A.3 Actions taken after refrigerant leakage or machinery breakdown (max 6)		3
A.4 Training for cold store personnel involved in storage and handling of perishables and temperature sensitive products (PTSP) (max 8)		4
A.5 Technical maintenance of refrigerating installations and insulation (max 6)		6
A.6 Hygienic maintenance (max 4)		0
	Total (A)	27
B. Storage and handling facility (max 36)		
B.1 Temperature zones for storage of goods (max 12)		9
B.2 Special equipment for storage and handling (max 6)		6
B.3 Spaces for commissioning / repacking (max 10)		10
B.4 Arrangements to protect cargoes during handling (max 4)		4
B.5 Forklift operation (max 4)		4
	Total (B)	33
C. Refrigeration System (max 24)		
C.1 Redundant power supply (max 4)		4
C.2 Type of refrigerant and refrigeration system (max 4)		0
C.3 Location of components containing refrigerant (max 2)		0
C.4 Arrangement of refrigeration machinery room (max 2)		2
C.5 Alarm system of refrigeration system (max 2)		2
C.6 Alarm system for cold rooms (max 2)		2
C.7 Temperature recording (max 8)		2
	Total (C)	12
	Total Score	72

**CCQI for
distribution
centre**

Today Problem



Cool Chain Quality Indicator (CCQI) for Truck & Trailer Transport				
A. Organization (max 40)				
A.1 Instructions and equipment for drivers (max 12)	10			
A.2 Route Optimization (max 2)	0			
A.3 Actions taken after breakdown (max 10)	5			
A.4 Training for truck drivers involved in transport of perishables and temperature sensitive products (PTSP) (max 8)	4			
A.5 Technical maintenance of vehicles (truck & trailers) (max 2)	2			
A.6 Technical maintenance of cooling appliances (max 3)	0			
A.7 Hygienic maintenance (max 3)	0			
Total (A)	21			
B. Transport equipment / Vehicles (max 60)				
transportation				
Long distance transportation is defined as transport with normally only one loading and one unloading point				
B1.1 Classification of vehicle insulation (max 24)	15			
B1.2 Cooling appliance (max 24)	20			
B1.3 Vehicle accessories (max 5)	0			
B1.4 Temperature monitoring / recording (max 7)	1			
Total (B1)	36	15	Long distance truck	
Local distribution is defined as transport with several loading and unloading points				
B2.1 Classification of vehicle insulation (max 25)	15			
B2.2 Cooling appliance (max 20)	15			
B2.3 Vehicle accessories (max 10)	4			
B2.4 Temperature monitoring / recording (max 5)	1			
Total (B1)	35	10	Short distance truck	
Total Score		56.6		

**CCQI for
transport**

Learning Objectives



- Recognize the industry best practices in cold chain management
- Explain the CCQC requirements
- Identify CCQI as the industry standard for reliability, quality and proficiency in perishable and temperature sensitive products logistics.
- Discuss the CCQI requirements and how they can be implemented
- Fill up CCQI master table based on a given company profile