



Certification and Quality Guide for Greenland Ice and Water Resources

CERTIFICATION AND QUALITY GUIDE FOR GREENLAND ICE AND WATER RESOURCES

The purpose of this suggested certification scheme is to guarantee sustainable usage of Greenland's ice and water resources and maintain the perception of Greenland as a supplier of high quality products. All parties who seek to exploit Greenland's ice and water resources should seek to comply with the requirements suggested in this scheme. The document also contains information regarding suggested technical requirements, productions requirements, information regarding different international certifications and a brief explanation of the certification process. For matters not included in this document please contact the Agency of Industry, Labour, Vocational Education and Training at ip@gh.gl or siip@gh.gl

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1. Introduction

This document outlines a suggested certification scheme prepared by Greenland authorities. Preserving the perception of Greenland as a pristine environment with unique nature, natural resources and culture is important in order to maintain a high-quality image throughout markets around the world. The purpose of the scheme is to ensure sustainable usage of Greenland's ice and water resources; environmentally, culturally and economically. The document also provides information and links to relevant professional and industrial bodies.

It should be emphasized that the type and scope of certification and quality systems

required for a particular business should be in proportion with its size and/ or risk. This means that a company consisting of e.g. three persons may not need to be ISO 14001 certified (abbreviations are explained in table 4). However, all companies should strive to minimize their environmental impact and avoid negative influence on their surroundings. Also, all companies that export water or ice from Greenland should have a HACCP system, follow GMP and the technical requirements set forth by ICBWA, as these are ticket to trade in most markets. Consequently larger companies should follow the scheme set forth in this document as they potentially have a larger impact on Greenland's resources.

2. Summary

In order to ensure products with sufficiently high quality and to gain access to important markets around the world a certification scheme has been developed. The scheme suggests a set of environmental and social responsibility actions which are considered to be important in terms of marketing and consumer demands. The scheme can therefore be regarded as a competitive necessity in the bottled water business. The first three stages of the scheme are mandatory (see Figure 1). They include water source definitions and quality requirements for water derived directly from glaciers for the different markets. In addition both GMP and a HACCP system need to be implemented. Ideally all companies should have some sort of system certification, preferably ISO 14001 (an environmental management systems) as it will serve as a tool for continuous improvement regarding emission and environmental impact. The company/producer must be certified by an independent third party. Also, some core performance indicators should be included in the annual report regarding environmental impact and social responsibility. Consequently, companies operating in Greenland should have some form of company responsibility plan in order to protect Greenland's unique culture and environment. A clear and proactive environmental profile is necessary in the increasingly more international, and at times controversial, water business. Furthermore, if the

product is promoted as having certain qualities, such as "from before Christ" these aspects need to be documented through product certification. Finally, since deriving water from glaciers is different than using water from other conventional water sources a few critical aspects should be consider carefully. Some of these aspects are outlined in section 7 (General considerations).

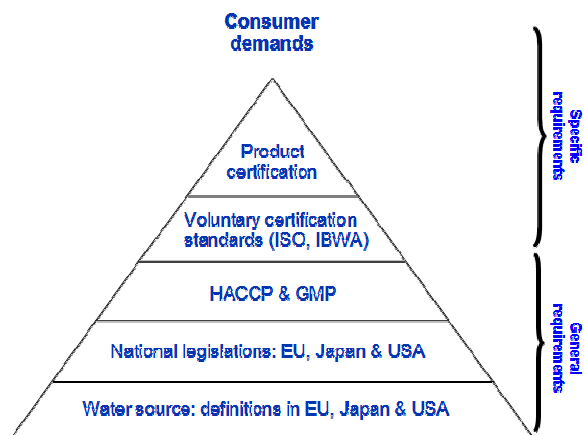


Figure 1: The three lowest levels of the pyramid are mandatory. One or more voluntary certifications are generally required in order to gain access to various markets.

3. Technical requirements

Water and ice resources produced in Greenland have to comply with technical requirements in the desired markets (chemical, microbial, radiological and monitoring requirements). In the three markets that have been explored (EU, Japan and USA), glacier water will be defined as normal drinking water or bottled water, and has to comply with the respective legislations (see Table 1 and

2). The “Food Code 18 AAC 31.740” (glacier water code) from Alaska may serve as a guide, but the code is not internationally accepted.

EU	80/777/EEC
Japan	STAN 227-2001
USA	CFR21 part 165

Table 1: Water definitions.

In order to gain access to as many markets as possible the ICBWA (see table 2 and 3) technical requirements should be met, as these are adapted to an international market and comply with most national regulations.

EU	98/83/EU
Japan	CODEX STAN 227-2001
USA	21 CFR Section 165.110(b)
ICBWA	ICBWA
WHO	"Guidelines for Drinking Water Quality"

Table 2: Technical requirements.

4. Production requirements

The production of water is a relatively comprehensive task, consisting of numerous steps regulated by different legislation. Water production is considered as food production, and needs to meet the general regulations of safe and secure production. In order to secure the product quality from source to the final destination, quality control along the production chain must be maintained and documented. The most important considerations during the production process can be divided into five steps:

- Hygiene and GMP
- Labeling

- Monitoring
- Packaging
- HACCP

Good Manufacturing Practices (GMPs):

21 CFR, Part 110, contains FDA regulations relating to GMP’s for all food production facilities. In addition, 21 CFR, Part 129, contains GMP’s specific to bottled water. GMP is the control and management of manufacturing and quality control testing of foods and pharmaceutical products. GMP takes a holistic approach of regulating the manufacturing and laboratory testing environment itself. Documentation of the process, activities, and operations involved is an essential component. The general GMP’s cover such areas as plant and ground maintenance, sanitary facilities, plumbing and sewage disposal. Bottled water GMP’s provide detailed regulations governing plant construction and design, sanitary facilities and operations, equipment design and construction, production and process controls specific to the product, and record keeping.

For information regarding labeling, monitoring and packaging see relevant (depending on the target market) legislation in Table 3. However, to facilitate the route towards a common standard for these three markets it is advisable to follow the standard from ICBWA as this standard has been developed to meet the requirements of the international bottled water market.

Hazard Analysis & Critical Control Points (HACCP) is a structured approach to risk management designed for use in the food industry in order to assure food safety. The documentation of a functioning HACCP system is mandatory for food producing businesses in several countries, including the EU and the USA.

5. Suggested certification scheme

The suggested Greenland certification scheme consists of three main components: a management system certification (ISO 14001 as a basis), a product certification (with ICBWA as a basis) and predefined environmental performance parameters (GRI).

The management system certification ensures that the company in question has an acceptable quality system in place and the ability to document that they are following good management practices. ISO 9001 is the most generally used general management system. ISO 14001 is an environmental management system where compliance results in 70-80% compliance to the ISO 9001 requirements. ISO 14001 is a generic standard with no specific measurements that need to be met. The standard states that the environmental goals need to be stated and documented. The standard requires organizations to identify all environmental impacts and associated aspects, and then implement actions to improve processes in prioritized areas with significant aspects.

The main elements of the standard are:

- environmental policy
- planning
- implementation and operation
- checking and corrective action
- management review

Corporate social responsibility (CSR) includes managing environmental, social and economical impacts, and can be thought of as a social license to operate. It addresses human rights, labor rights, environmental standards as well as fraud and community and marketplace practices. Greenland has a native population and a number of communities that should be considered as part of the planning of utilization of natural resources. It is desirable that businesses operating in Greenland have a corporate social responsibility plan or strategy. This would not only serve as a benefit to the local inhabitants, but can be used in marketing the product as a responsible choice measured up against relevant competitors. We recommend using the core performance indicators from the Global Reporting Initiative (<http://www.globalreporting.org>) as a basis or template in order to facilitate the process. The core performance indicators that should be included in the annual report are listed below and in the next page:

Environment

- Materials used, materials recycled and waste
- Direct and indirect energy consumption

- Impact of activities on biodiversity
- Total greenhouse gas and other gas emissions by weight

Labor

- Rates of injury, lost days
- Health and safety programs

Society

- Impact of operations on community
- Corruption analysis

Finally, in order to avoid fraud and to maintain the genuine nature of the product, a traceability system should be in place. This could for example be ISO 22005 (Traceability in the feed and food chain) or a different system with sufficient credibility.

Depending of the market the product is to be sold in, an ISO 22000 certification might be necessary or beneficial. ISO 22000 is a Food Safety Management System specifically designed for the food industry in order to assure food safety. It enables a company to identify relevant risks and to manage them efficiently, both from a food safety and cost effectiveness point of view. However, there are also other food standards that might be of use for your company.

Product certification ensures that the product produced is of the desired quality. While a management system needs to be in place no matter what product is being produced, the product certification can be

seen more as the responsibility of the producer. However, the product must meet international standards and have the quality that is such that will positively promote Greenland. Product certification can range from certification of a product produced in a manner that meets international production and legislative standards to promoting that the product has attributes that make it a higher value product than the standard product of its kind.

The international bottled water association (IBWA) and the ICBWA both have developed voluntary certification schemes for bottled water. The bottled water industry routinely employs additional measures to further strengthen the protection of its product, beginning with the source and all through the packaging. These requirements are laid out in the [Bottled Water Code of Practice](#). Also, in order to ensure proper quality and product safety, companies exporting from Greenland should have a HACCP system (see Codex Alimentarius) and GMP (see FDA, [21 CFR, Part 110](#) and [21 CFR, Part 129](#)). HACCP and GMP are to be considered ticket to trade in most markets.

If the product is promoted as having certain qualities, such as “from before Christ” or “from before industrial pollution” than these aspects need to be documented through product certification. Documenting these aspects will also increase the value of the product.

6. The certification process

Certification is using documentation to verify that a company has systems in place and fulfill the criteria set in a certification scheme. Audits are performed to evaluate if the documentation is sufficient, and that the systems are performing according to the standards set. The company/ producer is certified upon the completion of a satisfactory audit by an auditor employed by an independent third party.

When choosing a certification body there are several important aspects one should consider in order to ensure sufficient quality and value for money. The certification body should:

- be internationally accepted, and have a good reputation
- be accredited for the specific certification
- be present and well known within the markets of interest
- have experience within the topic of interest

It is also important to bear in mind that less expensive certification bodies might become the most expensive ones if not accepted by the market.

ISO has a list of recommendations that should be taken into account [when choosing a certification](#) body to carry out ISO 9001:2000 or ISO 14001:2004 certification, including that the certification body is ISO/IEC Guide 65 certified.

IBWA and ICBWA maintain and audit their own certification schemes. All members will be subject to audits on a regular basis. Food product certification may refer to recognised standards by the International Standardization Organization (ISO) or a standard's body product specification scheme (such as DNV's TPS (Technical Product Specification) standards).

For information on accredited certification bodies contact the national certification bodies, for example in Denmark ([DANAK](#)).

Audits are based on random sampling and will not find all non-conformities, but will ensure that the producer has a focus on quality and meeting the requirements set in the certification scheme.

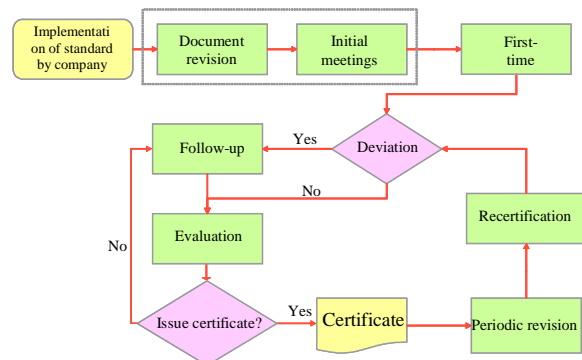


Figure 2: Flow chart illustrating the main steps during the system certification process.

The four main steps of certification are application, document review, an initial audit and the periodically surveillance.

Application. An application for certification is sent to the certification

body (Application forms are provided by the certification body).

Document Review. The certification body conducts a review of the management system documentation to ensure that it meets the necessary requirements of the standard.

Initial Audit. The certification body conducts an on-site audit to check that the management system has been properly implemented. If the management system has been implemented, the organization becomes certified to the standard. Certification is valid for a certain time frame depending on the scheme (3 years for ISO, 1 year for BRC), after which it is renewed.

Surveillance Audits. Initially every 6 months and then every year, surveillance audits are conducted to provide continued evidence of conformance.

7. General considerations

Some special considerations should be made when handling water and ice derived directly from glaciers:

- According to international regulations for drinking water the source has to be protected, making it unavailable for other purposes such as tourism, and hunting. This could potentially result in conflicts of interest.
- The list of contaminants that must be tested for in drinking water is

extensive. The guidelines have not, however, taken into account any glacial ice specific aspects in the testing regimes. If glaciers can potentially contain minerals and chemicals that are harmful, but not covered by national or international requirements, then their absence or presence should be documented.

- Bottled water is a food product which must be of consistent quality and the quality must be defined in order to meet regulations for quality, safety and labeling.
- The product offered must conform to the defined product parameters regardless of seasonal variations, storms or floods, or which batch of ice is utilized.
- The water quality testing performed on the glacier ice from various locations in Greenland showed very low conductivity values. This is lower than EU standards for drinking water. Low conductivity is not a health issue, but the levels will need to be part of the labeling of any natural water produced if it is to be sold in countries where conductivity is part of the water quality standard.
- As transport distance of the water to market will be considerable, considerations regarding transport type (green classed ships) and packaging type (e.g. biodegradable bottles) should be considered.

- Minimizing the use of products that can increase global warming, sustainable production, food miles, CO₂ footprint, traceability and natural products are all current consumer trends that have the potential to affect the market of bottled water from Greenland. The ice to water process should be shown to have minimal local and global environmental impact.
- Independent of where the bottling will take place, a system for

extraction and processing of ice from glaciers has to be established that is compatible with HACCP and GMP. Protecting the source from contamination is a fundamental element of water production. All storage materials that come into contact with the ice that will be used directly for water must be food grade, including eventual shipping of ice in ships.

Table 3: Important legislations, standards and information channels. Press the active web links under “Regulation” for further information.

	Regulation	Full title / content
USA	21 CFR, Part 101	Food labeling
	21 CFR, Part 110	Current good manufacturing practice in manufacturing, packing, or holding human food
	21 CFR, Part 129	Processing and bottling of bottled drinking water
	21 CFR, Part 130	Food standards: general
	21 CFR part 165	Requirements for Specific Standardized Beverages Sec. 165.110 Bottled water
	Code 18 AAC 31.730	Glacier ice and ice manufacturing (Alaska Only)
	Code 18 AAC 31.740	Bottled drinking water (Alaska Only)
EU	80/777/EEC	On the approximation of the laws of the Member States relating to the exploitation and marketing of natural mineral waters
	2002/72/EC	Relating to plastic materials and articles intended to come into contact with foodstuffs
	98/83/EC	On the quality of water intended for human consumption
CODEX	STAN 227-2001	General standard for bottled/packageged drinking waters (other than natural mineral waters)
	CAC/RCP 48-2001	Code of hygienic practice for bottled/packageged drinking waters (other than natural mineral waters)
	CAC/RCP 1-1969, Rev. 4-2003	Recommended international code of practice general principles of food hygiene
	CAC/GL 21-1997	Principles for the establishment and application of microbiological criteria for foods
	CODEX STAN 1-1985, Rev.1-1991	General standard for the labeling of prepackaged foods
GENERAL	ISO 9001	Quality management system. Requirements.
	ISO 14001	Environmental management systems. Requirements with guidance for use.
	ISO 22001	Food safety management systems. Requirements for any organization in the food chain.
	ISO 22005	Traceability in the feed and food chain. General principles and basic requirements for system design and implementation.
	GRI	The Global Reporting Initiative (GRI) is a widely used sustainability reporting framework setting out principles and indicators that can be use to measure social performance.
	IBWA	The International Bottled Water Association code of practice
	ICBWA	The International Council of Bottled Water Associations code of practice.
	HACCP	Hazard Analysis and Critical Control Point (Annex on HACCP, pages 21-31)

Table 4: Abbreviations used in the document

Abbreviations	
ICBWA	International Council of Bottled Water Associations
ISO	International Organization for Standardization
FDA	Food and Drug Administration
HACCP	Hazard Analysis and Critical Control Point
GMP	Good Manufacturing Practice
GRI	Global Reporting Initiative
IBWA	International Bottled Water Association
BRC	British Retail Consortium

Updated July 2008