Asia-Pacific
Economic Cooperation

Ministry of Commerce,
Industry and Energy
Republic of Korea

Best Practices of ISO 14021

Committee on Trade and Investment

February 2003

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Self-declared environmental claims

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Preface

Increasing demand for preservation of the environment, conservation of resources, and a sustainable society led to the publication of two types of ISO 14000 standards by ISO: management oriented and product oriented. The ISO 14000 product oriented standards include Environmental Labels and Declaration, Life Cycle Assessment and Design for Environment. These standards are intended to be applicable to assess environmental performance of products and services, and to provide guidance on improving their environmental performance. As a result these standards may serve as norms for environmental consideration of products and services in international trade. This implies that the standards have the potential to become technical facilitators as well as barriers to trade.

The ISO 14000 product oriented standards are not easy to comprehend and require expert interpretation to use them proficiently. In addition, most Asia-Pacific Economic Cooperation (APEC) developing economies do not have expertise on these standards. Thus, there is a strong need for producing a best practice book that enhances the level of understanding and use of the standards. This is the first of three books on the product oriented ISO 14000 series standards to be produced as part of the APEC Committee on Trade and Investment (CTI) project.

The ISO 14020 series standards, Environmental Labels and Declaration, are communication tools that convey information on environmental aspects of a product or service to the market. Three different types of environmental labels and declarations are currently in use. They include: Type I environmental labeling, Type II self-declared environmental claims, and Type III environmental declaration.

Each type of environmental label and declaration has the same goal; i.e. encouraging the demand for and supply of those products that cause less stress on the environment, thereby stimulating the potential for market driven continuous environmental improvement. Type II environmental declarations use texts and symbols emphasizing the environmental aspects of a product or service on a product or in advertisements. The purpose of these types of claims and declarations is to increase the market share by promoting the environmental preferability of a product to environmentally conscious consumers.

Environmental claims made by the company or self-declared environmental claims, however, are often not verified. This in turn leads to confusion in the market for the consumer. Since unfounded environmental claims are counter-productive to environmental consideration of a product and service, regulations regarding the use of environmental terms and symbols have been enforced in many parts of the world. Such regulations are not only applicable to domestic products but also to imported products. Hence these regulations have the potential of being used as trade facilitators as well as barriers.

The development of ISO 14021 was intended to provide an international harmonization of widely used self-declared environmental claims and declarations that would serve as an alternative to regulations. Standards are voluntary tools and international standards are recognized by the WTO. Voluntary use of ISO 14021 can avoid the need for "command and control" government regulations to solve the marketplace problems arising from unverified self-declared environmental claims without creating trade barriers. In some countries, standards in the ISO 14020 series have been referenced in legislation to avoid specific national regulations which might be construed as restrictive to international trade.

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I would like to extend my sincere thanks to Mr. Haruo Uehara by writing two chapters of this book and Ms. Jenny Hillard for her thorough check of English and making editorial improvement of this book. Special thanks are extended to many organizations and individuals including, but not limited to, ISO/TC207/SC3/WG2 and its experts, Mr. Jacques-Olivier Chabot of ISO, Mr. Jay Jackson and Ms. Chantale Potvin of Industry Canada, APEC secretariat, and MOCIE of Republic of Korea.

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Table of Contents

Chapter 1 Introduction: The ISO 14000 series standards 1

Chapter 2 The ISO 14020 series standards 9

Chapter 3 ISO 14020 and its relationship to ISO 14021, Type II EL 16

Chapter 4 Introduction to ISO 14021 25

Chapter 5 Interpretation of ISO 14021 30

1. Scope 30

2. Normative references 31

3. Terms and definitions 32

4. Objectives of self-declared environmental claims 32

5. Requirements applying to all self-declared environmental claims 33

6. Evaluation and claim verification requirements 55

7. Specific requirements for selected claims 63

Chapter 6 Case studies of self-declared environmental claims 96

1. Actual situation of self-declared environmental claims 96

2. Practices of self-declared environmental claims in Japanese industry 96

3. Implications from the practices - Conclusions 122

4. Other case examples for self-declared environmental claims 123

References 124

Chapter 1 Introduction: The ISO 14000 series standards

Environmental problems we have today have expanded from local and regional ones to global ones. Resource consumption and environmental emissions originating from industrial activities pose serious threats to human health and to the stability of ecosystems.

It is a well-known fact that the global environmental carrying capacity has limits. Natural resources including mineral ores and fossil fuels, agricultural productivity, and the self-purification capacity of the natural environment each have their own limits. Irrational resource consumption together with irresponsible environmental pollution resulting from the entire product life cycle – raw material acquisition, manufacturing, distribution, use and disposal – is the main cause of exceeding the global environmental carrying capacity. This is because our industrial structure and consumption patterns are not designed to minimize environmental impacts. This has created a growing concern that a sustainable society may not be achievable.

Industry or corporations are a major source of these environmental problems. This is because human society depends heavily on industrial products to sustain or raise its standard of living. Corporations consume resources and emit environmental emissions during the product manufacturing stage. Both of these activities have a significant negative impact on the environment. However, the negative environmental impacts from the entire life cycle of the product is greater, sometimes much greater, than just those from the manufacturing stage.

In general, environmental load throughout the entire life cycle of a product is much greater than that from the manufacturing stage. Typical examples include durable products such as home appliances and automobiles that consume energy throughout their use stage thus creating environmental loads from use and disposal that are much greater than from the manufacturing stage. For products like paper towels and aluminum foil, environmental load from the manufacturing stage is relatively high, however, the total load is still greater than that from the manufacturing stage alone. From this, it can be concluded that environmental loads occurring throughout the life cycle of consumer products are the main cause of today's environmental problems.

Traditionally environmental laws and regulations were aimed at commanding and controlling the environmental loads occurring during the manufacturing stage of a

product. In other words the command and control were focused on "end-of-pipe" treatment. In addition, extensive efforts have been made to improve production processes and process equipment, reduce material resources used, and so on. Focusing all these efforts on the management of the manufacturing stage of a product, i.e., control of the manufacturer's site, have not been sufficient to reduce global environmental problems. As a result, global environment problems have not been mitigated: rather, they tend to be aggravated.

Since 1990, environmental policy makers in the Netherlands and Germany have recognized that packaging waste can be reduced in quantity by imposing financial burdens on the producer, rather than the consumer. This is the basis of a concept known as "extended producer responsibility" (EPR) (OECD, 1996). It was normal for manufacturers to be responsible for the product only during its manufacturing stage (e.g. product function, production cost and environmental pollution control, etc). They were not responsible for the environmental problems caused by the discarding of packaging or the product after use. Collection, treatment and disposal of waste products were the responsibility of the government and local authorities. However, under EPR, the costs associated with the collection, treatment and disposal of the packaging and the discarded used products is borne by the manufacturer.

In response to the apparent failure of command and control policies, the emerging EPR policy and growing pressure from the public, some industries decided to take the initiative in overcoming environmental problems rather than being pushed by interested parties such as government, environmental activists and the public. This initiative was the introduction of a voluntary program called "environmental management" into the corporation's management overall management system.

Environmental management, first introduced in the Netherlands in the early 1980s, aimed at implementing environmental management of a corporation by setting environmental policy and identifying significant environmental aspects of corporation's activities. This was done by;

Taking into account suppliers and consumers,

Preparing environmental and operational programs,

Measuring and monitoring environmental performance,

Auditing environmental performance, and

Reviewing the overall environmental management

These voluntary measures were acceptable to the Netherlands government because environmental management considers not only the manufacturing stage but also the entire life cycle of a product. Furthermore, environmental management aims at pollution prevention rather than end-of-pipe treatment. In return for implementation of voluntary environmental management, the government gave some leeway to industries by relaxing some of its command and control regulations. To ensure effective implementation of environmental management, environmental auditing by an independent third party was required. The introduction of environmental management to the corporation's management system proved to be mutually beneficial to both industry and government.

The practice of environmental management has evolved into a process known as "environmental management system" (EMS). The EMS process quickly spread through industrial organizations, especially multinational companies, in developed countries, initially in the UK, the Netherlands, and the Nordic countries. As a result of the proliferation of EMS implementation, together with other environmental requirements for the management of a corporation's environmental impact, there emerged a necessity for standardization of environmental practices.

The Business Council for Sustainable Development put a request for the standardization of environmental management practices to the United Nations Committee on Environment and Development, which in turn passed the request to the International Organization for Standardization (ISO) in April 1991. In October 1991, ISO formed the "Strategic Advisory Group on Environment" (SAGE) to evaluate the necessity for the standardization of EMS. After one year of study, SAGE recommended that ISO should standardize EMS. As a result, Technical Committee (TC) 207 was formed in June 1993 to begin the work of creating standards for EMS.

A major driving force behind the creation of the ISO 14000 series was the need to have international standards for environmental management systems, environmental auditing, environmental labeling, environmental performance evaluation (EPE), and life cycle assessment (LCA). International harmonization of standards to deal with the environmental issues in the 21st century, called the century of the environment, was seen as critical to global commerce.

ISO standards are voluntary in nature; thus, there is no legal obligation to comply with

them but, to ensure their effectiveness, they need to incorporate many of the issues that would previously covered by "command and control" legislation or regulation. Accordingly, delegations from participating countries in the TC 207 meetings do their best to represent their viewpoints and interest in the ISO 14000 series.

The ISO 14000 standards are developed with the following key principles in mind: (ISO/TC 207, 2002)

They must result in better environmental management.

They must be applicable in all nations.

They should promote the broad interests of the public and the users of the standards.

They should be cost effective, non-prescriptive, and flexible, to allow them to meet the differing needs of organizations of any size worldwide.

As part of their flexibility, they should be suitable for internal or external verification.

They should be scientifically based.

And above all, they should be practical, useful and usable.

The first ISO 14000 series standard was published in September 1996. It is the standard on EMS and its document number is ISO 14001. A guidance document for the use of ISO 14001 was also published at the same time. This is ISO 14004. In October 1996, ISO 14010, 14011, and 14012 were published, which deal with auditing of the EMS. Standards on Environmental labels and declarations (EL) were published in 1998 and 2000, and on EPE in 1999. LCA standards were published in 1997 to 2000. Table 1.1 lists the document number with year of publication and title of each ISO 14000 series standard developed and/or being revised at the time of writing this book.

The ISO 14000 series shown in Table 1.1 can be classified into two major groups: organization oriented and product oriented. The former are designed to put environmental management system in place within an organization, while the latter are intended to enable organizations realize the benefits coming from the environmental management system by making and selling products and services which have less negative environmental impacts.

Table 1.1 Current publications status of the ISO 14000 series standards (ISO, 2002)

Subject		Title	Document No.	Publish	Revision status
Organization oriented (Management)	EMS	Environmental management systems - Specification with guidance for use	ISO 14001	1996	WD (2002)
		Environmental management systems - General guidelines on principle system and supporting technique	ISO 14004	1996	
		Information to assist forestry organizations in the use of Environmental Management System standards ISO 14001 and ISO 14004	ISO/TR 14061	1998	
	Auditing	Guidelines for environmental auditing - General principles	ISO 14010	1996	
		Guidelines for environmental auditing - Audit procedure - Auditing of environmental management systems	ISO 14011	1996	
		Guidelines for environmental auditing - Qualification criteria for environmental auditors	ISO 14012	1996	
		Environmental management - Environmental assessment of sites and organizations	ISO 14015	2001	
		Guidelines for quality and/or environmental management systems auditing	ISO 19011		
	EPE	Environmental management - Environmental performance evaluation - Guidelines	ISO 14031	1999	
		Environmental management - Examples of environmental performance evaluation (EPE)	ISO/TR 14032	1999	
		Guidelines for measuring, reporting and verifying entity-and project-level greenhouse gas emissions	ISO/AWI 14064		

Product oriented (Products)	Product design	Guide for the inclusion of environmental aspects in product standards	ISO Guide 64	1997	
		Environmental management - Integrating environmental aspects into product design and development	ISO/TR 14062	2002	
	Environmental labels	Environmental labels and declarations - General principles	ISO 14020	1998	
		Environmental labels and declarations - Self-declared environmental claims (Type II environmental labeling)	ISO 14021	1999	
		Environmental labels and declarations - Type I environmental labeling - Principles and procedures	ISO 14024	1999	
		Environmental labels and declarations - Type III environmental declarations	ISO/TR 14025	2000	
	LCA	Environmental management - Life cycle assessment - Principles and framework	ISO 14040	1997	
		Environmental management - Life cycle assessment - Goal and scope definition and inventory analysis	ISO 14041	1998	
		Environmental management - Life cycle assessment - Life cycle impact assessment	ISO 14042	2000	
		Environmental management - Life cycle assessment - Life cycle interpretation	ISO 14043	2000	
		Environmental management - Life cycle assessment - Examples of application of ISO 14042	ISO/WD TR 14047		
		Environmental management - Life cycle assessment - Data documentation format	ISO/TS 14048	2002 *(under publication)*	

		Environmental management - Life cycle assessment - Examples of application of ISO 14041 to goal and scope definition and inventory analysis	ISO/TR 14049	2000	
Vocabulary		Environmental management – Vocabulary	ISO 14050	1998	FDIS (2002)

Note: TR= Technical Report; WD= Working Draft; FDIS= Final Draft International Standard; AWI= Approved Work Item

Organization oriented standards can be viewed as an investment aimed at building the basic foundation of an environmental management system in an organization. To do this, ISO 14001 is needed. To ensure proper implementation of ISO 14001 in an organization, the auditing tools of the ISO 14010 series are required. In addition, parameters for the evaluation of the environmental performance of an organization, stipulated in the ISO 14030 series, are also required. Once these system and tools in place, an organization is ready to take advantage of its EMS.

Product oriented standards are tools for an organization to generate revenue, in contrast to the investment or cost incurred in the case of organization oriented standards. First, an organization has to analyze and assess the environmental problems or weaknesses of their products and services throughout the entire life cycle. This requires tools such as the ISO 14040 series on LCA. The identified environmental weakness or weak points need to be corrected to improve the products or services. This requires a design tool such as ISO/TR 14062, "Design for the Environment". Now the corporation launches the products or services in the marketplace by making environmental claims or affixing environmental labels to the products in accordance with the ISO 14020 series. This action should trigger the purchase of the products and services by consumers, which will, hopefully, lead to increased sales and market share. Figure 1.1 shows the relationship of product and organizational standards of ISO 14000 series.

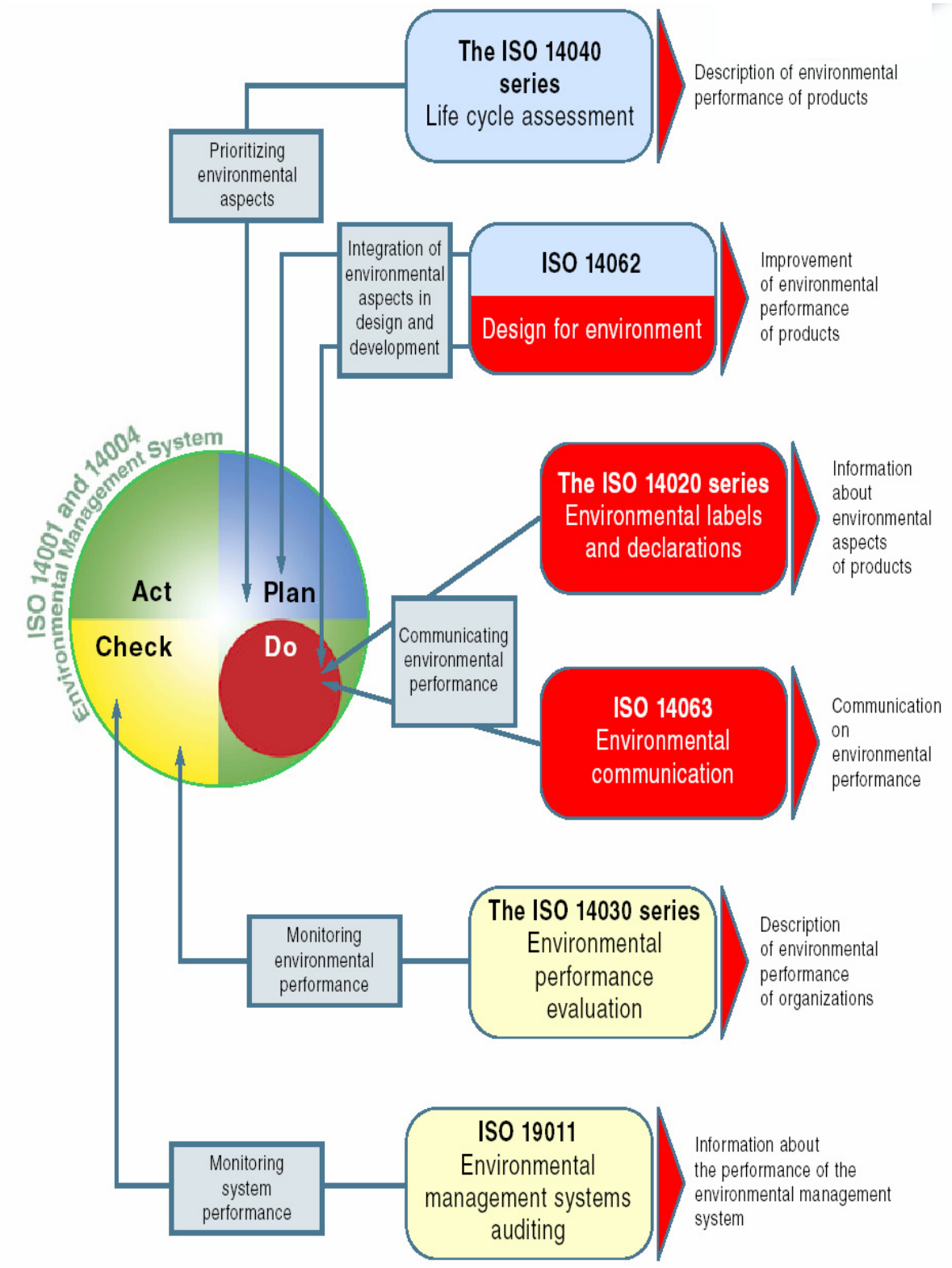

Figure1.1 Relationship among ISO 14000 series standards and their application (ISO, 2002)

Chapter 2 The ISO 14020 series standards

The ISO 14020 series standards, "Environmental Labels and Declaration", are international standards for communication tools that convey information on environmental aspects of a product (or service) to the market (ISO 14020, 1998). Three different types of environmental labels and declarations have been standardized as they were identified as being the type of labels most commonly in use. These are:

Type I for Ecolabelling programs (ISO 14024, 1999)

Type II self-declared environmental claims (ISO 14021, 1999)

Type III environmental product declarations (ISO/TR 14025, 2000)

All types of environmental labels and declarations have the same goal; i.e. encouraging the demand for and supply of those products that cause less stress on the environment, thereby stimulating the potential for market driven continuous environmental improvement (ISO 14020, 1998). Similarity, however, ends at this point. There are significant differences among the three different types of environmental labels and declaration.

Type I environmental labeling is in use today in many parts of the world. Ecolabelling programs that meet the requirements of Type I (ISO 14024) include the Blue Angel in Germany, Nordic White Swan in the Nordic countries, Ecomark in Japan, Environmental Mark in Korea and Environmental Choice in Canada, among others. This type of label signifies that products bearing the label are environmentally preferable to other products within the same product category. It is hoped that the label will encourage consumers to select this product because it is environmentally preferable to those without the label.

This type of environmental labeling, known as "ecolabeling programs", though voluntary in nature, can exert significant impact on the market if the environmental awareness of the consumer is high. These voluntary systems may facilitate the trade of environmentally preferable products. At the same time, they have the potential to create technical barriers to trade.

Type II environmental declarations use text and symbols emphasizing a particular environmental aspect of a product or service on the product or in product advertisements. The purpose of this type of label or advertisements is to increase market

share by promoting the environmental features of a product to the environmentally conscious consumers.

Environmental claims made by the company (self-declared environmental claim), however, are often difficult to verify. This can lead to marketplace confusion for the consumer. These environmental claims may be unsupported and thus counter-productive to helping consumers make informed environmental choices among products and services. For this reason, regulations regarding the use of environmental terms and symbols have been introduced in many parts of the world. Many of these regulations are now based on the international standard, ISO 14021. These regulations are not only applicable to domestic products but also to imported products. Hence these ISO 14021 based regulations have the potential of being used as trade facilitators as well as barriers.

The World Trade Organization (WTO) recognizes that environment related regulations and practices and environmental terms/symbols could be potential trade barriers. One of four TBT principles includes the international standardization of environmental standards to promote international trade and to maintain fair trade practice.

All of these reasons and trends provide background and justification for the standardization work by ISO in the field of environmental labeling. The following sections describe the contents of the "Environmental Labels and Declarations" (EL) standards, as well as all other major standardization activities within ISO/TC 207/SC3.

The subcommittee (SC) responsible for standardization of environmental labels and declarations under the TC207 is SC3. The organizational chart for SC3 and its assigned tasks are shown in Figure 2.1.

The SC3 coined new terms, "type I" and "type II" EL, to differentiate a third party operated certification scheme called "eco-labeling" from self-declared environmental claims. Type I EL represents third party verified eco-labeling programs and Type II an organizations self-declared environmental claims. When a new labeling system was brought into the SC3 for standardization, a new term, "type III" EL, was coined.

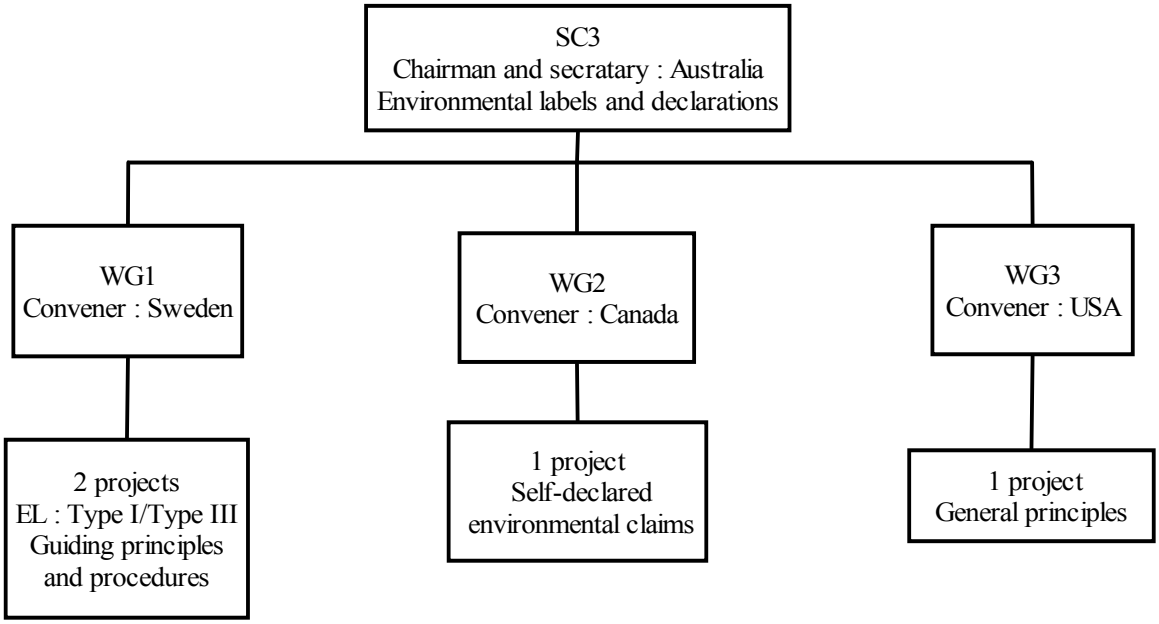

Figure 2.1 SC3 organizational chart with Working Groups (WG) and assigned tasks

Working Group 1 Tasks

Two separate tasks were assigned to this working group. One task was to standardize type I EL programs known as "eco-labeling". The main emphasis of this standardization process was to establish basic requirements and procedures for these programs such as how product categories are selected and how environmental criteria are identified. The other task was the standardization of the "type III" EL. The key feature of this type of label is to identify and report the environmental load of a product throughout its life cycle. Both programs may be similar if a third party operates them; however, the information on each label or declaration is completely different.

The first "Type I" EL program was the Blue Angel program in Germany. This program has been in operation since 1978 and became the initial world model for eco-labeling programs. Other programs in operation today include the White Swan in the Nordic countries, Environmental Choice in Canada, Ecomark in Japan, and Environmental Mark in Korea. At least 30 Type I EL programs are in operation in the world today, however, there are significant disparities among these programs. Some programs are well recognized in the market and have high consumer credibility, while others do not. For some programs it is difficult to get the certification label that creates a hurdle for manufacturers, while for others, it is too simple and the labels loose credibility.

Type I EL programs award their environmental label to products that meet a set of predetermined requirements (e.g. product environmental criteria, product function characteristics, etc.). The label thus identifies products that are determined to have less stress on the environment within a particular product category. A key point here is how the environmental criteria of a product are selected and how the environmental impacts of these criteria are determined. The standard on Type I EL (ISO 14024, 1999) states that products should meet environmental criteria which are based on life cycle considerations. This means that the product must demonstrate environmental superiority over competing products that serve the same function throughout its entire life cycle.

Life cycle "considerations" imply that environmental loads resulting from a product throughout its life cycle must be identified and quantified. Environmental loads are the criteria used in judging the comparative environmental impacts of a product. The ecolabelling program identifies key environmental criteria that are critical within a particular product category which serves the same function. Selection of environmental criteria must not lead to the transfer of impacts from one stage of a products life cycle to another, e.g., from manufacturing stage to use stage or from one medium to another, e.g., discharging pollutants into the land instead of water, without a net gain of environmental benefit.

The process of selection of environmental criteria for a product category may be illustrated by citing the example of a refrigerator. Assume that the life cycle assessment of a refrigerator showed that energy consumption in the use phase, chlorofluorocarbon (CFC) use as refrigerant in the manufacturing phase and plastic components recycling in the disposal phase are major sources of environmental loads. Then electricity consumption in the use phase, CFC leakage in the manufacturing phase and recyclability or the percentage of plastic components that are recycled in the disposal phase becomes the environmental criteria of the refrigerator product category. Specific values are assigned to each environmental criterion, which are used to determine which products receive the eco-label, taking care to only compare products or services which have similar functional units. The practitioner (operator of the ecolabeling program) is thus able to control the percentage of products in any category that are awarded the ecolabel. This ensures that the label continues to be a tool that enables consumers to select an environmentally preferable product.

The type I EL program is a pass-fail system; products meeting the specific values imposed by Type I criteria can obtain the label. However, due to the selectivity principle,

only 20 to 30% of products in any category are awarded labels. Products that cannot obtain the label, or choose not to apply, may have disadvantages in competing against products that do have the label in the same market.

An alternative to the type I program is the "Type III" environmental declaration. This may be run by a practitioner as a third party program, used as a business to business tool with second party oversight or operated on a self-declared basis. The type III label or declaration is based on preset categories of parameters that are determined from Life Cycle Assessment (LCA) results. Environmental loads and impacts accrued from the life cycle of a product are cataloged according to these preset categories of parameters. The type III environmental label or declaration presents the quantified information of the products environmental load throughout its entire life cycle.

Type III EL programnes are not a pass-fail systems. These programs or labels are generally regarded as more suitable for transactions involving raw materials, ancillary materials and components between businesses than for consumer products. This is a significant difference from type I EL programnes. Type III EL programs and declarations may also provide a viable tool for implementation of the green purchasing network (GPN) and for other business-to-business transactions.

Working Group 2 Tasks

An environmental claim is the information appearing on a product, it’s packaging, or in related literature or advertising material, which can be taken as saying something about its environmental aspects. It can take the form of text, symbols, or graphics.

A piece of advice or instructions to consumers of the product – for example, about proper care in its use or specialized disposal methods – is not regarded as a "claim". However, such advice is still important because consumers can base their actions based on these information. Detailed introduction of type II Environmental Declaration or ISO 14021 is in chapter 4.

Working Group 3 Tasks

This working group produced ISO 14020, a document that deals with the general principles that are to apply to all types of environmental labels and declarations. These principles shall be applied to the development and use of any new environmental labels and declarations. This means that Type I, Type II, Type III and any future environmental

labeling systems, whether standardized or not, should meet the principles of this standard.

There are nine general principles applicable to all environmental labeling (ISO 14020, 1998). These fundamental principles are that environmental labels and declarations:

shall be accurate, verifiable, relevant, and not misleading,

shall be based on scientific methodology,

shall not inhibit innovation, and

should consider the life cycle of the product (ISO 14024, 1999).

Other principles address the information used to develop the environmental claims, the process for developing labels, administrative requirements, and trade issues.

The principle concerning trade (principle 2) is one of the most important principles in this standard. It states that procedures and requirements for environmental labels and declarations shall not be prepared, adopted, or applied with a view to, or with the effect of, creating unnecessary obstacles to international trade. It further notes that the provisions and interpretations of the WTO should be taken into account (ISO 14020, 1988).

As shown in table 2.1, each type of environmental label and declaration has targeted different market segments (Lee and Park, 2001). While type I environmental labeling and type II self declared environmental claims aim at retail level consumers, target audiences for type III environmental declarations are industrial as well as retail level consumers. Furthermore, the requirement to use LCA is a unique feature of type III EL that distinguishes it from the other two types (ISO/TR 14025, 2000).

Table 2.1 Different types of environmental labels and declarations (Lee and Park, 2001)

Item	Type I	Type II	Type III
Generic Name	Eco Labeling	Self-declared Environmental Claim	Environmental Declaration
Target Audience	Retail Consumer	Retail Consumer	Industrial/Retail Consumer
Communication Method	Environmental Label	Text & Symbol	Environmental Profile Data sheet
Scope	Whole life cycle	Single aspect*	Whole life cycle
Criteria	Yes**	None	None
Use of LCA	No	No	Yes
Selectivity	Top 20~30%***	No	No
Practitioner	Third party	First party	Third/First party
Certification	Yes	Generally No	Yes/No
Governing body	Eco-Labeling Body	Consumer Bureau	Accreditation Body

* A specific aspect of a life cycle or a single environmental attribute

** Product environmental and function criteria

*** Top 20~30%" is not stipulated in Type I standard. Numerical definition is deliberately avoided in the discussion of SC3 and WG1.

Chapter 3 ISO 14020 and its relationship to ISO 14021, Type II EL

Introduction

All standards in the ISO 14020 series have the common title, “Environmental labels and declarations.” In this title, “labels” means the label that is affixed to the product or product packaging and “declarations” means any statement or claim that might be made about a product in advertising or informational literature in any media. This is to indicate that the standards are intended to cover all types of claims about the environmental attributes of a product, whether on the label or in other documentation.

The Type I EL is an award system based on an evaluation of a product against several criteria pre-selected for the product category. Type I programs are usually managed by a group called an "eco-labeling" body or a "practitioner". This body or practitioner is the 3rd party that provides authorization and oversight to any statement about a products environmental attribute on the label or in advertising.

On the other hand, in Type II and III EL schemes, the manufacturer or importer of a product voluntarily declares environmental aspects. In Type II and Type III environmental labeling and declarations, third party oversight is not a required element of the system, although a third party may be used at the discretion of those making the claim. A third party is seldom used for a claim relating to a single aspect of environmental consideration -Type II. However, if the report of scientific data (Type III) is being made to retail consumers, a third party is frequently used to ensure credibility of the data.

ISO 14020 has an additional subtitle, "General Principles", which means that this standard covers all three types of environmental labeling that have been standardized and any new type or system that evolves. In that sense, ISO 14020 is an umbrella standard that stipulates essential guiding principle as the basis for the development and use of Type I, II and III labels (see ISO 14020, Scope and its’ Note) and any future labeling systems or standards to be developed.

Wherever an EL standard has detailed specific requirements or specifications, these specific requirements have precedence over the general principles. (See ISO 14020 - Scope and Section 4.1). For example, ISO 14021 section 5.7 (h) stipulates the following requirement:

"(Type II claims) shall be true not only in relation to the final product but also shall take into consideration all relevant aspects of the product life cycle in order to identify the potential for one impact to be increased in the process of decreasing another".

This sentence is similar to the requirements of the general principle 1 of ISO 14020. Type II claims have to be consistent with the specific requirement of 5.7(h) as well as the general intent of Principle1 of ISO 14020.

Terms and definitions

Only the last part of the definition of "environmental label" and "environmental declaration" (ISO 14020, clause 2.1) requires interpretation. The use of the word “service” should be noted. The objective of the environmental labeling standards is not limited to “products” as physical entities but also includes “services” as intangible commodities, such as transportation, insurance, travel agencies, etc. It is also important to recognize that ISO 14021 (Type II) adopts “any goods or service” as the definition of "product" (ISO 14021, clause 3.1.11).

The definition in ISO 14020 2.1 has a Note, which describes forms of ELs in detail. Normally, the word "label" suggests a seal stuck on a product. However, as the note clearly shows, "environmental labels" are actually much more diverse. In a Type I EL scheme, symbols or seals are necessary, but symbols are optional in Type II labeling. Words or statements that promote a product as environmentally preferable, like advertisements, are the nitty-gritty of the program. Symbols and claims have been identified separately in the Type II standard.

The actual format of Type III labels is a data sheet describing the environmental performance of the product. Although it may have some graphic or symbol, this would only be as an eye-catcher to attract people’s attention.

Objective of environmental labels and declarations

To put a clause which describes an objective in this position in a standard is unusual. ISO standards in the 14000 series, other than the 14020 series, have no objective statements. The inclusion of the objective statement in the ISO 14020 series is the outcome of vigorous interventions from an NGO to ensure that improvement of the environment is clearly identified as a desired outcome of the use of standardized environment labels. For a long time the sub-committee argued over whether to identify

environmental improvement as a target or not. The final sentence was the result of a compromise reached by using expressions such as “stimulating the potential for market-driven continual environmental improvement” instead of “achieving the environmental improvement”. Opponents of use of "completing environmental improvement" through ELs had serious reservation that this might impose an obligation on enterprises to prove environmental improvement, which might cause controversy or even have legal implications.

In summary, this objective statement offers a good explanation of the mechanics of making environmental improvements through the use of EL programs. However, it is important to understand that the actual standards of the ISO 14020 series only imposed requirements to ensure accurate, reliable, and not misleading communication through ELs, they contain no requirements to establish measures that activate the demand-supply mechanism.

General principles

ISO 14020 is a small and simple standard with only an objective statement and nine general principles. Each principle has explanatory sentences entitled "specific considerations" which provide guidance on how to apply the principle. Although this document is intended to provide “general” principles covering all types of ELs, there are several principles that are clearly more applicable to Type I EL than to other types of labeling. The interpretation of each of the nine principles is presented here, however, the focus will be on how these principles relate to Type II ELs.

Principle 1

Environmental labels and declarations shall be accurate, verifiable, relevant and not misleading.

General Explanation

The keywords of this principle are "accurate", "verifiable", "relevant" and "not misleading", and the principle should be applied to all types of ELs. The necessity of this principle is clear for two reasons. The first is the need to achieve environmental improvement through the use of environmental labeling in the marketplace. If an EL conveys inaccurate information about the environmental aspects of a product and makes

false claims about the environment benefits of a product, environmental improvement cannot be achieved through use of the marketplace. Therefore, the accuracy and verifiability of an EL are essential components to achieving the objective.

The second reason is the effect of deceptiveness or misleading information on the consumers and/or purchasers. When an EL is not accurate, not relevant and/or misleading, it deceives consumers/purchasers and thus creates unfair trade by making it impossible for products to compete on a level playing field. This concern also should be addressed by national fair trade regulations or legislation which naturally leads to a close connection between fair trade laws and ELs.

Regarding the application of this principle to Type II EL, principle 1 of ISO 14020 is more specifically described in the requirements of clause 5.7 of the ISO 14021. Specific and appropriate guidance for applications of Principle 1 to self-declared environmental claims are described in relevant parts of the standard, e.g. qualifications and evaluation methodology. An important point of this principle is that the accuracy and verifiability of the claim should be realized throughout entire product life cycle, not only for a limited life cycle stage

Principle 2

Procedures and requirements for environmental labels and declarations shall not be prepared, adopted or applied with a view to, or with the effect of, creating unnecessary obstacles to international trade.

General Explanation

Principle 2 relates more to Type I than to Type II labels and declarations. The principle has a very compact explanation, but it is critical. This principle was developed because of one of the intrinsic characteristics of Type I, i.e. selectivity (ISO 14024, clause 5.5) and third party certification programs.

When a product is awarded a Type I EL through a rigorous evaluation of the product against several criteria by the third party ecolabeling body, the product has a strong position in the market. This is because the third party certified product is considered environmentally preferable to other products in the same product category. Therefore, it is critical that imported products, as well as domestic products, can be awarded a Type I

EL if they choose to apply. Foreign manufactures may make allegations of unfair trade barriers against an ecolabeling program if this is not allowed. Consequently this principle is critical in establishing criteria and evaluation methodologies in any EL program, but especially in Type I programs.

During the drafting of ISO 14020, the working group members recognized a lack of expertise on their part with regards to the trade issues. Thus, the working group finished the trade principle after creating sentences that only refer to consistency with the WTO agreements in clause 4.3.2 of the specific considerations which follow the principle statement.

For Type II ELs, this principle should be taken into account in developing the test and verification methodologies and the criteria, which are required in the verification of the Type II labels and declarations. There are no third parties involved to decide whether a Type II declaration is legitimate or not, and the claim is made by the first party (claimant) and the judgment is made by the second party (consumer/purchaser). Under these circumstances, the basis for the judgment is the evaluation and claim verification requirements (section 6 of ISO 14021) and the evaluation methodologies provided for each claim in section 7 of the same standard.

According to principle 8 (clause 4.9.2 of ISO 14020), these provisions ought to have been agreed between the two parties in the process of creating the label claim. When the criteria and methodologies to be used in the evaluation are different between countries, conflicts can occur in the international trade arena.

For example, in the case of the "…… free" claim (ISO 14021, clause 5.4), the criterion of "free" is the background concentration of the substance concerned. However, the background concentration of the substance may differ depending on the geographic area and technology and sensitivity of the equipment to detect the concentration may differ from country to country. Consequently Type II ELs also have to be operated with great sensitivity to international trade issues.

Principle 3

Environmental labels and declarations shall be based on scientific methodology that is sufficiently thorough and comprehensive to support the claim and that produces results that are accurate and reproducible.

General Explanation

This principle obviously shall be applied to all types of ELs. There are two important points in the specific considerations (ISO 14020, clause 4.4.2). Firstly, the methodology should be based on widely recognized disciplines of scientific or professional expertise. Secondly, the results of the evaluation must be reproducible. Scientific facts or theories that are accepted only by a limited number or groups of people and not yet publicly established, and evaluation based on results that have only been obtained once should not be adopted as the basis for any EL. Only widely accepted standards, i.e. international, national, or regional standard, and/or professional methods that have been recognized through a peer review process should be adopted for all ELs.

Principle 4

Information concerning the procedure, methodology, and any criteria used to support environmental labels and declarations shall be available and provided upon request to all interested parties.

General Explanation

This is a very important principle which can be applied to all types of ELs, to establish credibility and sound operation of the EL programs. All information regarding EL programs, except for confidential business information(CBI) and other legally restricted information such as intellectual property rights, should be disclosed to all stakeholders in as much detail as possible.

In the Type II standard, the issue is more specifically stated in the clause 6.5 of ISO 14021. According to this provision, the claimant shall not be allowed to make a claim when the information necessary for the verification of the claim cannot be disclosed because of confidentiality. This clause also contains more detailed specification on the information the claimant has to disclose when making a Type II claim.

Principle 5

The development of environmental labels and declarations shall take into consideration all relevant aspects of the life cycle of the product.

General Explanation

As stated in an earlier part of this chapter, environmental aspects to be taken into account in the evaluation of a product shall be expanded to include the entire life cycle of the product beyond the manufacturing stage. The boundary of the life cycle should cover environmental impacts from the very early stage of natural resource acquisition to the very end of the product in its disposal stage where the product returns to nature. The principle is known commonly as "from cradle to grave" and becomes the essential principle in all product-related environmental arenas, including all types of environmental labeling schemes.

An analytical tool called LCA is well developed now as the technical methodology to evaluate product environmental performance throughout its entire life cycle. LCA methodology and its application procedure are also standardized as the ISO 14040 series and sometimes LCA standards are referred to in the 14020 series. However, Type I and II standards do not require a complete evaluation with the LCA methodology.

Principle 6

Environmental labels and declarations shall not inhibit innovation which maintains or has the potential to improve environmental performance.

General Explanation

This principle mainly applies to Type I EL programs because these programs utilize specific criteria to award an EL to a product. When these criteria adopt some special design, structure, material, and/or characteristics of a product category, the capacity to create new products tend to shrink. Innovative design, structure, material, and so on become difficult to adopt in that product categories, not because their features are prohibited but because there is little chance of qualifying for the Type I EL label. Therefore, criteria in the Type I program shall be defined with product performance and environmental impacts in mind so that the freedom to introduce innovative measures to enhance product performance or reduce negative environmental impacts is not discouraged.

In some cases, for instances, the RAL-UZ 62 Copier certified by the Blue Angel Program, the criteria specifies the names of materials that are prohibited as ingredients

of the toner because they are potentially hazardous. This practice would seem to be contrary to principle 6 because material names are adopted instead of environmental aspects or product performance.

However, in this case, since the substances are known to be toxic, it is better that they are removed from the toner and the specific provision is intended to create environmental improvement through prohibition of these materials. This in turn promotes improvement by stimulating introduction of less hazardous materials through the enterprises technical effort, i.e., it tends to encourage innovation in an effort to replace the hazardous substance with environmentally benign ones. This mechanism works effectively in conjunction with specific characteristics of selectivity in Type I ELs.

Principle 7

> Any administrative requirement of information demands related to environmental labels and declarations shall be limited to those necessary to establish conformance with applicable criteria and standards of the labels and declarations.

General Explanation

The principle applies mainly to Type I and some Type III ELs, because these types may have a kind of public or half-public organization for certification (eco-labeling body in Type I) or verification (for peer review of LCA data in Type III). To get the involvement of a large majority of participants, including small and medium enterprises, in these programs, the time, energy, and cost associated with producing the information necessary for the use of ELs should be kept as low as possible. This principle is an essential element for the success of ELs, although indirect in nature.

Principle 8

> The process of developing environmental labels and declarations should include an open, participatory consultation with interested parties. Reasonable efforts should be made to achieve a consensus throughout the process.

General Explanation

Type I EL programs are operated by independent third parties called "eco-labeling

bodies" or "practitioners". The ecolabeling body establishes criteria and evaluation methodology to determine the awarding of an eco label to a product. Therefore, many stakeholders have interests about the criteria and the verification methodology, and the process to establish them. Getting agreement from stakeholders is an essential component for sound operation of ELs. This is why this principle appears here.

However, unanimous agreement, especially between unspecified and overwhelmingly diverse stakeholders, e.g., consumers scattered world wide, obviously cannot be achieved. Therefore, a rather reserved statement was adopted here: "Reasonable efforts should be made to achieve a consensus throughout the process". In this case, "consensus" uses the ISO definition "Consensus does not necessarily mean unanimity but general agreement without sustained objections" (ISO/IEC,1996).

Principle 9

> Information on the environmental aspects of products and services relevant to an environmental label or declaration shall be available to purchasers and potential purchasers from the party making the environmental label or declaration.

General Explanation

EL is a tool to communicate environmental aspects of a product or service between suppliers and consumers/purchasers in the marketplace, as described in the objective statement of this standard (section 3 of ISO 14020). All information about the development stage (principle 4 and 8) and implementation (principle 9) of ELs shall be open to all stakeholders. Responsibility to disclose the information is on the party making the environmental label or declaration, i.e. eco-labeling body for Type I, claimants for Type II, and the entity which operates and/or declares Type III. The information disclosure is indispensable to establishing the credibility of the EL, and is especially important for Type II EL, which involves no third party. Credibility is only maintained through reciprocal communication between claimant and consumers/ purchasers.

Chapter 4 Introduction to ISO 14021

In the introduction of ISO 14021 there is a paragraph that reads:

"Self-declared environmental claims may be made by manufacturers, importers, distributors, retailers or anyone else likely to benefit from such claims. Environmental claims made in regard to products may take the form of statements, symbols or graphics on product or package labels, or in product literature, technical bulletins, advertising, publicity, telemarketing, as well as digital or electronic media, such as the internet". (ISO 14021, 1999)

This paragraph well summarizes what a self-declared environmental claim is all about. It is a claim made by the claimant itself, not certified by an independent third party, and takes any possible form in any media for communication. In other words, there are numerous ways to make self-declared environmental claims. As a result, there is a greater potential for the claim be misused in the marketplace and create unfair market order. ISO 14021 is an international standard that provides guidance to claimants on how to make self-declared environmental claims in a manner that will maintain a level playing field in the marketplace.

As discussed earlier in this book, proliferation of environmental claims, particularly those that are non-verifiable, misleading and inaccurate, is a major threat to fair competition in the environmental marketing of products and services. Most current environmental claims have not considered environmental loads of a product or service throughout its entire life cycle. As a result, ISO 14021 was developed to provide a standard for self-declared environmental claim.

Self-declared environmental claims are environmental claims made without independent third-party certification. Anyone concerned with the product or service can make the claim. Environmental claims are statements, symbols or graphics that indicate the environmental aspects of a product or service, and can be made on product or packaging labels, product literature, technical bulletins, advertising, publicity or any communication media. Terms such as ‘recyclable’ and ‘biodegradable’ are examples of statements used in self-declared claims and the Mobius loop is an example of a symbol. The fundamental difference between self-declared environmental claims and Type I EL programs is that the former are made by the claimant while the latter by the third party.

Self-declared environmental claims should be accurate, verifiable, and not misleading to ensure fair competition in the market. Many nations have regulations or guidance regarding self-declared environmental claims and impose penalties for those violating the regulations. Since there are many different regulations, the objective of this standard is to provide harmonization and consistency in the use of self-declared environmental claims.

Twelve selected claims that represent terms commonly used in environmental claims are addressed in the standard for Type II EL (ISO 14021, 1999). They are: Recyclable; Recycled Content; Reduced Resource Use; Recovered Energy; Waste Reduction; Reduced Energy Consumption; Reduced Water Consumption; Extended Life Product; Reusable and Refillable; Designed for Disassembly; Compostable; and Degradable. Specifications for these claims and qualifications for their use are provided in ISO 14021.

In addition to the twelve selected claims, the standard provides general requirements for all self-declared environmental claims. A total of eighteen specific requirements are delineated in the section on "general requirements". A self-declared environmental claim shall be accurate and not misleading, be substantiated and verifiable, be relevant to that particular product, be specific as to the environmental aspect, be unlikely to result in misinterpretation, etc are examples of these specific requirements. There are also overarching requirements applicable to all self-declared environmental claims in ISO 14021. They include i) the principles set out in ISO 14020 shall apply, ii) vague or non-specific claims are not allowed, iii) claims of sustainability are not allowed.

A specific symbol selected in the standard is the Mobius Loop shown in Figure 4.1. It is a graphical symbol in the shape of three chasing arrows forming a triangle. The Mobius loop applies to the product or packaging and is used with claims of recyclable and recycled content (ISO 14021, 1999).

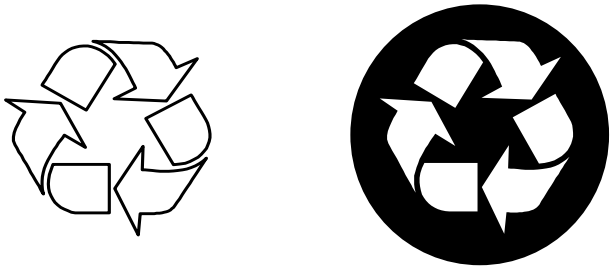

Figure 4.1 Examples of the Mobius loop

Expected benefits for consumers from self-declared environmental claims made in accordance with ISO 14021 may be that the environmental information they are given is accurate and helpful so that they can make informed decision regarding the environmental aspects of products and services. Businesses will find that following ISO 14021 will be in their best interests because ISO 14021 is an international standard that is acceptable for both international and domestic trade. The expected benefit for businesses that follow ISO 14021 is clear and straightforward guidance on how to make credible environmental claims for their products and services. (UK DOE, 1999)

Type II self-declared environmental claims made in advertisements of products and services are subject to the codes administered by national regulatory bodies, typically fair trade commissions. These bodies will take appropriate action based on guidance in ISO 14021 when investigating complaints about type II EL.

Advantage of the type II EL

There are several advantages to type II ELs. They include:

It is cheaper to make a claim because there is no need to conduct an LCA study,

It deals with a single issue based on life cycle consideration only,

It is easy to make a claim because it does not require sophisticated expert knowledge, and

There is no need to get prior agreement for the claim among all stakeholders as for a Type I EL, which usually takes more time and also requires intricate procedures to establish criteria for the product category.

Therefore, Type II claims meet the market needs more dynamically and strategically than type I EL. The type II EL could be a useful environmental marketing tool for developing economies for the reasons cited above. Of particular significance would be the application of type II EL to agricultural products. The use of type II EL would be a big advantage in competing against other economies in the world market, in particular, EU market. In addition, many SMEs will find that type II ELs provide an easy tool for them to make environmental claims of their products.

Effectiveness of the environmental advertising in the market

In the EU, environmental advertising is quite effective. Hence, it is a good marketing tool. The tool is reasonably effective in Japan and has average effectiveness in North America. In other markets, the impacts of environmental marketing are none to negligible.

Who prefers to what types of environmental labels and declarations?

1) Consumer organization

Prefers type I EL because it is a 3rd party certified program. However, SMEs often cannot afford access to type I EL programs because of costs. In addition, innovative products cannot access type I ELs because there is no product category in these programs into which an innovative new product can fit.

2) Industry

Prefers type II ELs because there is no need for outside scrutiny of the product or service. In fact, manufacturers push Type II EL as the environmental advertising tool of choice. As long as type II EL abides by the rules stipulated in ISO 14020 and 14021, the self-declared environmental declaration is an acceptable means of communicating environmental aspects of the products and services to the market. In short, the claim can be a great marketing tool for industry. In Japan, industry prefers a modified form of type II EL. It includes information similar to that required by a type III EL in the type II EL claim. This modified type II EL is called "type II plus" EL.

Weakness of the type II EL

Although type II EL is based on life cycle consideration, it only gives information on one aspect of a products' entire life cycle. In other words, type II EL does not provide entire life cycle information of a product so that the environmental impact information promoted in the self-declared claim may not accurately reflect the total environmental impact caused by the entire life cycle of the product or service.

Table 4.1 summarizes advantages, disadvantages and special feature of the three types of environmental labels and declarations. Focus in this table was given to the application of each environmental label and declaration to the market.

Table 4.1 Advantages, disadvantages and special features of type I, II and III EL

	Type I	Type II	Type III
Advantage	Easily identified Quick decision Credibility through 3rd party	Market oriented Flexible approach to market needs Tool for inter-business competition	Detailed data via common method Credibility via scientific quantitative data Decision by consumers /purchases (no pass-fail system)
Disadvantage	Only uses a symbol No detailed information No linking to company's unique effort	Relatively low credibility Need to face directly to consumers (no 3rd party) Claim is a single issue or limited	Complicated LCA analysis Insufficient back ground data Difficult to comprehend
Features in application and target group	Home use products /simple function product /low priced products/ Consumers	Products in general Consumers /Industrial purchasers	Products for industrial use /relatively complicate and high priced products /durable goods Industrial purchasers /consumers

Chapter 5 Interpretation of ISO 14021

1. Scope

General Explanation

This interpretation chapter is intended to provide guidance to users of ISO 14021 in the application of self-declared environmental claims. It will help the users understand the standard clause by clause by providing detailed interpretation and illustrating examples for the application of the clauses.

The advice and interpretation offered are neither authoritative nor binding. The interpretation and the illustrative examples are solely results of the work of the authors and do not reflect the views of APEC nor are endorsed by APEC. However, entities that seek to understand, comply, or ensure compliance with ISO 14021 will find these interpretations useful in developing their self-declared environmental claims.

This interpretation chapter is designed to assist APEC member economies in using ISO 14021 for their products and services when making environmental claims. Examples in this chapter have been extracted mainly from the work done by ISO/TC 207/SC3/WG2 interpretation task group.

Structure of the interpretation document

This interpretation chapter for self-declared environmental claims is structured systematically using a generic template. The template includes key sentences from the clauses of ISO 14021, a general explanation of the clause and illustrative examples. Because of the copyright issue, only a synopsis of the actual clause and clause number are quoted. The general explanation provides interpretation of the clause with relevant background information if necessary. Examples are intended to illustrate claims that are in conformance with ISO 14021. The examples, however, are not exhaustive and do not illustrate all possible appropriate and inappropriate environmental claims. When the authors judge that the clauses are self evident, neither the clause nor the general explanation or examples are given in this book.

ISO 14021 clause: 1, 2nd paragraph

This standard does not preclude, ….., legal requirement.

General Explanation

Legislative requirements and regulations for a self-declared environmental claim must be met prior to any requirements in ISO 14021. Each country has its own legal code and/or guide for the use of environmental claims on products and services. Most of the time, however, those codes/guides are not much different from the principles and requirements stipulated in ISO 14021, although major differences may exist. Thus, it is imperative to ensure that any self-declared environmental claim is checked not only against the requirements in ISO 14021 but also against the code and guide of a country where the claim is to be made. Other legal requirements related to product safety, quality and environmental aspects must also be met.

Examples

Typical examples of legal codes and/or guides related to environmental claims include:

- FTC Act to Environmental advertising and marketing practices, and Guide for the use of Environmental Marketing Claims (green guides): USA, Federal Trade Commission, Bureau of Consumer protection

- Competition Act, and Consumer Packaging and Labeling Act, and CSA guide on environmental marketing claims (CAN/CSA-ISO 14020-00 STD): Canada, Competition Bureau.

- Competition Act, and Guide for environmental marketing claims: Korea, Fair Trade Commission

- Consumer Products: Green claims code: UK Department for Environment, Food & Rural Affairs

2. Normative references

(Self-evident)

3. Terms and definitions

The definition of “3.1.7 functional unit” is difficult to understand for those who have no knowledge of LCA. Please see the general explanation under ISO 14021 clause: 6.3.2 in this book for an explanation and example of the functional unit. Others are self-evident.

4. Objectives of self-declared environmental claims

ISO 14021 clause: 4

(a) Accurate, verifiable, and not misleading;
(b) Increased potential for market forces to stimulate environmental improvements in production, process and products;
(c) Prevention or minimization of unwarranted claims;
(d) Reduction in marketplace confusion;
(e) Facilitation of international trade;
(f) Increased opportunity for making more informed choices.

General Explanation

The objective of ISO 14021 is well summarized in these six bullet points. Since there are too many unwarranted environmental claims being made in the marketplace throughout the world, consumers are inevitably confused and the market's disrupted because of unfair competition arising from these unwarranted claims. Therefore, the use of this standard is expected to assist the claimants to achieve a level playing field by providing harmonized practices in making self-declared environmental claims.

Examples

None

5. Requirements applying to all self-declared environmental claims

5.1 General

General Explanation

Self-declared environmental claims are statements, symbols, graphics, or any combination of these that indicates the environmental aspects of a product or service to the market and consumers. The claims made can be one or more of the twelve selected claims defined in ISO 14021 or some completely different claim, not identified among those twelve. If the claim to be used is not listed among the twelve identified in ISO 14021, the general requirements stipulated in section 5 of ISO 14021 must still be met. Below is the detailed discussion of the general requirements.

Examples

None

5.2 Relationship to ISO 14020

General Explanation

As discussed in chapter 3, ISO 14020 is an overarching standard affecting all types of environmental labels and declarations. Thus, the nine principles in ISO 14020 together with the specific considerations under each principle shall apply to self-declared environmental claims. ISO 14021 was built on foundations laid by the nine principles in ISO 14020; hence, following ISO 14021 should not cause any conflict with ISO 14020.

One of the nine principles in ISO 14020, the trade issue related to environmental labels and declarations, has not been explicitly addressed in ISO 14021. Thus, the trade principle in ISO 14020 must be taken into account when making self-declared environmental claims.

Examples

None

5.3 Vague and non-specific Claims

General Explanation

The use of vague and non-specific claims or those that make broad implications such as “environmentally safe,” “environmentally friendly”, "green", "natures’ friend", “ozone friendly”, etc, shall not be used because they are misleading. The intention of these claims is to represent that a product or service offers general environmental benefits without any qualifications. The truth is however, that no product or service can offer such an unqualified environmental benefit. No matter how small it may be, all products and services exert adverse impacts on the environment throughout their life cycle. Thus, vague and non-specific claims can neither be verifiable nor accurate. In short, these kinds of claims are in direct violation of the principles of ISO 14020 and the specific requirements given in ISO 14021.

It is worth defining what vagueness constitutes. Vagueness may be defined from two different perspectives, environmental aspects and degree of improvement. What creates a vague claim is the lack of specificity in making claims based on these two perspectives. Table 5.1 lists examples of vague claims and reasons for their being considered vague.

Table 5.1 Vague claims: examples and reasons for being a vague claim

Perspective	Vague Claim Example	Reason
Environmental aspects	Earth, Nature, Environment, Human, Ecosystem,	Content of the environmental aspect is too complex and diverse to be specified
Degree of improvement	Green, Blue, Clean, Good, Kind, Friendly, Ecology, Symbiotic	To specify the degree of improvement is difficult because content of the degree of improvement is too subjective, abstractive as well as non-quantitative.
Problematic environmental aspects and degree of improvements	Sustainability, Non-polluting, Zero waste, Zero emission, Best, Healthy	Possibility of different evaluation depends on different viewpoints. Thus, there are no agreements on these topics.

Examples

A manufacturer claims that their new packaging is "now environmentally friendlier" but offers no explanation. In fact, the amount of packaging is reduced 15% compared to former packaging. The claim is non-specific, thus it is an inappropriate claim. An appropriate claim would be: "The amount of material in the new packaging is reduced by 15% compared to former packaging."

5.4 Claims of "…Free"

General Explanation

Claims of "…free" must meet the requirements given in clause 5.7 (k) and 5.7 (p) in addition to meeting the fundamental requirements for making this claim based on an absence of ingredients. The absence of ingredients on which the claim is made means literally not present in the product or packaging, or only present in an acknowledged trace contaminant or background level.

In addition, "free something claims" shall not be made when they are based on the absence of ingredients which have never been associated with the product category.

Examples

Example 1:

Hair spray contains Volatile Organic Compounds (VOC), but never contained CFC. This is a preexisting but previously undisclosed aspect of the hair spray product.

If claim is made that "this hair spray is CFC-free," then this claim is not appropriate because it might lead consumers to believe that the claim is based on a recent product or process modification to remove CFCs.

Example 2:

Detergent as a product category never contains heavy metals. In other words, heavy metals have never been associated with the detergent product category. If a claim is made that "this detergent is heavy metals free," then this claim is inappropriate and it is a misleading claim.

5.5 Claims of Sustainability

General Explanation

Presently, sustainability is a term that has many implications; thus, it imparts different interpretations to different stakeholders. Because of the inherent ambiguity associated with this term, any claim related to sustainability shall not be made.

Examples

Example1:

A claim such as “This paper product is made from sustainably managed forest” is an inappropriate claim.

Example 2:

Another example of an inappropriate claim would be “this product promotes sustainable development.”

5.6 Use of Explanatory Statements

General Explanation

One of the salient features of the self-declared environmental claim is its relative simplicity in making claim. In particular, the type II environmental claim is based on a single aspect of an entire life cycle of a product or service. Thus, the stand-alone self-declared environmental claim could easily become too broad or un-specific. This will result in violation of the basic principles of ISO 14020. Therefore, it is much safer to add qualifying statement along with the main environmental claim. This qualifying statement will provide necessary information to the consumer and the market regarding the limitation of the claim being made.

5.7 Specific requirements

A total of eighteen specific requirements are delineated in ISO 14021. A self-declared environmental claims shall be accurate and not misleading, be substantiated and verified, be relevant to that particular product, be specific as to the environmental aspect, be

unlikely to result in misinterpretation, etc are examples of the specific requirements. One of the overarching requirements is that the principles set out in ISO 14020 shall also apply to all self-declared environmental claims. No self-declared environmental claims shall violate these eighteen specific requirements. Each of the eighteen specific requirements is discussed below.

ISO 14021 clause: 5.7 a)

Be accurate and not misleading.

General Explanation

Any claim being made must ensure that it is accurate and at the same time does not mislead the consumer. To be accurate the claimant must have all the data and information necessary to support the claim. The data must be collected based on principles laid out in ISO 14020. There are cases where a claim can mislead the consumer even if it is accurate. Thus, the claim must be reasonable enough not to mislead or deceive the consumer.

Examples

Packaging contains 3% recycled paper content. The previous packaging contained only 2%. A claim saying that “new packaging contains 50 % more recycled paper content compared to previous packaging” is a misleading claim, although the claim is accurate. (See clause 6.3.3)

ISO 14021 clause: 5.7 b)

Be substantiated and verified.

General Explanation

Any self-declared environmental claim must be based on adequate scientific evidence to support the claim. "Scientific evidence" means that the evidence must be reproducible and repeatable and be gathered and assessed based on recognized methodologies as specified in principle 3 of ISO 14020. Section 6 of ISO 14021 specifically addresses the issues of evaluation and verification of self-declared environmental claims. In particular, clause 6.4 provides further clarification of the methodology requirement defined in

principle 3 of ISO 14020. References <12> through <66> in the bibliography section of ISO 14021 are typical examples of recognized methods.

Examples

None

ISO 14021 clause: 5.7 c)

Be relevant to that particular product….

General Explanation

Any self-declared environmental claim must have relevance to the attributes of the product or service to which it is applied. One of the major problems of the self-declared environmental claims is the lack of specificity on what exactly the claim refers to. For instance, there are many claims implying broad environmental benefits, although the claim is actually based on only one specific aspect of a product life cycle or on a single attribute of a product. Thus, it is important to reveal the specific aspect of the products' attribute when making claims. Under no circumstances shall loosely related or non-specific claims be made.

Products usually carry an additional environmental load beyond that of the production stage. These additional loads came from life cycle stages other than the production stage, which may have a certified EMS. Therefore, a claim of EMS certified is not relevant as a product-related claim.

Examples

A manufacturer has received ISO 14000 certification. The manufacturer shall not use the fact that it has been awarded the ISO 14000 certificate in making self-declared environmental claim. This is because ISO 14000 Environmental Management System deals with the organization, not the product it manufactures.

ISO 14021 clause: 5.7 d)

Be presented in a manner that clearly indicates whether the claim applies to the complete product, or only to a product component, or packaging, …..

General Explanation

One of the major problems arising from the non-specificity of claims is whether the claim refers to the product, the package or the function provided by the product. Any self-declared environmental claim should, therefore, clearly indicate the target it refers to. This type of problem can occur when making a claim on a product with packaging. When a product that is under consideration for a self-declared environmental claim contains minor parts with minor impacts on the environment, the claim does not have to specify the target because the parts are considered insignificant.

Examples

Example 1:

A recyclable claim is made on the packaging of a roll of plastic wrap without any explanatory statement. For instance, “This product is recyclable.” Unless both plastic wrap and packaging are recyclable, the claim is misleading. This is because most consumers presume both product and packaging are recyclable. In fact, only the packaging is recyclable in this case.

It is appropriate to make such a claim if one specifies which part of the product is recyclable by using an explanatory statement next to the recyclable claim. For instance, “The packaging of this plastic wrap is recyclable” is an appropriate claim because it qualifies the recyclable part of the product.

Example 2:

Aluminum foil with a claim of “10% recycled content” without specifying whether the target is the packaging or the aluminum foil itself (product) is misleading when, in fact, only the packaging contains 10% recycled content. This is because the average consumer will assume that both aluminum foil product and packaging contain 10% recycled content. However, if the claim is qualified to read “10% recycled content in packaging,” the claim is appropriate.

ISO 14021 clause: 5.7 e)

Be specific as to the environmental aspect or environmental improvement which is claimed.

General Explanation

This requirement has been discussed in detail under clause 5.3, vague and non-specific claims. The same argument raised in clause 5.3 applies here. That is, a self-declared environmental claim must clearly indicate what kind of environmental improvement has been created in the product or service for which a claim is made. In short, be specific as to the environmental improvement or environmental aspect where the improvement occurs.

Examples

New packaging uses 20% less material compared to that used previously. An appropriate claim would be “new packaging uses 20% less material compared to the previous packaging.” A claim such as “less packaging” is not a specific claim, as it does not identify what the packaging is being compared with when claiming "less".

ISO 14021 clause: 5.7 f)

Not be restated using different terminology to imply multiple benefits for a single environmental change.

General Explanation

In principle, self-declared environmental claims are designed to make claims for environmental benefit(s) or improvement resulting from a change in a single environmental aspect of a product or service. It is plausible to consider one benefit may lead to another in a serial manner in a cause-effect chain. However, this is not the direct result of the environmental improvement arising from a single change. One should make a claim only for the benefit(s) arising from a single environmental change. Do not claim multiple benefits from the same cause-effect chain.

Examples

Washing time of a newly developed washer is reduced by half compared to previous model. As a result, water consumption is reduced by half when compared to the previous model. In this case, an appropriate claim would be: "The new washer is water saving and energy saving compared to the previous washer." However, if an additional claim is made such as "The new washer contributes to a reduction to global warming because of reduction in energy consumption" then this claim is in violation of this specific requirement.

ISO 14021 clause: 5.7 g)

Be unlikely to result in misinterpretation.

General Explanation

It is not easy to ensure that claims made are interpreted properly by the consumer in the manner intended by the claimant. However, every effort must be given not to mislead the consumer. This may be achieved by only making claims based on the specific requirements stipulated in clause 5.7.

Examples

None

ISO 14021 clause: 5.7 h)

Be true not only in relation to the final product, but also consider all relevant aspects of the product life cycle …. (life cycle consideration)

General Explanation

This requirement addresses the issue of life cycle consideration for self-declared environmental claim. Self-declared claims focus on a single aspect of the life cycle of a product or service. However, every effort must be given to ensure that the claimed environmental benefit or improvement does not result in transfer of environmental burden from one life cycle stage to another. This can be checked by performing LCA. But the use of LCA defeats the purpose of self-declared environmental claims. Thus, a

qualitative check, such as a life cycle consideration using a life cycle matrix can be used for this purpose. A sample tool for a qualitative check of the environmental assessment of a product or service is shown in Figure 5.1. The chosen sample is a life cycle consideration matrix.

The claimant fills in each cell of the matrix in Figure 5.1 by analyzing the entire life cycle of a product or service under consideration. Relevant environmental data of the product or service, as well as environmental expertise are required to complete the life cycle consideration matrix. Based on the qualitative check of each cell in the matrix, one can find which life cycle stage and which environmental category are significant sources of environmental impact.

Environmental Categories	Life cycle stage					Total
	Raw material Acquisition	Manufac-turing	Distribution	Use	End of life	
Global warming		+	+	+		3
Resource depletion		++	++			4
Ozone depletion		+				1
Acidification		+	+		+	3
Eutrophication		+	+		+	3
Emissions to air	+	++	++			5
Emissions to water	+	++				3
Solid wastes	+	++				3
Total	3	12	7	1	2	25

Note: +++: very significant, ++: significant, +: somewhat significant, Blank: not significant or not related.

Figure 5.1 Sample life cycle consideration matrix

Examples

Products' weight and volume have been reduced to save materials as well as to reduce the use of transport energy during distribution. However, the change results in increased use of toxic chemicals in the manufacturing process. Yes, the final product is small and light, which enables one to make the claim that the product has achieved "reduced resource use." However, the environmental impact from the increased use of toxic chemicals must be checked against the environmental benefits accrued from the reduced resource use. If the results are not clear, no claims should be made.

ISO 14021 clause: 5.7 i)

Be presented in a manner which does not imply that the product is endorsed or certified by an independent third party organization when it is not.

General Explanation

Type II EL does not require the use of any third party to certify the claim. If a company pretends a claim is certified or verified by a third party in order to inspire the trust of consumers, notwithstanding no such party exists, they are in violation of the requirement in clause 5.7 i). If the claimant has a third party verifier or certifier, it is acceptable to make a claim with the reference to the third party. Even if a third party is used, responsibility for the verification of the claim remains with the claimant, not the third party.

The requirement in this clause accepts the possibility of the use of an independent third party for Type II self-declared claims, and provides an opportunity for the development of different types of environmental declaration, such as Type 2.5, which is discussed in chapter 6 as example from Japan. As a minimum, it is important to ensure that the evaluation method and criteria used for the verification of the self-declared environmental claim is chosen by the claimant, not by the independent third party. This is because the responsibility for ensuring the credibility of the claim must remain in the claimants' hands. Considering the wide variety of environmental characteristics and the different stakeholders that might be involved in preparing verification methods and criteria and the possibility of using third party verification, various derivatives from type I and type II are expected in the marketplace.

There are many organizations in the world dedicated to various different causes, including environmental conservation. Often times these non-profit organizations require funding from corporate donors. When a company donates fund to the cause of these organizations or sponsors their activities, the company may be recognized by these organizations with a "seal" that can be displayed on their products. However, this does not mean that these organizations endorse the activities or products of the company. Under no circumstances, is it permissible to use the organizations' symbol, logo or text indicating or implying endorsement by the organization of the environmental performance or benefits of products or services of that company.

Examples

An appropriate claim would be "1% of revenue generated by this product goes to support the NGO (Non Governmental Organization)" printed close to the logo. However, affixing the logo of NGO or any other NGO without this qualification is inappropriate.

ISO 14021 clause: 5.7 j)

Not, either directly or by implication, suggests an environmental improvement which does not exist, nor shall it exaggerate the environmental aspect of the product to which the claim relates.

General Explanation

A self-declared environmental claim shall not be presented in a manner that overstates or exaggerates an environmental improvement or benefit, when in fact, the improvement or benefit was negligible. Any claim, whether explicit or implicit, violating this requirement shall be avoided.

Examples

None

ISO 14021 clause: 5.7 k)

not be made if, despite the claim being literally true, it is likely to be misinterpreted by purchasers or is misleading through the omission of relevant facts.

General Explanation

A self-declared environmental claim is prone to misinterpretation by the consumer because of its simplicity. Typically a claim is communicated to the consumer in the form of a short phrase, symbol, or a combination of both which comes on the product or packaging. Because of its brevity and the strong message desired by the claimant, adequate supporting statements may not be there. The company will want to make a claim based on fact, although the fact alone may lead to misinterpretation by the consumer.

Examples

None

ISO 14021 clause: 5.7 l)

Only relate to an environmental aspect that either exists or is likely to be realized during the life of the product.

General Explanation

Any self-declared environmental claim must have relevance to the conditions the claim refers to. In other words, claimed environmental benefit must be realized during the life of the product (e.g., disassembly of products, recycling or reuse of products, savings in energy and water, etc). Although a qualifying statement accompanies the claim, if the qualifier does not lead to the realization of the claimed benefit, the claim is not appropriate. This requirement is especially important for claims made in the use and disposal stages, because environmental improvement claimed may not be realized while the product is still in the market.

Examples

A claim that a new furnace is energy saving is in violation of this requirement, when in fact the savings will only occur if the consumer also installs a sophisticated and expensive thermostat system that most residences do not have.

ISO 14021 clause: 5.7 m)

Be presented in a manner that clearly indicates that the environmental claim and explanatory statement should be read together…

General Explanation

When an explanatory statement or qualifying statement accompanies the main claim, the statement must be adjacent to the main claim with comparable font size, font color and background color, if any. This is to avoid any perceived deception by the claimant if the explanatory statement is located away from the main claim or appears to be hidden due to the use of an unreasonably small size font or obscure color. The underlying spirit of this requirement is to clearly present the explanatory statement together with the main claim to the consumer.

Examples

None

ISO 14021 clause: 5.7 n)

If a comparative assertion of environmental superiority or improvement is made, be specific and make clear the basis for the comparison. …. be relevant in terms of how recently any improvement was made.

General Explanation:

One of the major applications of self-declared environmental claim is to assert that a product is superior to the competitors' product or a manufacturer previous product. This type of comparison is termed "comparative assertion" and is a major source of legal challenges by competitors. Extreme care must be taken before making comparative assertion.

It is often easier to compare the environmental improvement or benefit of a product against a manufacturers own previous product. Special care must be given not to claim improvements made a long time ago. In general, one year or less is considered a recent improvement. Any improvement made over one year ago or longer needs careful consideration before being used to make a comparative assertion.

Because there is a high likelihood of being challenged by competitors and subsequently being investigated by the authorities, supporting information for the claim must be well prepared and this information shall be available upon request. ISO 14021 covers this topic in detail because of its wider application. Clause 6.3 of ISO 14021 deals with comparative claims and their verification methodologies.

Examples

None

ISO 14021 clause: 5.7 o)

> If based on a pre-existing but previously undisclosed aspect, be presented in a manner that does not lead purchasers, …. to believe that the claim is based on a recent … modification.

General Explanation

Recently, progress made in environmental science in the field such as global warming or ozone layer depletion leads to identification of pollutants affecting adversely on the environment. In response to these findings, many companies tried to abate or reduce these pollutants from their products and production processes. When they are successful, they naturally consider making claims based on the progress they made. Sometimes, however, companies want to take advantage of these findings by making claims of their products based on pre-existing conditions, even if there were no recent product or process modifications to reduce or eliminate pollutants from their products or processes. This type of practice is in violation of this specific requirement.

Examples

Example 1:

Hair spray contains VOC, but never contained CFC; that is a preexisting but previously undisclosed aspect. If a claim is made such as “this hair spray is CFC-free” is not acceptable because it might lead consumers to believe the claim is based on a recent product or process modification.

Example 2:

It is an appropriate claim such as “Since 1990, we have been using 50% recycled paper to make this box.” However, it is an inappropriate claim if it says “New package! This box contains at least 50% recycled paper.” Again, this claim would mislead consumers to believe that the claim is based on recent modification of the packaging.

ISO 14021 clause: 5.7 p)

Not be made where they are based on the absence of ingredients or features which have never been associated with the product category.

General Explanation

This clause is different from clause 5.7(o) because it deals with ingredients and features, not pre-existing or previously undisclosed features of a product. Simply put it, do not make claims based on the absence of ingredients or features where such ingredients or features have never been part of the product category. Again, the motive behind the temptation to make this type of claim is the desire of the claimant to take advantage of the new findings on toxic chemicals or pollutants affecting adversely on the environment. By claiming that their products do not use or contain those pollutants, they could be viewed by the consumers as environmentally conscious.

Examples

Heavy metals have never been associated with the detergent category. If a claim is made as “this detergent is heavy metals free,” it is an inappropriate claim that will mislead consumer.

ISO 14021 clause: 5.7 (q)

Be reassessed and updated as necessary to reflect changes in technology, competitive products or other circumstances that could alter the accuracy of the claim.

General Explanation

Advances in science and technology, in particular measurement techniques, require claims be reviewed, and if necessary, be revised or updated. This is of particular

relevance when the claim is a comparative one. Inherently, comparison involves information on other products either "in-house" or competitors. Progress made in science, technology, or techniques may have been applied to the competitors product. Without reflecting these changes, the old comparative claim may no longer be valid even if it was previously proven accurate.

In general, technological innovation or advances in science lead to changes in product and production processes. Manufacturers make claims based on improvements created by innovation. This is a routine practice for a business sector where technology is itself a product, such as information technology and the electronics industry. Obsolete claims should be renewed or abolished following review of the claim. There is no specific stipulation defining obsoleteness in ISO 14021 which could create problem in the future with self-declared environmental claims.

Examples

None

ISO 14021 clause: 5.7 r)

Be relevant to the area where the corresponding environmental impact occurs.

General Explanation

In today's global market, products manufactured in one country are often used and disposed of in another country. The life cycle of a product often spans the entire globe, therefore environmental impacts of a product throughout its entire life cycle can be distributed throughout the world.

A product manufactured in country A using process X may realize certain environmental benefits, then this product is exported to country B. In accordance with the requirements in this clause, the environmental benefits realized in country A cannot be the basis for claim in country B. However, the same product manufactured in country B using the same process X is allowed to make a claim based on the same benefit realized because the benefits occur in country B where the product is manufactured and sold. The situation where the same product is treated differently depending on the status of domestic or imported product could cause technical barriers to trade. This is the reason why there is a note accompanying this clause which allows manufacturers to make

process-related claims as long as the reduction in environmental impacts occurs in the area where the manufacturing process is located.

This clause specifically addresses the impacts caused by a product in its entire life cycle when the product moves from one country to another. The critical point of this clause is that when making a claim with regard to a specific life cycle stage of a product, the claim must be relevant to the geographical area where the specific life cycle stage exists. For instance, manufacturing process-related claims must be relevant to the environmental conditions of the geographical area where the manufacturing plant is located.

Examples

Example 1:

Let say that 60 metric tons of water is required to produce one ton of paint in a typical paint manufacturing process. Suppose that it requires 30 metric tons of water per ton of paint produced in Korea. As water is a scarce resource in Korea, a 50% reduction is a significant environmental improvement in Korea. If the product is sold in Brazil, where water is abundant, the reduced water use claim is still relevant because it is relevant in the geographic area where the product is made. But, how effective will this claim be in the Brazilian market? This is a point to consider when making a claim.

Example 2:

An exporter makes a claim that a product is “recyclable”, using a Mobius loop symbol on his exported product. However, the manufacturer, importer and/or the country where the product is sold do not yet have the recycling facilities necessary to process the product back into useful material or product. The claim is in violation of this requirement, because the environmental impact of the recyclable claim does not occur in the country where the product is sold and discarded; thus, the claim is not relevant to the area where the corresponding environmental impact occurs.

5.8 Use of symbols to make environmental claims

The literal meaning of a "symbol" is defined in the dictionary as something "that represents something else by association, or resemblance, especially a material object

representing something invisible". Clearly, the use of a symbol aims at enhancing the effectiveness of an environmental claim. People understand the meaning or intention of the claim better when they see a symbol with the claim in text. Successful symbols should convey the meaning or intention of the claim. Simple and easy to understand symbols are key to the success of their use in the claim. The use of a symbol is optional in ISO 14021. However, when a symbol is used, it should not overshadow the text claim, and shall meet all the general requirements applied to self-declared environmental claims.

ISO 14021 clause: 5.8.3

Symbols used for one type of environmental claim should be easily distinguishable from other symbols……

General Explanation

There are many different symbols in use today. For instance, there currently exists in most marketplaces:

The "Green Point" symbol (representing the fact that the company has made a contribution to an environmental awareness program in Europe),

Material identification symbols to identify various types of materials so that they can be sorted for recycling programs,

Marks related to certification of product safety or quality, etc.

Because of these situations, one symbol per claim is stipulated. Furthermore, this symbol must clearly and uniquely represent the specific claim.

ISO 14021 clause: 5.8.4

A symbol expressing implementation of an environmental management system shall not be used in such a way that it could be misunderstood ……..

General Explanation

This clause is related to the use of EMS certification of an organization that manufactures or markets product. Most EMS certification bodies have their own logos or symbols. When they award ISO 14001 certification to an organization, a certificate is

issued which bears the logo or symbol. However, the ISO 14001 certificate only certifies that an environmental management system is in place in the organization, it does not certify the products the organization manufactures or markets. Therefore, the use of ISO 14001 certificate symbol with a self-declared environmental claim is prohibited. Simultaneous use of both the certification logo and the claim could mislead consumers into believing that the product environmental claim is recognized by an independent certification body.

Examples

Example 1:

The use of the ISO 14001 certification logo next to a claim is not acceptable. Furthermore, claims such as "we care about product in the environment and have been certified to 14001" is also not in compliance with ISO 14021.

Example 2:

A claim such as "This product is manufactured in a factory which has ISO 14001 certified environmental management system. Thus, the product is also good for the environment" is false and misleading.

ISO 14021 clause: 5.8.5

Natural objects shall only be used if there is a direct and verifiable link …….

General Explanation

This clause is similar to clause 5.3, which deals with vague or non-specific claims. Clause 5.3 prohibits the use of vague or non-specific or claims that broadly imply that a product is environmentally benign or beneficial. When this clause is applied to symbols, it prohibits the use of natural objects because they have previously been used to impart the general impression that the product or service is environmentally benign or beneficial. Just as vague or non-specific claims are prohibited, so are symbols, such as some form of natural object. Again, symbol must be specific and clearly represent the text of the claim.

Examples

The following symbols are examples of the modified natural objects that shall not be used in self-declared environmental claims.

5.9 Other information or claims

ISO 14021 clause: 5.9.1

Words, numbers or symbols used in addition to environmental symbols such as material identification, disposal instructions, or hazard warnings….

General Explanation

There are many different types of information on a product or service which is intended as communication to consumers. Environmental claims are just one such piece of consumers information. Information on how to recycle, disassemble, and discard waste product, material identification codes and the names of materials, information on any toxic or hazardous substances contained in the product are legitimate pieces of environmental information. This information should be communicated to the consumers to encourage proper use and disposal of the product.

5.10 **Specific symbols (The Mobius loop)**

It is up to the claimant to decide what type of symbol to use for a claim in text. The purpose of using a symbol is to enhance the consumers' understanding of the claim because text alone may not be sufficient to convey the claimants' intention. However,

only one symbol, the Mobius loop, has been recognized widely in the marketplace to date. The Mobius loop has been used extensively to indicate a product feature that is related to the recyclability and recycled content claims. Because of the widespread use and recognition of the Mobius loop, only this symbol has been accorded specific requirements for use in ISO 14021. Detailed instruction as to the use of the Mobius loop in conjunction with selected claims such as recyclable and recycled content is discussed in clauses 7.7 and 7.8. Examples of the Mobius loop symbol used for recyclable and recycled content claims are shown in Figure 5.2.

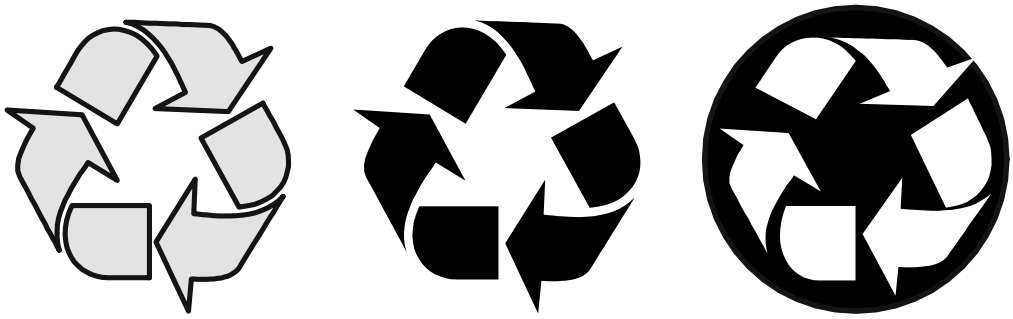

Figure 5.2 The Mobius symbols representing recyclability and recycled content of a product

In ISO 14021, the explanation that covers the figure says “examples” of the Mobius loop, and the configuration of the loop with a quantitative definition is not given anywhere in the standard. There is a normative reference ISO 7000 but this standard also does not have the precise shape of the Mobius loop with quantitative definition. In addition, ISO does not have a prototype of the figure for printing. Accordingly, the figures in the standard are not precisely defined and claimants should create their own figures of the Mobius loop at the time of making the environmental declaration, if they want to use the symbol. Deviations from the Mobius loop shown in Figure 5.1 may emerge and acceptable forms of the Mobius loop may be determined later by the market.

ISO 14021 clause: 5.10.2.2

The Mobius symbol accompanied by an explanatory statement….

General Explanation

This clause is similar to spirit of clause 5.7 (d) "Specific Requirements". Clause 5.7 (d)

requires that a claim be presented in a way that clearly indicates whether it applies to the product or packaging or both. By the same token, the Mobius loop should also be presented in a manner that clearly indicates whether the symbol applies to the product or packaging or both. Unless the symbol applies to the complete product, a qualifying or explanatory statement shall be presented next to the symbol. The statement will clarify whether the symbol applies to packaging only or product only.

Examples

None

6. Evaluation and claim verification requirements

Evaluation and verification of self-declared environmental claims involves several steps. They include: i) evaluation step, ii) verification step, iii) marketing step, and iv) repetition of the evaluation and verification steps if there are challenges to the claim.

The evaluation step includes three separate sub-steps: selection of the methods for evaluation, performing tests in accordance with the selected methods, and collecting data from the test. Once the evaluation step is completed, the claimant (or a third party on behalf of the claimant) checks the data resulting from the evaluation step. This is called verification. Once the verification step is completed, the product making the claim is launched into the market. When there is a challenge to the claim, the evaluation and verification steps are repeated by the relevant verifier.

6.1 Responsibilities of the claimants

ISO 14021 clause: 6.1

The claimant shall be responsible for evaluation and providing data pertaining to the verification of …..

General Explanation

Claimants are responsible for any claims they make. This is especially true for self-declared environmental claims. Responsibility for the claim includes evaluation of the data and provision of necessary data for the verification of the claim if requested by the stakeholders.

Examples

None

6.2 Reliability of evaluation methodology

The literal meaning of "evaluate", as defined in the dictionary, says that to evaluate is "to examine and judge carefully, to calculate the numerical value of." Evaluation of data for the claim means that the claimant examines and judges the data with care to meet the requirements stipulated in clause 5.7. To ensure proper evaluation, reliable evaluation measures shall be implemented and information related to the verification of the claims fully documented. Clause 6.4 guides users of ISO 14021 on what to consider in selecting proper evaluation methods.

6.3 Evaluation of comparative claims

As discussed in clause 5.7 (n), comparative claims are made to assert that products are superior to previous products from the same manufacturer or to competitors' products. Because of this, comparative claims are prone to scrutiny by those affected by the claims - particularly competitors; hence, evaluation of comparative claim should be carried out with extreme care.

As with any comparison, the comparative claim must be based on comparability. For example, one should not compare an apple and an orange, but compare between apples or between oranges. Comparability calls for comparison against products in the same product category where functions provided are similar. It also calls for reasonable temporal and geographical perspective in comparison, i.e., current or recent products in the same marketplace. In addition, methods for comparison must be acceptable to the stakeholders. Clause 6.4 provides guidance for the selection of the methods, and the bibliography lists a number of acceptable methods.

Comparative claims can be made not only against an organization's own previous products and a competitor's products but also against organizations previous processes or competitors processes. Comparative claims made against processes often target an organization's own processes. This is because of the difficulties in accessing the process information of the competitors.

ISO 14021 clause: 6.3.2

Evaluation: a) using the same unit of measurement, b) based on the same functional unit, c) calculated over an appropriate time interval.

General Explanation

Comparative claims involving a specific life cycle stage are subject to more stringent scrutiny because of possible ambiguity associated with the system boundary where the specific life cycle stage is defined. In particular, clause 6.3.2 (b) calls for use of the same functional unit. A "functional unit" is a technical term used in LCA which is defined in clause 3.1.7. Simply put, the function of a product must be quantified before a comparison can be made. When the function is quantified, it is called a functional unit. An appropriate time interval over which to calculate data for a comparative claim has been suggested to be less than one year. Thus, comparative claims can become out dated and when this occurs, the basis of the claim must be updated.

Example

Let’s compare two different types of beverage container: a glass bottle versus an aluminum can.

Function of both containers: beverage storage

Beverage volume stored in each container: 300 mL

Thus, the functional unit of the container is 300 mL.

We now have the same basis for comparison of these two containers, the same functional unit. However, functional unit itself does not allow us to compare two beverage containers. We need the physical unit for actual comparison. This physical unit is called a measurement unit.

Before the comparison begins, one has to determine a measurement unit. In other words, determine the physical characteristics of each container that can fulfill the function of storing 300 mL beverage. Let's say that the glass bottle requires 75 gram of glass, while the aluminum can uses 5 gram of aluminum. Now the actual comparison begins

between the glass bottle and the aluminum can based on these measurement units, 75 gram of glass and 5 gram of aluminum.

ISO 14021 clause: 6.3.3 (a)

Percentages expressed as absolute differences.

General explanation

Certain physical attributes are measured in percentages, such as recycled paper content in a paper product. In this case, comparative claims shall use the difference in the measured percent values of the products that are being compared. It is not permitted to use relative difference values in this case as that may mislead consumers.

Examples

Recycled content of my newly developed packaging contains 20% recycled material content. My previous packaging contained 5% recycled material content. In this case, the comparative claim should take the form of measured difference, not relative difference.

An appropriate claim is: “My new packaging has 15% more recycled material compared to my previous packaging.” An inappropriate claim is: "Recycled content of my new packaging has increased 300% over my previous packaging.” For the latter, the basis for the claim was the relative difference obtained by the following calculation: (20-5)/5×100=300%.

One can easily appreciate the difference between measured difference and relative difference.

ISO 14021 clause: 6.3.3 (b)

Absolute (measured) values expressed as relative improvements.

General explanation

This appears to be the opposite case to clause 6.3.3 (a). This clause is applicable to a

case where actual measurement is not a percentage value, but a conventional measured value in conventional units (not a percentage). In this case, a comparative claim shall use the relative difference in the measured values of products that are being compared. It is not permitted to use absolute or measured difference value in this case. This is again to avoid claims that may mislead consumers.

Examples

The time needed to disassemble an electronics product, say a refrigerator, was 120 seconds using a previous model. Recent design changes reduce this time to 60 seconds in the new model. In this case, the comparative claim should take the form of relative difference, not measured difference.

An appropriate comparative claim is "Disassembly time of my new refrigerator model has been reduced by 50% over my previous model." The basis for this claim was the measured difference arrived at by using the following calculation: (120-60)/ 120×100=50%. An inappropriate claim is "Disassembly time of my new refrigerator model has been reduced by 60 seconds over my previous model."

ISO 14021 clause: 6.3.5

Improvements related to a product and its packaging shall be stated separately …..

General explanation

This clause is an extension of the specific requirement in clause 5.7 (d) applied to a comparative claim. Clause 5.7 (d) says that self-declared environmental claim shall be presented in a way that clearly indicates whether the claim applies to a product or packaging. As stipulated in clause 6.3.1, the comparative claim is made by comparing one product against another specific product to avoid any potential confusion arising from having a vague or ambiguous comparison. The comparative claim must have a clear target for comparison, whether product or packaging, but not both product and packaging as an aggregated unit.

Examples

None

ISO 14021 clause: 6.4

Methods for evaluation and claim verification shall follow, in order of preference ……

General Explanation

This is an elaboration of the specific requirement in clause 5.7 (b). Any self-declared environmental claim must be based on scientific evidence to support the claim. The scientific evidence must be reproducible and repeatable and be based on recognized methodologies, as specified in principle 3 of ISO 14020. It is necessary to evaluate and verify every claim. Methodologies with the widest acceptance, such as international standards, are the preferred verification methods. Less preference is given to methods as the degree of acceptance decreases. Where there are no recognized methods available, a new method may be invented as long as it meets the principle 3 of ISO 14020. References <12> through <66> in the bibliography of this standard are typical examples of recognized methods.

Examples

None

ISO 14021 clause: 6.5.1

A claim is considered verifiable without confidential business information...

General Explanation

When a claimant does not wish to release data or information on the scientific evidence which supports the claim because of the confidential nature of this information, the claim shall not be made. In other words, you shall not make a claim if you cannot verify that claim and show the evidence supporting the verification to other stakeholders, including the public and competitors.

Examples

None

ISO 14021 clause: 6.5.3 (b)

Documentary evidence…

General Explanation

When a claim is made for the process rather than a product, evidence to verify the claim cannot be obtained through testing of the final product. In this case, evidence in the form of a document trail must be prepared and be available upon request.

Examples

None

ISO 14021 clause: 6.5.3 (e)

Evidence that the claim conforms to the requirements of clauses 6.7(h) and 6.7 (r)...

General Explanation

The phrase "all relevant aspects of the product life cycle" in clause 5.7 h) is depicted in table form in Figure 5.1. This phrase can be better understood by citing an explanatory example using this figure.

When environmental improvement is achieved for the resource depletion area during the manufacturing and distribution stages, two cells in Figure 5.1 (at the cross points of "resource depletion" with "manufacturing stage" and "distribution stage") are upgraded from ++ to +++. If the claimant had no interest in improving other areas, i.e., other cells in the matrix shown in Figure 5.1, the claimant may end up transferring some of the environmental burden savings from these two areas to other areas. These transferred saving could be used to offset the negative impacts of increased toxic chemicals use in the production process which results in the down grading of two other cells from, say, ++ to +.

All relevant aspects of the life cycle are related to the final product. However, the matrix clearly shows the life cycle stages span the "upstream" (suppliers) of "Raw material acquisition stage," through the "downstream" (purchaser/user, waste managements) to the "use stage" and the "end of life stage." Accordingly, a claimant has to scrutinize the

whole matrix “not only in relation to the final product” but also “all relevant aspects of the product life cycle,” as stipulated in clause 5.7 h).

When following the life cycle stages from the very beginning of “the cradle” to the end of “the grave,” it is important to realize the fact that time and geographic area change simultaneously. That is, from material, to products, to user, to wastes in the case of time, and from oil well, to factories in the exporting country, to importing country in the case of the geographical area. One cannot see these changes in Figure 5.1. Therefore, attempts must be made to assess all the dimensions in Figure 5.1 while bearing in mind the difference of time and geographical area. In this regards, the issue of geographic difference is addressed in 5.7 r), and a detailed explanation is already provided under clause 5.7 r) in this chapter.

Finally, the claimant has to record the two matrices of result before and after the improvement as “the evidence of clause 6.5.3. e),” hopefully with no down graded cells.

Examples

None

ISO 14021 clause: 6.5.3 (g)

Evidence giving assurance of the continuing accuracy of the claim while the product is on the market ….

General Explanation

As long as the product carrying the comparative claim remains on the market, the claimant must update the claim regularly to assure accuracy. There are possibilities that the product against which the comparison was made may have been improved or the product carrying the claim has been improved. In this case, the basis of the claim must be reviewed and updated accordingly. The update should be continued until the product carrying the claim is completely phased out from the market. This may take some time, even if the claimant no longer markets the product in the market where the comparative claim has been made. However, caution must be taken to ensure that the requirements of this clause are not solely aimed at comparative claims. It applies to any claim.

7. Specific requirements for selected claims

Twelve selected claims that represent terms commonly used in self-declared environmental claims are defined in ISO 14021. They are:

Compostable

Degradable

Designed for Disassembly

Extended Life Product

Recovered Energy

Recyclable

Recycled Content

Reduced Energy Consumption

Reduced Resource Use

Reduced Water Consumption

Reusable and Refillable

Waste Reduction

Specifications of these claims and qualifications for their use are provided in section 7 of ISO 14021. It must be noted that the list of twelve claims is not exhaustive but rather a selection of commonly used claims. The selection of these twelve is not intended to indicate that these selected claims are in any way superior to other claims. Claims other than the twelve selected can also be made by the claimant at his or her own discretion, provided they meet the conditions outlined in the section on "General Requirements". Below is the detailed discussion of the twelve selected claims.

(1) Compostable

Composting is a biological process where microorganisms break down larger organic molecules into smaller ones under either aerobic or anaerobic conditions or both. When the conditions are aerobic, it is called aerobic composting, when conditions are anaerobic it is called anaerobic composting. In practice, however, both aerobic and anaerobic conditions exist in the same composting pile.

Microorganisms involved in composting include bacteria, fungi, and protozoa. In addition, other types of organisms such as earthworms are involved. These organisms convert organic matters into a soil-like (humus-like) material called compost. For efficient composting to occur, environmental conditions for the organisms must be favorable to them. Factors affecting the composting process include:

i) carbon to nitrogen ratio of the organic matters during composting,

ii) moisture content of the compost pile,

iii) other conditions such as the degree of aeration, inside temperature of the compost pile, particle size of the organic matter being composted, etc.

Composting is a biological process requiring some degree of care to ensure success. Thus the claimant should use self-declared environmental claim “compostable” carefully. Clause 7.2 in ISO 14021 simply reiterates that all the specific requirements stipulated in clause 5.7 shall be applied to a “compostable” claim. It should also be noted that a “compostable” claim is part of “degradable" or, to be more specific, "biodegradable” claims under clause 7.3. Depending on the type of degradation the product undergoes, different claim can be made, compostable or degradable.

ISO 14021 clause: 7.2.2.1

Qualifications for a compostability claim not allowed to make if …
(a) Negatively affects the overall value …
(b) Releases substances in concentrations harmful to the environment …
(c) Significantly reduces the rate of composting …

General Explanation

This clause warns the claimant not to make “compostable” claims if the composting process for that product yields undesirable outputs. Since composting processes must yield soil-like material as the final product, anything that is less than soil-like or humus-like material is simply unacceptable. In addition, if the composting process generates harmful substances or a final product containing harmful substances, (probably because of the presence of harmful molecules in the material going into the composting process), the “compostable” claim shall not be made.

In the case of a significant reduction in composting rate (probably because of the presence of too much of non-compostable material in the composting process) again the "compostable" claim shall not be made. Carbon to nitrogen ratio of the material feeding into the composting process is the key factor in the operation of a composting process. Thus, presence of excessive amount of non-biodegradable materials in the feed is detrimental to achieving the objective of composting.

Examples

None

ISO 14021 clause: 7.2.2.2

Qualification for all compostability claims: (a) The type of composting facility, home-composting…. (b) If the entire product is not compostable, the claim…. (c) If problems or risks are associated with introducing…

General Explanation

This clause is an extension of the specific requirement in clause 5.7 (d) applied to the compostable claim. Clause 5.7 (d) says that self-declared environmental claim shall be presented to clearly indicate whether the claim applies to a product or packaging. In case of the compostability claim, the claimant must be specific both as to the type of the composting facility to be used and which part of the product or packaging is eligible to make a claim of compostable.

Unless the entire product is compostable in any types of composting facilities, the claimant must describe the specifics in a qualifying statement that accompanies the claim. Clause (c) above is similar to clause (a) in that the claimant must state or qualify the type of composting facility to be used if the product going into the composting process has the potential create risks or cause problems for specific types of composting facilities.

Examples

None

ISO 14021 clause: 7.2.2.3

Qualifications for a home composting case…

General Explanation

This clause is an elaboration of the specific requirement in clause 5.7 (k) which addresses the issue of how consumers may be misled through the omission of relevant facts, although the claim is literally true. When this applies to a claim that a product is compostable in a home composting system, the claim shall not be made where such extraordinary requirements as complicated preparation methods, need to modify the product or the need for special skills or equipment are required.

"Special skill" may be defined as the skill and knowledge obtained through professional or specific training other than regular compulsory education. Special equipment is that which can be purchased in a special shop for professional users. Special processes are those that are operated with special skill, knowledge, and equipment. Therefore, it is unreasonable to expect ordinary consumers to be equipped with such extraordinary skills and equipment. In short, do not make claims that products are compostable in a home composter if special skills, equipment or product processing are required.

Examples

None

ISO 14021 clause: 7.2.2.4

Qualifications for other composting processes or facilities other than home composters ….

General Explanation

When the compostable claims refer to on-site or central composting facilities as the place for composting, these facilities must be conveniently available to a reasonable portion of purchasers, potential purchasers and users of the product. A difficult level to quantify is what should be considered as a "reasonable portion". What percentage of the purchasers is considered reasonable? No clear answer is provided in the standard. It is left to the claimant to determine what is a reasonable portion of purchasers, potential

purchasers and users of the product to have access to suitable facilities in a region where the products making the claim are sold.

Compostable claims without an explanatory statement must meet the requirement of being conveniently available for reasonable portion of purchasers, etc. When this requirement is not met, the claim can only be made with an appropriate explanatory statement that identifies the low availability of facilities. This avoids the need to prohibit the use of the claim entirely. However, non-specific claims such as “Compostable where facilities exist” are unacceptable and shall not be made. The spirit of this clause is that composting facilities should be easily accessible to consumers.

(2) Degradable

Degradation is a chemical as well as a biological process where particulate matters are broken down to macro molecules, and then to micro molecules. Materials that use the degradation process are organic. By definition, organic matter consists of carbon and hydrogen as a minimum, and nitrogen most of the time. Sometimes other substances such as sulfur and phosphorus are included in the organic material. The end products of the degradation process are usually CO_2, NH_3, H_2O, and minerals.

Chemical breakdown occurs when strong acids or alkalis split chemical bonds of the particulate matters or macro molecules. Similarly, photodegradation breaks down chemical bonds using sun light energy present in shorter wavelengths such as ultraviolet. Biological breakdown employs enzymes generated by microorganisms to break down chemical bonds of organic matter by the enzymatic reactions. Two terms for "degradable" are in general use. One is "photodegradable", used where photochemical reaction occurs, and the other is "biodegradable" used where biological reaction occurs.

Since degradation occurs under particular conditions, any degradable claim must state the conditions where the degradation will occur. Furthermore, the actual condition where product disposal occurs, must meet the conditions specific to each degradable claim. This is particularly relevant to a biodegradable claim.

There are two commonly known conditions for biodegradability: aerobic and anaerobic. The aerobic condition occurs when molecular oxygen is present to oxidize organics into the final products. Typical final products in this case are CO_2, NH_3, and H_2O. The anaerobic condition, however, occurs when molecular oxygen is not present. In this case,

final products are intermediate products such as methane, hydrogen sulfide, etc. Thus, care must be exercised to consider the actual condition where disposal and degradation occurs to ensure they match the condition for the degradable claim.

ISO 14021 clause: 7.3.1

Degradable …. within a given time

General Explanation

The definition of "degradation" has been explained in detail above. The key point here is the time taken to break down products that makes claims of degradability. The time required for degradation must be reasonable if a "degradable" claim is made. What is a reasonable time for the breakdown of organics? In general, the time for the breakdown of organics depend on the degree of complexity of the chemical structure of the organic materials. Chemicals with many branches and/or with many substituted element, such as chlorine, take longer to degrade than those with fewer branches and fewer substituted elements. If the product takes a longer time for degradation, caution must be exercised in making a degradable claim.

Examples

None

ISO 14021 clause: 7.3.2.1

Qualifications to all types of degradation….. (a) Degradation test method and actual disposal circumstances.... (b) Release of substances in harmful concentrations….

General Explanation

Clause 7.3.2.1 (a) specifies parameters to consider in the degradation test method. This is because test conditions, such as test duration, dictate the level of degradation. For example, if the test duration increases, more organics will be broken down. Thus, once a recognized test method is chosen, the test duration must match the actual duration in the disposal site.

In addition, test conditions often differ from the actual conditions in the site where the products are disposed of. Unless the test is conducted at the actual disposal site, it is inevitable that there will be somewhat different results when test conditions compared to those that actually occur in the disposal site. That is why the test condition must mimic, as closely as possible, the actual disposal condition where products are disposed of. If a claim is made based on test conditions that differ from the actual disposal condition, the claim is unacceptable.

Originally compostable and degradable were defined as an attribute in natural environmental conditions. However, it was recognized during the ISO discussion that natural environmental conditions vary significant from area to area, such as desert, swamp, high mountains, the tropics, urban area, forests, etc. Therefore the same degree of degradability cannot be expected from the same material discarded under differing natural environmental conditions. Therefore, ISO 14021 identifies a selection of test methods and criteria (e.g., shown in the bibliography section (c) 18 - 48) for the evaluation of degradability.

Clause 7.3.2.1 (b) is similar to clause 7.2.2.1 (b) where release of substances in concentrations harmful to the environment is an unacceptable condition in making a compostable claim. By the same token, release of substances in concentrations harmful to the environment is unacceptable in making a degradable claim.

Examples

Example 1:

A claim of ‘biodegradable’ is printed on a garbage bag. The bag manufacturer has data that the bag is biodegradable in soil conditions with certain oxygen and moisture contents. In general, garbage bags are either incinerated or landfilled in a sanitary landfill operated anaerobically. Thus, the degradable claim is not relevant to the circumstance of the disposal condition. It is a misleading claim.

Example 2:

While many materials are ultimately degradable, the conditions under which these materials are normally disposed of (usually landfill) may hinder the degradation process. Waste in sanitary landfill sites is generally devoid of air, moisture and light, effectively preventing any degradation of materials. Any claims of degradablility in relation to

materials which normally end up in landfill sites should not be used unless it can be proven that degradation will occur over a reasonable period of time under these conditions.

Example 3:

Claims of degradability may be made for products disposed of through the sewer system provided that the by-products of degradation and the product itself do not contain ingredients that are known to be damaging to the environment or the sewer or sewage treatment plant.

(3) Designed for Disassembly

Ecodesign is a design practice that integrates environmental aspects of a product throughout its entire life cycle into product design and development. "Designed for disassembly" is one aspect of an ecodesign where emphasis is given to the disassembly of a product at the disposal stage. The goal of ecodesign is to reduce resource consumption as well as to minimize environmental emissions to the environment. As such, designed for disassembly is an invaluable tool in achieving the goal of ecodesign.

Designed for disassembly is a claim that deals with various aspects of the product disassembly. This claim applies mostly to durable products such as automobiles, home appliances and most electronics products. Efficient and effective disassembly is a prerequisite for efficient and effective reuse, recycling and energy recovery of the product or packaging. Because the financial burden associated with the disassembly of a product can be a deterrent to reuse and recycling of the product, a product or packaging specifically designed for disassembly reduces costs as well as environmental burdens of a product life cycle. Key operating variables of the "designed for disassembly" claim include time and cost required for the disassembly process.

One interesting observation here is that ISO 14021 not only considers reuse and recycling of waste product components and materials but also energy recovery from the waste product as beneficial to the environment. This is the reason why recovered energy became one of twelve selected claims in ISO 14021.

ISO 14021 clause: 7.4.2.1

Qualifications for a designed for disassembly claim shall be accompanied by an explanatory statement that ….

General Explanation

"Designed for disassembly" is a claim based on disassembly to specific components or parts of a product that will be disposed of by various methods. Consequently, an explanatory statement to identify whether components or parts will be recycled, re-used or disposed of in an energy recovery facility must always accompany this claim. There is no exception - there will always be explanatory statements with the designed for disassembly claim.

Examples

None

ISO 14021 clause: 7.4.2.2

Qualification for a designed for disassembly claim accompanied by another claim, such as recyclable claim, the relevant requirements …

General Explanation

When there are additional claims to be made with the designed for disassembly claim, then relevant requirements specific to the claim(s) shall be followed.

Examples

None

ISO 14021 clause: 7.4.2.4

Qualifications for a special process required to disassemble the product, then… (a) Collection or drop-off facilities … (b) If not conveniently available… (c) General qualifications not acceptable…

General Explanation

If the product requires a special process for disassembly, this special requirement must be identified in the explanatory statement as part of the claim. This clause is quite similar to clause 7.2.2.4. As discussed under clause 7.2.2.4, problems can arise when the "designed for disassembly claim" refers to collection or drop-off facilities, as these facilities are required to be conveniently available to a reasonable portion of purchasers, potential purchasers and users of the product where the product is sold.

Here again is the issue of "reasonable portion". How many people must be able to access these facilities for it to be considered a reasonable portion? No clear answer is provided in the standard. It is left to the judgment of the claimant. Non-specific qualifications for the claim, such as “Can be disassembled where facilities exist” are unacceptable and shall not be used. Again the spirit of this clause is that disassembly facilities should be easily accessible to the consumers.

Examples

None

ISO 14021 clause: 7.4.2.6

Qualifications for the need for a) specialized tools or expertise … b) clear information on the method of disassembly …..

General Explanation

This clause is based on common sense and should be self explanatory. The basic message here is that the claimant must provide disassembly instruction that identify the common tools required, disassembly procedure employed, and information on what to do with the components or parts from the disassembly process, e.g., reuse and recycling, energy recovery, and disposal. Note that the same consideration on specialized skills, equipment, and processes described under clause 7.2.2.3 also apply here and no special tools or expertise should be required.

Examples

None

(4) Extended Life Product

Like designed for disassembly, an extended life product is also one of several design strategies to realize ecodesign. As stated in the designed for disassembly section, ecodesign is defined as a design practice that integrates environmental aspects of a product in its entire life cycle through product design and development.

An extended life product is a design strategy where useful life, not absolute life, of a product is prolonged. Practical design considerations to extend product life include, but are not limited to, improved durability, easy upgrade capability, lasting aesthetic appearance, etc. Reduced resource use and reduced environmental emissions are the net results from extending products' useful life.

ISO 14021 clause: 7.5.2.1

Qualifications for all extended life product claims shall be qualified and meet requirements ….

General Explanation

Since "extended life product" is a claim based on the prolonged life of a product, this is a comparative claim and must always be accompanied by an explanatory statement. For instance, the length of the product life extension, the design feature that has prolonged the life, or which components can be upgraded and the number of years this will extend the product life, etc, shall all be explained.

This claim is comparative in nature because it declares prolonged life of a product over other products, whether competitors' or previous products from the same manufacturer. Thus, specific requirement given in clause 5.7 (n) and all requirements for the evaluation of comparative claims in clause 6.3 must be met.

Examples

None

ISO 14021 clause: 7.5.2.2

Qualification for an extended life product claim based upon an upgradability feature, specific information and infrastructure …

General Explanation

Upgradability is a product feature that enhances the performance of a product and as a result prolongs the products' useful life by replacing a component(s) or part(s) with better performing or longer lasting ones. Typical examples would include the replacement of a low level memory chip in a desktop computer with a high level one. Obviously specific information or instructions must be provided to the consumers regarding what and how to do upgrading. In addition, the upgrading must be convenient enough so that neither special skills nor special tools are required, and the components or parts for upgrading should be available to most consumers in reasonable time and at a reasonable cost.

Examples

None

ISO 14021 clause: 7.5.2.3

Qualification for extended life product claims that are based on the improved durability of the product …

General Explanation

Explanatory statements that accompany the extended life product claim based on the improved durability of the product must include specific data. They are: how long the product life is extended in years or as a percentage improvement, and actual measured data such as number of operations before breakage, or any other data to support and verify the extended life product claim.

Examples

None

(5) Recovered Energy

There are a variety of ways to manage wastes, in particular, solid wastes in today's world. Waste is something for which the generator has no further use and, as such, is discarded to the environment. Most often, waste refers to solid waste. Reuse, recycling, incineration, and landfill are among the most common waste management methods.

The order of hierarchy in waste management is reuse, recycle, and then incinerate Landfill is the final destiny of all remaining materials in the waste management process. Of the three waste management options, the most desirable one is reuse, followed by recycling. Reuse means reusing products, components and parts for other products, and recycling means recycling of materials left after reuse back into useful products and materials.

Incineration is the least desired option of the three. It involves combustion of wastes in an incinerator. Although the concept of incineration is simple and straight forward, flue gas from the incineration process poses potential threats to the environment, especially from the presence of dioxins. However, a well controlled incineration process could minimize the formation of toxic chemicals. In addition, energy can be recovered from the incineration process using various heat recovery devices such as economizer, pre-heater, etc.

Certain power generators use solid wastes to produce heat and electricity. This mode of power generation is called co-generation. Municipal garbage as well as industrial solid wastes becomes feedstock in the co-generation process. Occasionally, manufacturing plants recover energy from their own waste incinerators.

The "Recovered energy" claim is designed to claim that a product has been manufactured using the recovered energy from wastes. If a claimant is the producer of the energy, then the recovered energy itself becomes a product which can make a claim. One thing that makes it difficult to make this claim is that a manufacturer normally purchases energy from a power grid where the power plant generates electricity from waste. In this situation, the manufacturer may make a claim of recovered energy for his product.

There are two possible scenarios for this manufacturer. First, the manufacturer does nothing to use recovered energy intentionally but simply taps into the power grid, which

happens to include recovered energy. Second, the manufacturer commits to improve environmental performance of his products by using recovered energy intentionally. For the second scenario, there would be no problem in making a recovered energy claim. However, for the first scenario, is it in line with the intention of the principles and specific requirements of ISO 14021?

It is the authors' opinion that the second scenario is a totally acceptable situation for making the recovered energy claim. However, we are not in favor of use of the recovered energy claim simply based on the first scenario. The claimant must demonstrate his commitment to the use of recovered energy, rather than simply being connected to the power grid where electricity from recovered energy is distributed.

ISO 14021 clause: 7.6.2 (b)

Qualifications for making a recovered energy claim, the claimant shall ensure that adverse effects ….

General Explanation

One of the major side-effects of energy recovery in a waste incineration process is the presence of toxic substances in the flue gas. Dioxins, known to cause cancer to laboratory animals, are major toxic substances present in the flue gas of a waste incinerator. This means that energy recovery from a waste incineration process which emits toxic substances is unacceptable from the life cycle perspective. This situation is in direct violation of the specific requirement in clause 5.7 (h) where shifting adverse impact from one life cycle phase to another is prohibited. Thus, the claimant must ensure that no adverse impacts result from the energy recovery activity by proper management of the waste incineration process including the flue gas treatment.

Examples

None

ISO 14021 clause: 7.6.2 (c)

Qualifications for the type and quantity of waste that has been used for recovery …..

General Explanation

A claimant must explain the type and quantity of waste used to recover energy. Energy recovered from the combustion of waste can make the recovered energy claim. If the recovered energy does not come from waste, no claims on recovered energy shall be made.

Examples

None

ISO 14021 clause: 7.6.3

Evaluation methodology:
(a) $R - E > 0$
(b) Net recovered energy (%) $= \frac{(R - E) \times 100}{(R-E) + P}$

General Explanation

Energy from primary sources means that energy which is derived from sources like fossil fuels, not from secondary sources like wastes. Thus, energy from waste is different from energy from primary sources. Legend E in the above equation includes primary energy required for operating trucks to collect waste, for processing waste before being fed into the combustion system, and for operating pollution control devices associated with the energy recovery system (incineration system). Legend R represents gross energy recovered from the energy recovery system. Legend P represents the energy input to the product manufacturing system from the primary energy source only.

No energy recovery claim shall be made if the energy recovered is less than the amount of energy expended to recover the energy from the waste. Nonetheless, it is always tempting to make a claim of recovered energy even if the energy spent(E) exceeds the amount of the recovered energy(R). Therefore, evaluation of the claim must be undertaken in accordance with clause 6, and all the evidence must be on file and be readily available upon request.

Examples

None

(6) Recyclable

Recycling is an activity that transforms waste into raw materials for the manufacture of new products. One major distinction between recycling and reuse is that the latter reuses parts and components as they stand, while the former reprocesses used materials back into materials that can replace virgin resource inputs.

Both recycling and reuse activities involve same infrastructure to enable them to "close the loop" and get components and materials back into the marketplace. This infrastructure includes collection or drop-off facilities available to a reasonable proportion of the consumers, and sorting, processing, and separating facilities in place. However, one of the most significant factors in recycling and reuse is the need for the existence of the markets that deal in recycled materials and reused parts or components for manufacturing or refurbishing of new products or used products.

In order to make a recyclable claim, all the infrastructure facilities described above must be in place before the recyclable claim can be made in order to ensure that the recycled material is actually being re-processed into useful products. If all the infrastructure requirements are not met, the claim must be accompanied by a qualifying statement. If there are inadequate facilities to collect, sort and process materials back into products, the recyclable claim shall not be made. The Mobius loop symbol, without a percentage value identified, may be used with a recyclable claim, if desired.

Examples

Example 1:

Plastic beverage bottles are collected and incinerated to generate electricity and heat. Thus, the collected bottles cannot be used as raw materials for product or packaging. Claims of ‘recyclable’ for these plastic beverage bottles are misleading.

Example 2:

Assume that a ‘recyclable’ claim is on a garbage bag. In general, garbage bags are not

separated from garbage in a landfill or in an incineration plant. Although the bag is recyclable in nature, the reality is that this bag cannot be collected and recycled. Thus the claim is misleading.

Example 3:

A packaging is marked “recyclable” but is composed of several materials which cannot be recycled together. In this case, there should be specific instructions on how to properly prepare the material. For example: “remove metal staples before recycling.”

However, a bottle with a metal cap is labeled as recyclable. As long as the bottle is recyclable, the claim is valid. The cap is an incidental portion of the product.

ISO 14021 clause: 7.7.2

Qualifications for collection or drop-off facilities….

General Explanation

When the collection or drop-off facility requirements outlined in the infrastructure requirements above are not met, an explanatory statement that states the limitation of the collection facilities associated with the claim must accompany the recyclable claim. In the event there are no collection/drop-off facilities in place, then no recyclable claim shall be made. In addition, vague statements such as “recyclable where facilities exist” are not adequate as explanatory statements.

Examples

Example 1:

Corrugated cardboard and boxboard are routinely collected from commercial establishments for recycling but curbside collection from households is very limited. In this situation, a recyclable claim should not be used on the packaging.

Example 2:

A glass bottle with a metal cap bears the statement “recyclable.” Glass is recycled only in limited parts of the country. Consumers in areas where recycling facilities do not

exist may be misled into believing that the material is more widely recycled than is actually the case. In this situation it may be more appropriate to qualify the claim by stating: “recyclable in city x” or “please return to (store name) for recycling.”

Example 3:

A plastic bottle is labeled “Recyclable through Company X facilities.” The bottle manufacturer has developed the technology to recycle the material and has established collection points within the area of distribution and the bottles are being recycled. The claim is not likely to be considered misleading because a reasonable amount of recycling is occurring, collection facilities have been made widely available, and the consumer is provided with detailed information identifying the collection points.

(7) Recycled Content

Recycled content is defined as the percentage of the mass of recycled material in a product or packaging. There are two critical aspects associated with this claim. First, what are the recycled materials? Second, how can the mass of recycled material in a product or package be determined? ISO 14021 addresses these two points.

Recycled materials fall into two categories, pre-consumer or post-consumer materials. Detailed definitions of pre- and post-consumer materials are in clause 7.8.1.1 (a). The mass of recycled material being fed into the manufacturing process of a product or packaging is considered as the mass of recycled material in the final product or packaging, respectively. This is because tests or methods to determining the actual recycled material content in a final product are difficult or non-existent.

ISO 14021 clause: 7.8.1.1

Pre-consumer material and post-consumer material Recycled material Recovered material

General Explanation

This clause clarifies what constitutes acceptable recycled material in a recycled content claim. Conventional thinking often considers in-plant wastes, such as regrind, rework or

scrap, that are generated during the manufacturing process and reutilized within the same process that generated it as recycled material. However, pre-consumer material defined in this clause excludes this type of reutilized material from being considered as recycled content for the purposes of recycled content claims. The intention of ISO 14021 is to discourage the use of the recycled content claim for routine practices in a manufacturing process that reutilizes in-plant wastes in the same manufacturing process.

Pre-consumer material, for the purpose of a recycled content claim, is waste generated from one commercial process that has actually been discarded and then collected and reprocessed in another process. This means that the waste leaves the premise of the factory that generated it, and then follows the recycling path. When someone other than the waste generator uses the pre-consumer material to make a product, then this pre-consumer material can be the basis for the recycled content claim. Based on this stringent requirement for pre-consumer material, it would be difficult to make a recycled content claim based on pre-consumer material.

In contrast to pre-consumer material, post-consumer material is what most people consider recycled material. Any waste that has been recycled following a recycling path (see discussion under recyclable claim) is considered post-consumer material. Recycled material is the material that has been processed in a recycling facility in order to enable it to be used as a raw material in a manufacturing process in lieu of virgin raw material.

In almost all cases, the real content of the recycled material in a finished product cannot be measured, i.e., cannot be verified. The claim is based on an estimation of the recycled material content from the ratio of recycled material to virgin resources in the feedstock fed into the production process. Thus, the authors feel that there is a need to correct the definition of "recycled content". The current definition shows the discrepancy between theoretical and practical aspects of the recycled content.

Examples

Example 1: Recycled content

A glass container is labeled “recycled.” Unless the container is made of 100% recycled materials, the claim is misleading.

Example 2: Pre-consumer material

2.1 Scrap metal generated from A is collected and processed by B who is located across the street from A, and sells to C. C uses the processed metals for raw material in its product. The recycled material in C's product is a pre-consumer material

2.2 A manufacturer routinely collects spoiled material and scraps from the factory floor and combines this material with raw virgin material to produce the same product. A claim that the finished products contain "recycled" material may be misleading because this process is part of the normal production practice. The scraps and spoiled matter would not have normally entered the solid waste stream.

Example 3: Post-consumer material

Newspapers, magazines and books, which were displayed at the store (distribution chain) but have been returned because they were not sold to the users, are post consumer material.

ISO 14021 clause: 7.8.1.2

Material recycling is only one of a number of waste-prevention strategies. The choice ….

General Explanation

As stated in the note with this clause, attention has to be given to the life cycle consideration of a product when making the recycled content claim. Clause 5.7 (h) specifically addresses the life cycle consideration issue - that a claim made based on a feature in a specific life cycle stage shall not result in a shift of the environmental load of that specific life cycle stage to another. This is particularly true for the recycled content claim because higher recycled content may result in an increase in the environmental load of another life cycle stage, therefore, caution should be exercised when making recycled content claims. Net environmental load of the product or packaging must not increase as a result of the incorporation of recycled content. It is useful to note that principle 6 of ISO 14020 is also relevant to this clause.

Examples

None

ISO 14021 clause: 7.8.2.1

Where a claim of recycled content is made, the percentage of recycled material …..

General Explanation

The recycled content claim must be accompanied by identification of the percentage of recycled material used in manufacturing the product (packaging). One can differentiate pre-consumer material from post-consumer material, or can aggregate both in stating the recycled material percentage.

Examples

Example 1:

Recycled material in a birthday card consists of 30% post-consumer material and 20% pre-consumer material. You can state it as it is, or you can say "The card contains 50% recycled content, and 30% is post-consumer material."

Example 2:

A packaging label states "50% recycled material." The packaging material is purchased from several sources, and the amount of recycled material provided by each source varies. The 50% figure is established as the minimum amount of recycled material present. The claim would be valid.

ISO 14021 clause: 7.8.2.2

The percentage recycled content for products and packaging shall be …

General Explanation

No freedom is allowed in stating the recycled material percentage in a product and/or packaging.

Examples

A computer diskette consists of a product and packaging. A claim such as "The product (computer diskette) contains 40% pre-consumer materials and the packaging (box)

contains 25% pre-consumer material and 35% post-consumer material" is an appropriate claim.

ISO 14021 clause: 7.8.4.1

$$\text{Recycled content (\%)} = \frac{\text{mass of recycled material} \times 100}{\text{mass of product}}$$

General Explanation

Because of difficulties associated with measuring recycled content in a final product or packaging, ISO 14021 decided to consider the amount of recycled material in the mass feeding into the manufacturing process of the product and packaging as the mass of recycled material. However, question related to the mass of the product comes up in the formula given in clause 7.8.4.1.

According to Figure A.1 in Annex A of ISO 14020, the "product" here means final product. In the same figure, final product(P) consists of recycled material(A) and primary material(B). However, no manufacturing process can convert all input materials into 100% output product. There are always production losses in the form of wastes, co-products or by-products in any manufacturing processes. Therefore, an equation given in Figure A.1 in Annex A, P= A + B, does not reflect the real world situation. In reality, P is always less than (A+ B).

One possible interpretation of this apparent paradox of the equation, P= A + B, is to assume that final product, P, is not the mass of the final product, but is the sum of input materials to the manufacturing process, i.e., virgin raw material(primary material(B)) and recycled material(A). In fact, this is the most likely interpretation when scrutinizing Annex A. Therefore, P in the recycled content calculation formula should be the sum of all input materials into the manufacturing process, primary material(B) and recycled material(A), not the actual mass of the final product. Only this interpretation will give consistent basis for calculating the recycled content percentage.

All these discussions indicate that the claimant must be ready to present information with regard to the amount of recycled material as well as primary material used in the manufacturing process. Evidence produced for this purpose may include procurement records of the recycled and primary material, and any other relevant manufacturing

process data.

Examples

None

(8) Reduced Energy Consumption

A product life cycle consists of five distinctive stages: raw material acquisition, manufacturing, distribution, use, and disposal. All products exert impacts on the environment throughout their entire life cycle. However, certain types of products exert more impact in certain specific life cycle stages. In the case of durable products such as home appliance and automobiles, most impact occurs during the use stage. Out of the twelve selected claims in section 7, there are two selected claims based on the use stage. They are the reduced energy consumption claim and the reduced water consumption claim.

The reduced energy claim refers to the savings in energy use of a product during the use stage. Commonly used claims falling under this claim include energy-efficient, energy-saving or energy-conserving. Any reductions of energy use during the manufacturing, distribution, or waste disposal stages are not eligible for this particular claim.

The nature of this claim is comparative. In other words, there has to be another product, whether its' own previous product or competitor's product, against which to make the comparison. Therefore, all the requirements for making a comparative claim shall apply. The comparison must be with a product with the same or similar function.

ISO 14021 clause: 7.9.2

Qualifications for reduced energy consumption…

General Explanation

Since this is a comparative claim, an explanatory statement must follow. As discussed above, this claim is based on energy savings realized during the product use stage. In case of a service, energy savings occurring during the delivery of the service is the subject of the claim. No other energy savings in other life cycle stages can be the basis

for this claim.

Examples

None

ISO 14021 clause: 7.9.3

Evaluation for reduced energy consumption ….

General Explanation

Realized energy savings of a product during the use stage may vary depending on the use conditions. This is because different users have different ways of using the product. Therefore, an average value must be obtained based on well established statistical approaches including a sufficient number of representative samples for the evaluation. For the claim to be accurate and not misleading, selection of the recognized evaluation methods is a critical factor in substantiating this claim.

Examples

None

(9) Reduced Resource Use

In contrast to the reduced energy claim, the reduced resource use claim is applicable to the reduction of resource use realized only during the manufacturing or distribution stages of a product or packaging. Note that "resource" includes not only material resources, but also resources like energy and water.

It is, of course, possible to realize savings in energy and water during the manufacturing stage. However, these savings are all included in the reduced resource use claim. Caution must be exercised to avoid confusion between a reduced energy or water consumption claim (that refers to the use stage) and a reduced resource use claim (which refers to the manufacturing and distribution stages).

Just like the reduced energy consumption claim, the nature of this claim is comparative. However, unlike the reduced energy claim, the target for comparison is not a product

itself, but a manufacturing process. Thus, there has to be other product manufacturing process, whether its' own previous process or competitor's process, for comparison. Since it is not possible to get access to the competitor's manufacturing process information, most of the time the reduced resource use claim targets its own previous manufacturing process.

In case of a service, the same requirements are applied as to the manufacturing process. Of course, all requirements under the clause relating to comparative claims shall also apply in this claim. Comparison must be based on an equal footing such that a product manufacturing process with the same or similar function of a product being manufactured must be chosen for comparison.

ISO 14021 clause: 7.10.2

Qualifications for all reduced resource use claims….

General Explanation

Since this claim is a comparative claim, it cannot be a stand alone claim and an explanatory statement must follow. As discussed above, this claim is based on resource savings realized during the product manufacturing and/or distribution stages, not during the other life cycle stages such as raw material acquisition, use, and disposal.

Just like the recycled content claim, a separate statement on percentage reduction in resource use must be made for product and packaging. In addition, the type of resource being saved must be stated, e.g., type of raw materials, energy. In other words, the claim must be as specific as possible.

As with the recycled content claim, attention has to be given to the life cycle consideration of a product or packaging manufacturing process when making the reduced resource use claim. Clause 5.7 (h) specifically addresses the life cycle consideration issue. It says that a claim made based on a feature in a specific life cycle stage shall not result in a shift of the environmental load of that specific life cycle stage to another. This is particularly true for the reduced resource use claim because reduction in the use of resource in the manufacturing stage may result in an increase in environmental load of other life cycle stages. Therefore, caution should be exercised when making reduced resource use claims where net environmental load of the product

or packaging in its entire life cycle must not increase as a result of this claim.

There is also a time limit associated with the reduced resource use claim. In clause 5.7 (n) it specifies that a comparative claim must be relevant in terms of how recently any improvement was made. In clause 6.3.2 (c) the suggestion is made that the approximate time interval for the calculation of the improvement between two products that are being compared should be less than twelve months. In line with these specific requirements, the maximum time interval allowed when using the reduced resource use claim is twelve months. In other words, one can choose the resource use condition up to twelve months ago as the baseline in calculating the reduction in resource use.

Along with the reduction in resource use, the manufacturing process may employ different resources when compared to the baseline process for comparison. In this case, each change in the amount of a resource used must be stated, one by one, as an explanatory statement with this claim.

Examples

None

ISO 14021 clause: 7.10.3

Evaluation: percentage of the reduced resource use per production unit =

$$\frac{(\text{initial resource use per production unit} - \text{new resource use per production unit}) \times (100)}{\text{Initial resource use per production unit}}$$

General Explanation

Production volume changes as demand for the product or packaging changes in the market. To calculate a reduced resource use claim, normalize the amount of resources used in the manufacturing of the product over a certain period of time and divide by the total number or mass of product in the same period of time in the same factory. Of course, the product manufactured during this time period should be identical, although some minor ingredients or features of the product may change. This is inevitable because of improvements in the product and process design or modification.

The evaluation methodology given in 7.10.3 is not crystal clear. The data acquisition period, where data becomes the basis for the calculation of the claim evaluation, is not

stipulated in general terms, even in the provision of clause 6, except for comparative claims 6.3.2 c) and 7.10.3. Accordingly, it seems to be reasonable that the twelve month period may be applied for all claims.

The approach stated in clause 7.10.2.7 may also be adopted in other claims, because at the time of launching a new product into the market, the claim may be used, even if the result of twelve months of production records do not yet exist. If the expected effect cannot be achieved and after twelve months have passed and results have not been achieved to support the claim, the claim should be corrected or withdrawn. Products whose production does not continue for twelve months enter the market from time to time because of rapid changes in models. In this case, the total production period, even if less than twelve months, may be adopted as the data acquisition period. However, the data and the claim are no longer relevant because production is already terminated.

All these discussions indicate that the claimant must be prepared to present information with regard to the type and amount of resource used in the manufacturing process. Evidence used for this purpose may include procurement records of the resource used, and any other relevant manufacturing process data.

Examples

None

(10) Reduced Water Consumption

This claim is, in essence, identical to the reduced energy consumption claim. All the points made under the reduced energy consumption claim apply here as well. Reduced water consumption claims refer to the savings in water use of a product during the use stage. Commonly used terms falling under this claim include "water-efficient", "water-saving" or "water-conserving". Any reductions of water use during the manufacturing, distribution, or waste disposal stages are not eligible for this claim.

The nature of this claim is comparative. In other words, there has to be another product, whether its' own previous product or a competitor's product, for comparison. Therefore, all the requirements under the clause on comparative claims shall apply. One important point to note here is that the comparison must be with a product with the same or similar function.

ISO 14021 clause: 7.11.2

Qualifications for all reduced water consumption claims…

General Explanation

As this claim is comparative, an explanatory statement must follow. As discussed above, this claim is based on water savings realized during the product use stage. In the case of a service, water savings occurring during the delivery of the service are the subject of the claim. No other water savings in other life cycle stages can be the basis for this claim.

Examples

None

ISO 14021 clause: 7.11.3

Evaluations for reduced water consumption….

General Explanation

Realized water savings of a product during the use stage may vary depending on the use conditions. This is because different users have different habits in using the product. The average value must be obtained based on a well established statistical approach including sufficient number of representative samples for the evaluation. For the claim to be accurate and not misleading, selection of a recognized evaluation method is critical in substantiating this claim.

Examples

None

(11) Reusable and Refillable

Reusable and refillable claims deal with the product disposal stage of the life cycle. As was discussed in the recycling claim section, reuse precedes recycling in the hierarchy of waste management activities. The typical hierarchy of waste management practices is

reuse, recycling, incineration (energy recovery), and disposal. Once waste is generated, the first priority in managing the waste is to reuse it.

Reuse is an activity that uses the waste product, component, or packaging for a certain number of times for the same purpose for which it was originally designed. . Refilling is a special application of reuse, where packaging or product in its original form is designed to be filled with the same or similar product more than once without additional processing, except cleaning or washing.

Both reusable and refillable activities involve similar infrastructure as that required for recycling to make them possible. The infrastructure includes collection or drop-off programs or facilities available to a reasonable proportion of the consumers, and programs for reusing or refilling of the product or packaging.

One of the most significant factors for reusable and refillable products is the existence of the systems that allow the consumer to reuse or refill the product or packaging. In the case of reusable parts or components, there has to be a market where they are purchased by the manufacturer and subsequently reused for the manufacturing or refurbishing of new products or used products.

When using a reusable or refillable claim, all the infrastructure requirements applicable to reusable and refillable activity described above must be satisfied before the claim can be made. If all the infrastructure requirements are not in place, a qualifying statement must accompany the claim or the claim shall not be made.

ISO 14021 clause: 7.12.2.3

Qualifications for a reusable and refillable claim when program for collecting the used product or packaging, or facilities for…..

General Explanation

When the infrastructure requirements outlined above are not met, the reusable or refillable claim must be accompanied by an explanatory statement. The infrastructure requirements include collection or drop-off programs or facilities, systems for reusing or refilling the product or packaging, and existence of the products that allow the consumer to reuse or refill the product or packaging.

Any explanatory statement shall explain the limitations of the program for collecting, reusing/refilling used product or packaging, and the limited availability of the facilities or products that are dedicated to reuse or refills of the product or packaging by the consumer. Vague statements, such as “reusable/refillable where facilities exist”, are not adequate as an explanatory statement.

Examples

None

ISO 14021 clause: 7.12.3

Evaluation for reusable and refillable….

General Explanation

The actual number of reuses and refills of a product or packaging during the life time of the product or packaging may vary depending on consumer behavior and the reuse and refill operation. This is because different users have different habits in reusing or refilling the product or packaging. An average value must be obtained based on a well established statistical approach including sufficient number of representative samples for the evaluation. For the claim to be accurate and not misleading, selection of the recognized evaluation methods is critical in substantiating this claim.

Examples

None

(12) Waste Reduction

There are three Rs in waste management. They are reduce, reuse, and recycle. Waste reduction is the preferred option. This is because the most efficient and effective measure to control waste problem is pollution prevention or source reduction, not end-of-pipe treatment.

Waste reduction aims at reducing waste generation from the source (source reduction) by modifying the manufacturing process, optimizing the distribution logistics, optimizing the use scenario of the product, and changing the design of a product to

minimize the generation of waste in its' entire life cycle. In addition, actual reduction of the waste volume and mass by end-of-pipe treatment is also included in the category of waste reduction claims in ISO 14021.

A self-declared environmental claim is designed to make a claim of an environmental improvement of a product in a specific life cycle stage. Out of twelve specific claims listed in clause 7, only one claim deviates from this unique feature of the self-declared claim. It is the waste reduction claim. The other eleven selected claims are designed for declaring an environmental improvement to a product in a specific life cycle stage.

ISO 14021 clause: 7.13.1

Note: Waste may include discharges to air…..

General Explanation

Waste in its narrower sense represents solid waste. However, waste in a broader sense includes anything that is discarded or discharged into the environment. Here environment includes air, water and land. The term "waste" is used in the broader sense in waste reduction claims.

Examples

A process modification employing recycling of the waste stream back into the process resulted in waste reduction. The claimant can make a waste reduction claim based on this process modification.

ISO 14021 clause: 7.13.2.3

Qualifications: Reduction in water content and mass of solid waste.

General Explanation

In solid waste treatment, the primary objective is to reduce the volume of the waste. A key substance contributing to the volume of waste is water. Moisture content of typical household solid waste ranges from 85 to 95 %, and dewatered sludge from the sewage treatment plant is approximately 80%. Since solid waste must be transported, treated, and ultimately disposed of in a landfill, there is an incentive to reduce the volume of

waste by reducing the moisture content. Solid waste treatment is always associated with volume reduction. However, the mass of the solid waste can also be reduced during the waste treatment process. Thus clause 7.13.2.3 reconfirms that not only volume reduction but also mass reduction are eligible for the waste reduction claim.

Examples

None

ISO 14021 clause: 7.13.2.4

Qualifications: Calculations of process waste reduction shall not include in-process re-utilization of materials ….

General Explanation

This clause contains the same constraint as that applied to the recycled content claim in the definition of pre-consumer material in clause 7.8.1.1, where in-plant reutilization of material as recycled content in a product is excluded. ISO 14021 discourages the use of routine practices of reutilization of in-plant wastes in manufacturing processes as the basis for making a self-declared claim of having achieved an environmental benefit. In-plant reutilization appears to result in a reduction of waste generated from the manufacturing process. However, since this type of in-plant reutilization has been excluded from the waste definition in ISO 14021, a waste reduction claim based on in-plant or in-process reutilization of materials such as rework, regrind or scrap materials is prohibited.

Examples

None

ISO 14021 clause: 7.13.2.5

Qualifications: Waste generators who transfer wastes to other users …..

General Explanation

This is a noteworthy point in waste management practice. Preventive action to reduce waste should occur throughout the entire life cycle of a product and should include end-of-pipe treatment by the product manufacturer. Waste that is transferred to other users must utilize the waste for a constructive purpose. The claimant making a waste reduction claim must ensure that the intended users of the waste do indeed utilize the waste and it is not just transferred from one generator to somewhere else for ultimate disposal.

Examples

None

ISO 14021 clause: 7.13.3

Evaluation: Reduced waste amount may be calculated and/or measured….

General Explanation

Based on the mass balance between input and output data during the product manufacturing process, the amount of waste reduced may be calculated for this life cycle stage. Actual measurement of the generated waste can also provide information as to the amount of waste reduction achieved before and after the waste reduction measure in place.

Like any other process related claims such as recycled content claim, the claimant must be prepared to provide information on the amount of waste generated and raw materials, both primary and recycled, used in the manufacturing process. Evidence to substantiate a waste reduction claim may include procurement records for raw materials, contract records for waste haul or treatment, and any other relevant manufacturing process data.

Annex A (Informative)

Details on this section have been covered under the recycled content claim.

Chapter 6 Case studies of self-declared environmental claims

1. Actual situation of self-declared environmental claims

Many self-declared environmental claims were made in markets worldwide as a means of environmental advertising on various products prior to the introduction of the ISO 14020 series standards. This trend has continued and even increased since the publication of ISO 14021. However, it is hard to judge if they have achieved conformity with the ISO 14020 series standards. The claimants seldom identify whether their claims conform, and no independent third party assessment of conformity exists.

Since ISO standards are not regulations that can be enforced, the probability that claims are not based on ISO 14021 appears likely. Therefore, it is difficult to judge whether an environmental claim is Type II, as defined in ISO 14021 or not, unless evidence of conformity is disclosed, voluntarily or on demand. Although there are several research reports on the status quo of the self-declared environmental claim, e.g. reports by Consumers International (http://www.consumersinternational.org), confirmation of conformity by second parties requesting verification data seems to be limited.

The investigation of the practice of self-declared claims, presented below, is not different from the above-mentioned study, in that the conformity had not been confirmed. However, over 30 enterprises and industrial associations in Japan that are representative of each industrial sector, have been studied through their website pages to examine how they practice environmental libeling.

The study was conducted between January and March 2002. It is almost impossible to draw clear-cut conclusion from the study because of large diversity in style and contents of the claims, and the wide variety of products. Therefore, only a rough, descriptive summary and comments on conformity to ISO 14021 can be reported.

2. Practices of self-declared environmental claims in Japanese industry

Self-declared environmental claims from each company were surveyed. Industrial associations were surveyed where their member companies used common claims. The results of this survey are summarized and tabulated in sections according to common claim terms, or those of similar meaning, although some diversity for product specific

claims remains. Thereafter, several typical samples of claims and accompanying symbols are presented in order to understand the total marketplace reality. Some comments on their conformity to ISO 14021 are given if necessary.

Obviously, the survey does not intend to cover all companies in Japan. Companies picked up in the survey are not necessarily superior to others in environmental performance. It is safe to say here that there are many other enterprises in Japan that employ environmental declarations.

2.1 Sectoral summary of self-declared environmental claims

2.1.1 Electronic and electric appliances, business machines, and information equipment

Claim category	Claims
Reduced energy consumption	Decrease of power consumption during operation Decrease of power consumption during idling
Promotion of recycling	Change of packaging materials (to materials easy to recycle e.g. paper) Recycled paper (e.g. Manual) Materials easy to recycle Recycled materials (in product) Establishment of recycling system (for industries and consumers) Recycling of batteries Recycling of toner and ink cartridges Reuse of parts Reduction of plastics types Material identification of plastics
Recycled content	Recycled content of packaging material Recycled content of product
Recyclable	“Potentially recyclable ratio”
Reduced resource use	Reduced resource use in product and packaging Wrapping paper made from wood-free fibers
Reduced water Consumption	Dry development (without wet ink) of image from laser printer
Reduction of toxic material	Reduced use of toxic material in product Lead-free solder

Reduction of toxic material	Elimination of flame retardants including phosphor and halogen Elimination of steel including hexa-valent chromium Reduction of PVC Elimination of hazardous batteries (Ni-Cd, Hg) Elimination of VOC in ink (of package, catalogue, instruction manual) Packaging materials with reduced toxic emission on incineration Reduced emission into air from vehicles by rationalized distribution system
Degradable	Biodegradable plastics
Design for disassembly	Design for disassembly using simple tools Reduction of number of screws
Reduction of space for use	Design for bulk reduction of product
Extended life product	Life extension by upgradability system (provision of functional parts) Life extension by adopting durable parts and materials
Conformity with regulation and standard	Elimination of ozone depleting materials in production Adherence of criteria to energy saving law Award of Energy-star, Eco-mark, and Blue Angel Establishment of recycling system as requirements of the recycling law Identification of hazardous batteries Introduction of EMS and achievement of certification
Introduction of methods of environmental management	Implementation of "Product assessment" Implementation of "Green procurement" Survey of the amount of lead consumed (in production) Disclosure of environmental information Evaluation of CO_2 emission by LCA Warning of toxic components Commendation by public organization

General Explanation

i) An overwhelming number of companies use several claim terms by applying in-house criteria to their products. Typically the criteria include evaluation methods that are

disclosed in detail on their website. However, it is not always possible to read the claims on the products or in the materials that accompany products, and sometimes the claim only says, "Meets our in-house criteria." The practice seems to be inconsistent with the ISO 14020 and 14021 principles, but using self-declaration with specific evaluation methods and criteria suitable for the complicated, multi claims on highly intricate and technology-oriented products is unavoidable. Otherwise, multi claims for one product with long qualifying sentences, full of technological details, could become burdensome and difficult to understand at the point-of-sale.

ii) Many of the claims surveyed have following problems. They are not in conformance with the ISO 14021 and 14020 principles; they don't comply with regulation and standards; they are not products from an EMS certified plant; they do not fit with implementation of Green procurement* or Product assessment**; they have not applied LCA methods and evaluations; they have not received endorsement by a public organization, and environmental information disclosure is not available.

* "Green procurement" is a privately organized movement (GPN: Green Products Networks) with a broad range of participation from manufacturers, consumers, and industries procurement bodies. They promote buying/procuring so-called green products. The government, especially by the Environment Ministry, in Japan, also supports the campaign.

** "Product assessment" is a method of evaluating and improving environmental performance of products in the product design process prior to production, which is strongly recommended and implemented in Japan, and backed up by the government as a system partly connected to a law.

iii) There are other questionable claims such as "potentially recyclable ratio", "bulk reduction of product," and warning of toxic components.

2.1.2 Automobile and transportation equipments

Claim category	Claims
Reduced energy consumption	High fuel efficiency Surpasses the requirement for fuel efficiency
Reduced emission	Reduction of CO_2 emission Surpasses the target for emission reduction

Reduced use of toxic materials	Reduced coolant type and use in air conditioners Reduced coolant in air conditioners
Promotion of recycling	Design for easy recycling Recycled materials Easily recyclable materials

General Explanation

Claims in this sector are overwhelmingly concentrated on the use and disposal stages, especially energy consumption, emissions, and recycling. The distinguishing trends are that they recognize that, for this sector, the environmental load in these two life cycle stages are the largest in their product life cycle. Therefore, they believe these claims are the most effective for stimulating environmental improvement and other claims, relating to the production or distribution stages, are not so important.

Since the environmental problems caused by products in this sector create major concern, especially in urban society, regulations to control environmental performance are vigorously established in every country, including Japan. Therefore, almost all the claims are already covered by regulations, such as requirement for fuel efficiency, emission restrictions, responsibility for material recycling, and so on. Accordingly, the above mentioned claims are not uniquely self-declared claims. Almost all are covered under the regulations and consequently are in line with the regulations as well as ISO standards.

2.1.3 Housing and house equipment

Claim category	Claims
Reduction of energy and water consumption (in operation)	Reduction of power and water consumption (toilet equipment) Energy saving of hot-water supply system Reduction of energy and water for cleaning by smear repellant treatment Solar cell
Reduced resource use (in production)	Weight reduction of products Reduced use of packaging materials Reuse of wastes

Design for recycling and recycled content	Material identification and reduction of parts and material types Recycled content
Reduction of toxic material (in production)	Reduced use of formaldehyde (in adhesives and coatings) Reduced use of PVC

General Explanation

In general, the majority of the companies in this sector also have in-house criteria and evaluation system for the above-mentioned claims.

2.1.4 Packaging and containers

Claim category	Claims
Recycled content	Recycled content 100% Recycled bottle Recycled fabric made of PETE Recycled fiber and bag made of PETE
Recyclable	Design for easy recycle Recyclable Corrugated cardboard used instead for shock absorber
Refillable	Returnable bottle
Degradable	Biodegradable plastics Biodegradable fibers Container made of starch-origin plastics
Reduced resource use	Reduction of packaging materials Papers made of wood-free fibers Wood from forest thinning
Reduction of toxic materials	Steel without hexa-valent chromium Chlorine-free rapping film Ink made from soybean oil Reduced use of formaldehyde (adhesive, coating) Ink made from recycled vegetable oil

General Explanation:

Recyclability and identification of degradable materials are leading claims in this sector and in-house criteria are not used, probably because of relatively simple products.

2.1.5 Building and building materials

Claim category	Claims
Reduced energy and resource consumption	Reduced consumption of water and power Use of solar heat Product powered with solar cell Reduced fuel consumption by weight reduction Power from wind mill
Recyclable and adoption of recycled materials	Molding with recycled PETE Insulator made of recycled paper Building materials of recycled china clay Recycling of PETE Container from recycled materials Recycled PETE fiber Recycled wood Recyclable Recycled building materials Establishment of recycling system
Reduction of toxic materials	Degradation facility for NO_X/SO_X Steel free from hexa-valent chromium Elimination of PVC in electric wire insulation
Extended life product	Product for long use
Reusable and refillable	Refillable plastic bottle
Others	Reduced load of maintenance Environmental protection, cleaning, and tree planting

General Explanation

Recycling related claims are dominant, and use of solar energy, greening, tree planting, and environmental protection are unique claims for this sector.

2.1.6 Stationary and office supplies

Claim category	Claims
Use of recycled materials	Recycled paper Paper from wood-free fiber Recycled plastics Use of odd material Recycled PETE fiber
Recycled content	Recycled content of paper Recycled content
Designed for disassembly	Design for easy recycling Plastic lamination avoided Single material Design for disassembly
Reduction of toxic material	Elimination of PVC Avoidance of formaldehyde
Easy recycle	Material identification
Degradable	Biodegradable material Photo-degradable material
Recyclable	Recyclable Recycling system for cartridges
Reduced resource use	Simplified packaging
Extended life product	Long use
Refillable	Refillable

General Explanation

Claims related to recyclability and disassembly are the main claims, as shown in the above list. Individual company uses many symbols in different ways.

2.1.7 Clothing and textile industry

Claim category	Claims
Recycled materials	Recycled rubber Recycled PETE Recycled paper Recycled material Reuse of wastes

Recyclable	Recyclable Nylon Easy recycling Recyclable
Reduction of toxic material	Elimination of PVC Reduced use of chemicals Fluorocarbon-free urethane
Reduced resource use	Reduced resource use Dying without water Wood-free fiber
Reduced energy consumption	Produced by power from wind mill Reduced energy consumption
Design for easy recycle	Single material
Biodegradable	Adoption of biodegradable material

General Explanation

In this sector, claims of recycled PETE fiber are dominant, as well as recycling related claims in general.

2.1.8 Materials and components

Claim category	Claims
Recycled material	Plastic compound of recycled material Recycled PETE plastics Recycled paper Recycling of wastes Recycling of used tire
Degradable	Degradable material Biodegradable material
Recyclable	Recyclable rubber
Reduced energy consumption	Use of solar cell
Recovered energy	Recovered energy
Reduced resource use	Paper from wood-free fiber

General Explanation

Many claims related to recycling are made in this sector too.

2.1.9 Energy and power generation

Claim category	Claims
Reduced energy consumption	Power from wind mill Power from solar cell
Recovered energy	Recovered energy from waste heat
Reduced resource use	Reuse of wastes Use of waste plastics as chemical reduction agent in blast furnaces

General Explanation

This sector does not appear to use many self-declared environmental claims.

2.1.10 Distribution and retailing

Claim category	Claims
Promotion of recycling	Recycling of packaging materials
Reduced resource use	Use of odd material Paper from wood free fiber Reduction of packaging material
Reduction of toxic material	Detergents create less pollution Non bleached textile Rapping film without chlorine Elimination of chlorine
Recycled content	Recycled content
Refillable	Returnable bottle
Reduced energy consumption	Co-generation Reduction of energy consumption
Waste reduction	Waste reduction

General Explanation

Recycling, reduced resource use, and reduction of toxic material are observed in many cases in this sector.

2.2 Case studies on self-declared environmental claims and symbols by individual companies

Since the number of companies surveyed for the study is over 30, explaining each case is almost impossible because of lack of space. Accordingly, several cases are presented below to illustrate distinctive examples in detail.

2.2.1 NEC Corporation (http://www.nec.com/)

Claims and qualifications

The company has its own system to qualify products as "Environmentally Sound Products (Eco Products)", which consists of three phased standards, i.e. Basic Requirements for the Eco Symbol, Common Eco Product Standards, and Environmental Standards for Each Product Group.

Basic Requirements for the Eco Symbol are: (a) the product meets Common Eco Product Standards and Environmental Standards applicable to the product; (b) the product has superiority in environmental soundness to the counterpart products of competitors or past NEC products; (c) the product's environmental aspects and information are verifiable and available for consumers.

Major items in Common Eco Product Standards are shown in the table below.

Items	Contents
Prevention of global warming	Understand amount of CO_2 emission by LCA (no criteria value)
Recycle and recover of resources	Material identification of plastics Cardboard contains recycled content over 70% Recycled paper awarded Eco Mark for manuals

Reduction of pollution	Elimination of PCB, poly chlorinated naphthalene, asbestos, and particular flame retardants including bromine Elimination of ozone depleting substance in all production stages including materials, parts Elimination of PVC from packing and bags/pouches
Prior assessment of environmental performance	Product assessment in design and production stage “Green procurement” of parts and materials
Establishment of EMS	Certification of EMS with ISO 14001

Environmental Standards for Each Product Group are provided specifically according to the product group’s peculiarity. Therefore, individual standards are not appropriate here, but the items are the same as in the table’s items and the contents are more detailed, sometimes including more items, and adjusted to the product category.

Communication and symbol

Products that fulfill the above-mentioned standards are given the symbol shown on the left hand side. The symbol (called as Ecosymbol) is put on products, catalogues, manuals, other materials, and internet homepage. Detailed explanations about the claim’s qualification are not necessarily displayed on the product itself. In addition to the symbol, six claims are indicated with each graphic, although they are not shown here. The six aspects are:

reduced energy (with reduction ratio),

consideration of packaging (type of materials and recycled content of paper),

material identification (with name and applied parts),

reduced volume of the product (with mass reduction ratio to past product), reduction of toxic materials (with names and reduced mass), and

recovery system of used products (only for corporate use).

General Explanation

Products have always used composite and multiple claims. Explanation of multiple qualifications for environmental claims need many sentences and become hard to understand at the store. For this reason, companies choose to disclose selected simple explanatory statements on the product, and provide detailed descriptions in the accompanying materials and internet homepage. Management related claims, such as EMS certification, introduction of prior assessment methods, and so-called green procurement, may not be appropriate and not comply with ISO 14021. The symbol does not relate to the meaning of each claim, but reflects the company's recommendation of the products in general as environmentally conscious products. It's use is also strictly limited to the company called "NEC".

In the sector where NEC belongs, there are many companies adopting similar systems of qualifications and symbols..

2.2.2 Sony Corporation (http://www.sony.net/)

Claims and qualifications

Sony selected five aspects on which to make claims about environmentally conscious products.

Reduction of power consumption in idling

Lead-free solder

Elimination of non-halogen flame retardants

Easily recyclable packaging

Vegetable ink without VOC

A quantitative or definitive explanatory statement usually follows the claims.

Communication and symbol

The claims are stated on catalogues, packaging, manuals, advertisements, and displays at the store, as well as stickers on

products. On occasion, a symbol (called an Eco info mark), shown on the left hand side, is placed in front of the claim and explanatory statements to attract attention. The symbol is different from those suggested in the ISO standards, in that it has no relevance to the implication of the claim. It may be called a heading instead of a symbol.

General Explanation

The company has simple qualifications rather than systematic or phased qualifications, which is unique when compared to other companies in the sector.

2.2.3 TOTO LTD. (http://www.toto.co.jp/en/)

Claims and qualifications

TOTO is one of leading manufacturers of ceramic sanitary equipment and plumbing hardware in Japan. The company has an in-house system to certify products as eco-products, using its own marking on the products. The following requirements for the claims are selected for certification by the system through the company's product assessment activity.

Reduced CO_2 emission in production and use, with Life Cycle CO_2 evaluation method

Reduced energy consumption in use

Reduced water consumption in use

Reduction of air pollution and effluent

Cleaning of air and water

Coping with "3R" (Reduction of product mass and extension of product life, Reuse of recycled materials, and promotion of Recycling of product and packaging)

Communication and symbol

To communicate the claims, symbols that are actually a kind of graphic of letters which convey the claim itself, are used on the product, its catalogue, etc. One of these graphics is shown on the left hand side (called as TOTO Eco mark), the Chinese characters mean, "reduced use of water and power." They use other graphics such as "reduced energy", "reduced wastes", "reduced use of detergents", "reduced NO_X emission and minimized size",

“low emission of formaldehyde”, etc.

General Explanation

In this case, the marking method offers another unique system. The graphic itself has almost no meaning and the letters are the main feature. However, since the space for letters is limited by the graphics, detailed explanatory statements are omitted.

2.2.4 Mizuno Corporation (http://www.mizuno.com/)

Claims and qualifications

Claims made by this company are not general principles covering all products, but specific to each product or product group. So far, ten products/product groups are designated as deserving to carry the “Mizuno Environmental Label,” which is shown below. The ten products/groups are:

Shoes and rackets made of artificial leather from recycled PETE (grips are made from the leather)

Sport wear, shoes, and bags made with recycled PETE fiber

Golf club with recycled rubber grip

Sport wear and insoles of recycled fiber

Shoes with film containing silk protein power

Base ball gloves made of leather tanned with non-chromate agent, and made of recycled PETE fiber

Soles with rubber sole of recycled tire

Shirts and underwear made of “Pressthermo”

Shirts and underwear made of “Eval” fiber

Wares made of biodegradable fiber and plastics of lactic acid derivatives

Communication and symbol

These products are identified with the mark shown on the left side. The marking is put on the products catalogue, etc.

General Explanation

There are no across-the-board principles or criteria applied to each product, and detailed explanations, such as recycled content or environmental advantage, are not presented.

2.3 Case study on self-declared claims by organizations including industrial associations

There are several type II-like declarations operated by some organizations such as industrial associations, trade associations, environment oriented groups, etc. In fact, they are not truly type II self-declared environmental claims. They appear to be a kind of certification program or accreditation program similar to the type I EL. However, they are certainly not type I program, because the operating body is not an independent third party, there is no open participation system for stakeholders, or the majority of the claims are limited to a single issue.

While to pick up these programs as type II self-declared environmental claims here may be confusing, it may have rationale in that the expansion of type II characteristics may produce this kind of derivative. To review these programs is probably helpful in understanding the peculiarity of type II declarations from a different viewpoint.

2.3.1 PC Green Label System (http://www.jeita.or.jp/english/)

The operating body of this program is Japan Electronics and Information Technology Industries Association (JEITA), which is one of the leading industrial associations in Japan. The target products are personal computers (PCs), including desktops and laptops, as well as peripherals like keyboards, mouse, and monitors.

Claims and qualifications (digest)

System facilities and competence as a manufacturer for developing and producing environmentally conscious PCs:

Establishment and operation of ISO 14001 EMS or the equivalent

Prior assessment system to prevent wastes from used products

System for reduced resource use

Collection and disposition system to comply with regulations

System to accept used domestic products from municipal facilities

System providing easy access to relevant environmental information

For product users

For municipal authorities

For maintenance departments/contractors

For contractors of recycling and disposition

Implementation of environmentally conscious design and production

Design for reduced energy consumption

Consideration of product safety and electro-magnetic interference

Reduction of harmful substances

Design and production of 3R principles (reduce, reuse and recycle) for products

Design and production of 3R principles for packaging and manuals

Elimination (so far as possible) of cancerous substances in IARC (International Agency for Research on Cancer) list as level 1 and 2A.

Communication and symbol

PCs that pass the above qualification are allowed to display the symbol of the association, which is shown on the left hand side. An explanatory statement which refers to the JEITA program on its homepage, are usually added to the symbol.

General Explanation

The program seems to be a kind of certification program and not to be a type II self-declared environmental claim. However, members of the association are manufactures of PCs (the fist party). Therefore it seems reasonable to consider these claims as a kind of self-declared declaration. type 1.5 (?) may be rather appropriate name. There are a lot of qualifications related to the system establishment, rather than aspects of product itself, which are not in line with the ISO 14021 principles. However, as far as appearance is concerned, the symbol sends a message of an "environmentally conscious PC" and to distinguish this program from type II EL is difficult.

2.3.2 Green Mark (Use of recycled paper) (http://www.prpc.or.jp)

The operator of the program is a kind of half-public organization named Paper Recycling Promotion Center (an incorporated foundation). The objective of this organization is to promote recycle of paper through financial support, keeping balance in demand and supply of used paper stock, and public relation with people in general. Supporting members are pulp and paper manufacturers and paper stock dealers. The target products are toilet papers, tissues, business papers, news papers, paper heat insulators, paper products for pet, corrugated card boards, paper boxes, etc.

Claims and qualifications

Recycled paper products with 40% recycled content or more. (Basic requirement)

Over 50% content for business papers and news papers

100% recycled content for toilet papers

Communication and symbol

The symbol is indicated on the products or its packaging.

Prior procedures and approval from the center is necessary to use the symbol.

The letters on the symbol mean "green mark."

General Explanation

The program clearly aims at declaration of recycled content. However, there is no

recycled content figure which is against the ISO 14021 requirements on expressing the recycled content claim. But, it is fair to state that the symbol has been used for many years before ISO 14021. Although the program looks like a certification of the recycled content, the message of the symbol may be recognized as a type II declaration, at least in appearance.

2.3.3 Green Pla Mark (Biodegradable plastics) (http://www.bpsweb.net/)

Operating body of this program is Biodegradable Plastics Society, which consists of manufacturers of biodegradable plastics, industrial users of the plastics, and application members that are going to use the mark for their products. According to the society rule, the aim is to certify the plastics as biodegradable in conformity with JIS/ISO (JIS: Japan Industrial Standard), publicly opened positive list of materials that are registered and disclosed by the society, and inspection rule of the society. Therefore, the society is like a test and verification organization for type II self-declared environmental claims based on national standards (the counterpart standards to ISO standards). System and constituent organizations seem to be well equipped to keep technical and fair-minded operation as well as openness.

Claims and qualifications

Over 50% (mass or volume) of the product has to be biodegradable and registered in the positive list of the society

All ingredients pass the criteria of safety and non-toxicity

Communication and symbol

The products consist of biodegradable plastics, which are applied voluntarily and approved by the society, can use the symbol. The letters on the symbol mean “Green Pla” and “biodegradable plastics.”

General Explanation

This case may be the one described in the clause 5.7 (i) of ISO 14021 as certified by the third party, although it is still not clear whether the society is truly independent third party or not.

2.3.4 R Mark (Recycled paper content)

The mark originally was introduced by a council to promote waste reduction (a substructure led by nation-wide municipal confederation and partly participated by citizens). Aim of this plan is to promote paper recycle and paper products, especially printed papers.

Claims and qualifications

Every recycled paper can use the mark with % figure of recycled content. No need to get allowance or registration to the operating body.

Communication and symbol

Everyone can use the mark freely, shown on the left hand, as long as it indicates accurate % of the recycled content in the products. The sentence on the symbol is read as “use recycled paper of recycled content ××％”. The figure in the mark shows % of the recycled content.

General Explanation

Use of the mark is completely free for everyone. This mark also has been used for a long time well before the ISO discussion. However, as of now, the mark does not comply with the ISO 14021 requirements.

2.3.5 Pack Mark (Use of recycled milk carton) (http://www.packren.org/)

The program is operated by the Japan Milk Carton Recycling Association (JMCRA), which consists of various members from different fields such as nature preservation, distributors of organically grown vegetables, preservation of the waters, improvement of consumers’ lives, waste reduction, recycling, environmental education, co-ops activities, workshop activity for welfare of handicapped people, public corporation for the senior citizen. Originally, the activity started by housewives to collect and recycle used milk carton. As the activity increasingly grows, expedient utilization of recycled resource becomes indispensable for efficient resource circulation. Pack Mark was then introduced for products made from recycled fibers of used milk cartons. The mark is used on toilet papers, tissues, files, notes, paper trays for foods, various packages, paper

stings, etc.

Claims and qualifications

The products produced in the factories previously approved by JMCRA

Contain recycled fiber from used milk carton partly or entirely

Percentages of the content are settled depending on the product

Pollution preventive measures in production process

Quality and safety satisfied relevant standards.

Reasonable price

Mark users are registered as members of the Recycle Association for Collection and Use*

* Commissioned body by JMCRA to carry out the business practice

Communication and symbol

Products satisfied the above requirements could indicate the pack mark, shown on the left hand of which letters mean, “recycle of milk carton.”

General Explanation

The program may be a certification of type II declarations by a third party. Considering the fact that the operating body consists of only user’s side (the second party), and background based on specialty or technical expertise seems not to exist, its characteristic is ambiguous from the view point of ISO classification. As far as consumer’s perception is concerned, it is likely to be construed as a type II self-declared environmental claim.

2.4 Database of self-declared environmental information (Type III like environmental declaration)

2.4.1 GPN Database (http://www.gpndb.jp/)

The Green Purchasing Network (GPN) is a private organization to promote purchasing

of environmentally conscious products, of which members consist of industries, consumers, and government. So far, GPN published “Basic Principle of Green Purchasing,” “Product-wise Guideline for Green Purchasing,” and “Environmental Data Book (GPN Database)”.

The GPN in Japan has fifteen different data books, applicable to fifteen different product categories. A data book takes the form of a matrix, which consists of green purchasing guidelines, criteria or parameters in a row and the names of products in a column. Manufacturers may provide environmental information about their products in response to the criteria in the data book. The manufacturers are responsible for the information they provide; thus, the environmental information in the GPN’s data book is classified as a self-declared environmental declaration.

In general, an individual company makes self-declared environmental declaration for its own products. However, the data book in the Japanese GPN program is different from the traditional approach because self-declared environmental claims are made in a structured way by presenting information in accordance with the format. Furthermore, an independent, non- profit organization organizes and manages the data books, but not the contents of the claims.

Unlike conventional self-declared environmental claims, claims presented in the data book are easy to compare. This is because claims are presented by filling in the blank cells of the matrix in the data book where all claimants must answer to the same criteria or parameters for a particular product. Typical criteria or parameters for copying machines include; energy consumption, two-sided copy function, collection and recycling of used products and cartridges, use of reusable parts and recycled materials, non-use of halogenated substances and heavy metals.

The fifteen product categories covered in the Japanese GPN program are: copying and printing paper; copiers, printers, facsimile machines; personal computers; stationery and office supplies; office furniture; toilet and tissue paper; lighting apparatus and lamps; motorcars; refrigerators; washing machines; air conditioners; TV sets; uniform and working wear; offset printing service; hotels and lodges (under development). A table below shows data book for personal computers, specifically, lab top PCs.

GPN data book of Lap top PCs for Green purchasing (GPN Japan, 2002)

ID Number			**61**	.	**65**	.	**70**
Product name			VAIO PCG-XR7		Libretto 100CT/2.1		ThinkPad i Series/2611-459
Target user			Individual		Individual/ Corporation		Individual
Manufacturer			SONY	.	Toshiba	.	IBM
Process/HD/Monitor			Pentium(R) 10.0 GB LCD(TFT) 13.3inch	.	Pentium(R) 10.0 GB LCD(TFT) 13.3inch	.	Mobile Intel(R) 366MHz 6.4GB LCD(TFT) 14.1 inch
Energy consumption (W)			2.0	.	15.0	.	2.5
Energy Star	Suitability on Standard		Yes	.	Yes	.	Yes
	Set Sale	Main	-	.	-	.	-
		Monitor	-	.	-	.	-
Low power mode	Power consumption (W)		2.0	.	15.0	.	2.5
	Set Sale	Main	-	.	-	.	-
		Monitor	-	.	-	.	-
Added note on energy efficiency			Energy star design		Off-power saving		Suitable for energy standard
Memory Expandability		Basic (MB)	64	.	32	.	64
		Slot	Yes	.	Yes	.	Yes
		Max. (MB)	256	.	64	.	256
MB expanded slot, PC card slot			Yes		Yes		Yes
Added note on long use			Capable of addition of memory, battery of long life. 4-7hours		Capable of upgrade of HDD, etc		Correspondence of TypeIII*1 or TypeI/II*2, CardBus/ZV port

Recyclable design	Yes	.	Yes	.	Yes
Use of recycled plastic material	No	.	No	.	No
Added note on material	Indication of name of resin and type of battery		Indication of name of resin and type of battery, unification of packaging		Design for disassembly, use of recyclable material
Use of recycled paper for manual	Yes	.	No	.	Yes
Use of retardant (Br)	None	.	None	.	None
Use of PVC	None	.	None	.	None
Added note on environmental aspect	Unification of cardboard, use of Halogen-free resin		Minimization of packaging, prohibition of EPS		Indication of name of raw material of plastic parts
Added note on technical aspect	Jog dial, CD-R drive		Design of high function and high capacity		Design of All-in-One
Suggested manufactured Sales Price	1999/6 Open	.	1999/6 Open	.	1999/7 Open

As can be seen from this table, the data book contains information on self-declared environmental claims presented in an orderly manner. As such, purchasers can make product comparisons with ease based on the information in the data book. The table includes not only self-declared environmental information but also specific information related to product attributes. Thus, one may consider that data books in the Japanese GPN program are not self-declared environmental claims.

There are clear statement made by the GPN in the data book that the data in the data book is neutral information for consumers/purchasers' informed purchase which is a collection of self-declared company's data offered and registered voluntarily, and that no recommendation or certification is given from the GPN as environmentally conscious products. The responsibility for the data is on each company, of which home page is linked with the data book web site. However, an assumption seems to be natural

that consumers/purchasers are likely to misunderstand easily as recommendations from GPN because of the name and property of the organization appeared in the data book.

A broader interpretation of self-declared environmental claims certainly can include the GPN's data books as an application of type II EL. The basic characteristics of the information are self-declared environmental claims, but the type of information is a data sheet, other than sentences, which can accommodate similar products in a category. Therefore, it may be type III like self-declared environmental claims, e.g. dare to call it Type 2.5 declaration.

2.4.2 Energy Conservation Performance Catalogue (http://www.eccj.or.jp/index_e.html)

The providing body of the data collection is the Energy Conservation Center, Japan (ECCJ), a semi public incorporated foundation. The center implements energy-conserving activities based on laws and regulations, such as on factories, on buildings, on products, on civil life, etc. Regarding product oriented activities, the organization operates Energy Star Program (commissioned from the government), Energy Conservation Label, etc., as well as Energy Conservation Performance Catalogue.

The program discloses data in catalogue regarding energy conserving performance during operation of various products. The data based on evaluation methods stipulated in laws and standards are not verified and certified by the ECCJ. The catalogue also contains other functional information of the product if the company intends to include it. The information is edited in accordance with the pre-established parameters and format, which were adopted through consultation with industries for industrial use and, consultation with academic, consumers, and industries for home use.

The categories and the number of product under the category (shown in brackets) are: Air conditioners(270), TV sets(229), VCR(86), Refrigerators(93), Washing machines (60), Light fixtures(97), Copy machines(14), Personal computers(126), Copy machines for business use(53), and Air conditioners for business use(45)

Since the data are obtained by the company according to the relevant regulations and standards and not verified or certified, its property is considered as a sort of Type II self-declared environmental claims. The difference is that the information is not in text or symbol but in datasheet.

2.4.3 Eco-profile for home appliances (http://www.jema-net.or.jp)

The database is compiled with data of self certified on their own responsibility from member companies and arranged with common items and format by the Japan Electrical Manufacturers' Association(JEMA). The targeted products are refrigerators(7), washing machines(6), and home use air conditioners(9). The figure in bracket is current number of product in each product category.

Parameters in the database include: Power consumption in operation, Mass and major material formation of product, Recycled plastic components, Paper material of major manuals and documents, Types of rechargeable batteries, Mass and major materials of packages, Recycled content of major packaging materials, Mass of lead contained solder of PCB, Components of PVC, Components using specific flame retardant of bromine derivatives, EMS certification of major production sites, and Noise level during operation

JEMA mentions reference to ISO/JIS standard of type II EL, relevant regulations, and Code of Fair Competition on Indications of Products (the National House Appliance Fair Trade Council). Judging from the statement of JEMA, the database is a sort of Type II like data, without certification by the association.

2.4.4 Model-wise Environmental Information of Cars (http://www.jama.or.jp/eco/eco_car/info/info_1.html)

Japan Automobile Manufacturers' Association Inc. sets up a network on the home page to link to member companies' home pages that provide environmental information in common format and items that are previously set by JAMA. The items are fuel efficiency, exhaust gas, noise, coolant for air conditioner, lead ingredient, and recycling information.

After all, this is a network without substantial database other than only a linkage to home pages of the member companies. However, it is convenient for purchasers to get comparable information classified by model. The information is obtained according to the relevant regulation or standards but is neither verified nor certified by JAMA. Therefore, this is also a kind of self-declared information like Type II, but the form is similar to Type III EL.

3. Implications from the practices - Conclusions

3.1 Contents of claims

Many problematic claims are observed in the actual practices. They include: i) introduction, establishment, implementation, and certification of environmental management system (EMS), ii) conformity with the regulations, and iii) introduction, establishment, or implementation of methodologies and systems (not the results of evaluation) for environmental performance evaluation of the products.

Although the intention of the claimants to appeal the merits of these items is well understood, these claims obviously do not meet requirements stipulated in ISO 14021.

3.2 Form of communication

i) Claims without required explanatory statements are occasionally observed.

ii) Due to multiple claims and large number of claimed components, indication of claims, to put explanation and symbols on the product seems to be reasonably difficult, especially for complicate and high performance products.

iii) Disclosure of only information like “meet in-house standards” instead of evaluation results of aspects is observed, even if a company has its own evaluation standards in detail for self-declaration and its achievement. This type of claim should be decided not to be relevant from the view point of ISO 14021.

iv) For the case of (b), communication as electronic information on home pages should be considered and discussed as formal method of disclosure of claim’s explanatory statements at the time of the ISO discussion for the revision of ISO 14021.

v) Claims that seem to be verified or certified by third-party-like organizations are observed. Standpoint to the claimant of the organization is not necessarily clear as the third party. However, the claims’ characteristics are rather clear as Type II claims. Therefore, it should be identified as Type 1.5 declaration. From the viewpoint of ISO 14021 5.7 i), the claims should be noteworthy.

vi) Some programs that make data sheet of unverified/certified environmental

information are operated by organization including industrial associations. The property of the data sheet is thought to be self-declaration, but the form is like type III declaration, i.e. Type 2.5 may be appropriate.

3.3 Use of symbols

Many different symbols used are different for each company. In some cases, symbols are closely connected to the company name or logo. This indicates that these symbols simply mean "environmentally conscious product" instead of conveying specific environmental aspects of the product. This situation might not have been dealt with in discussion of ISO 14021 (ISO 14021 clauses 5.8.2, 5.8.3, 5.8.5, and Note, 5.9.3). The expectation for maturity and popular use of new symbols for ten (10) selected claims other than the Mobius Loop through market practice may not be achieved in the near future (ISO 14021, clause 5.9.3).

A different mark, e.g. Eco info mark or TOTO Eco mark, as presented above, that may have been discussed during the drafting of ISO 14021 has now been emerging. How to deal with these marks might be another issue for the next revision of ISO 14021.

4. Other case examples for self-declared environmental claims

4.1 Asahi Shimbun (1992): Newspaper article

Member companies of The Japan Electrical Manufactures' Association (JEMA) use the marking, which is printed on the document, for the indication of a refrigerator produced with HCFC instead of CFC as the coolant. In the vicinity of the mark, the explanatory statement, which states the refrigerator copes with legislation on chlorofluorocarbon, is printed. Green Peace Japan criticizes this symbol as implying benefits for the earth in adverse to the reality that HCFC is still harmful for the earth because of its greenhouse effect although it has smaller ozone-depleting coefficient than CFC. They appealed to Fair Trade Committee and Japanese Organization for Examination of Advertising as a misleading and inappropriate advertisement. JEMA says there is no expression of "earth friendly" and thus the claim does not mislead consumers.

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Asia-Pacific

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ISBN 981-04-8516-6 APEC # 203-CT-01