TECHNICAL REPORT

ISO/TR 14025

First edition
2000-03-15

Environmental labels and declarations — Type III environmental declarations

Marquage et déclarations environnementaux — Déclarations environnementales de type III

Reference number
ISO/TR 14025:2000(E)

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 734 10 79
E-mail copyright@iso.ch
Web www.iso.ch

Printed in Switzerland

Contents

Page

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The main task of technical committees is to prepare International Standards, but in exceptional circumstances a technical committee may propose the publication of a Technical Report of one of the following types:

— type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;

— type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;

— type 3, when a technical committee has collected data of different kind from that which is normally published as an International Standard ("state of the art", for example).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

Technical Reports are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Attention is drawn to the possibility that some of the elements of this Technical Report may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO/TR 14025, which is a Technical Report of type 2, was prepared by Technical Committee ISO/TC 207, *Environmental management*, Subcommittee SC 3, *Environmental labelling*.

This document is being issued in the Technical Report (type 2) series of publications (according to subclause G.3.2.2 of Part 1 of the ISO/IEC Directives, 1995) as a “prospective standard for provisional application” in the field of Type III environmental declarations because there is an urgent need for guidance on how standards in this field should be used to meet an identified need.

This document is not to be regarded as an “International Standard”. It is proposed for provisional application so that information and experience of its use in practice may be gathered. Comments on the content of this document should be sent to the ISO Central Secretariat.

A review of this Technical Report (type 2) will be carried out not later than three years after its publication with the options of: extension for another three years; conversion into an International Standard; or withdrawal.

Introduction

The purpose of this Technical Report is to identify and describe the elements and issues concerning Type III environmental declarations and corresponding programmes, as well as to provide information in specific areas where general agreement among experts exists.

This Technical Report also discusses issues that should be resolved prior to the possible development of an International Standard. It recognizes that there are various Type III environmental declarations in use and that the concept is still evolving.

In the work plan of the Type III task group, a Type III environmental declaration is described as "quantified environmental life cycle product information, provided by a supplier, based on independent verification, (e.g. third party), (critically reviewed) systematic data, presented as a set of categories of parameter (for a sector group)[1)].

— The Type III environmental declaration is non-selective but presents the information in a format that facilitates comparison between products.

— The Type III environmental declaration includes information supplied to industrial customers and to end-use consumers.

"Third party" does not necessarily imply the involvement of a certification body."

1) These terms of reference are not yet finalized and represent a majority, rather than a unanimous, point of view on some issues. The parts in parentheses are issues for further consideration.

Environmental labels and declarations — Type III environmental declarations

1 Scope

This Technical Report identifies and describes elements and issues concerning Type III environmental declarations and corresponding programmes, including technical considerations, declaration format and communication, and administrative considerations for developing and/or issuing a Type III environmental declaration.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this Technical Report. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this Technical Report are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 14020:1998, *Environmental labels and declarations — General principles.*

ISO 14021:1999, *Environmental labels and declarations — Self-declared environmental claims (Type II environmental labelling).*

ISO 14024:1999, *Environmental labels and declarations — Type I environmental labelling — Principles and procedures.*

ISO 14040:1997, *Environmental management — Life cycle assessment — Principles and framework.*

ISO 14041:1998, *Environmental management — Life cycle assessment — Goal and scope definition and inventory analysis.*

ISO 14042:2000, *Environmental management — Life cycle assessment — Life cycle impact assessment.*

ISO 14043:2000, *Environmental management — Life cycle assessment — Life cycle interpretation.*

3 Terms and definitions

For the purposes of this Technical Report, the terms and definitions given in ISO 14020, ISO 14024, ISO 14040, ISO 14041, ISO 14042, ISO 14043 and the following apply.

3.1
category endpoint
attribute or aspect of natural environment, human health or resources, identifying an environmental issue of concern

NOTE Figure 2 [ISO 14042:2000] illustrates this term in further detail.

[ISO 14042:2000]

3.2
certification
procedure by which a third party gives written assurance that a product, process or service conforms to specified requirements

[ISO/IEC Guide 2:1996]

3.3
functional unit
quantified performance of a product system for use as a reference unit in a life cycle assessment study

[ISO 14040:1997]

3.4
impact category
class representing environmental issues of concern to which LCI results may be assigned

[ISO 14042:2000]

3.5
interested party
any party affected by the development and use of a Type III environmental declaration

3.6
life cycle impact category indicator
quantifiable representation of an impact category

NOTE The shorter expression “category indicator” is used in the text of this International Standard [ISO 14042:—] (including the terms and definitions clause) for improved readability.

[ISO 14042:2000]

3.7
product
any goods or service

[ISO 14024:1999]

3.8
product category
group of products which have equivalent function

[ISO 14024:1999]

3.9
product function characteristics
attribute or characteristic in the performance and use of a product

[ISO 14024:1999]

3.10
third party
person or body that is recognized as being independent of the parties involved, as concerns the issue in question

NOTE “Third party” does not necessarily imply the involvement of a certification body.

3.11
Type III environmental declaration
quantified environmental data for a product with pre-set categories of parameters based on the ISO 14040 series of standards, but not excluding additional environmental information provided within a Type III environmental declaration programme

NOTE In the present development of Type III environmental declarations, alternative methodologies have been considered. In future standardization work, alternative methodologies could be incorporated as the basis for Type III environmental declarations. Therefore this Technical Report discusses issues associated with these methodologies as well. If other operational methodologies have been developed by the time future standardization work is carried out, this could be incorporated.

3.12
Type III environmental declaration programme
voluntary process by which an industrial sector or independent body develops a Type III environmental declaration, including setting minimum requirements, selecting categories of parameters, defining the involvement of third parties and the format of external communications

4 Objective of Type III environmental declarations

The overall goal of environmental labels and declarations is, through communication of verifiable and accurate information that is not misleading on environmental aspects of products and services, to encourage the demand for and supply of those products and services that cause less stress on the environment, thereby stimulating the potential for market-driven continuous environmental improvement [ISO 14020].

5 Technical considerations

5.1 General

Consistent with the principles of ISO 14020, the methodology used to develop Type III environmental declarations shall be based on scientific and engineering approaches that can accurately reflect and communicate the environmental aspects and information contained in the declaration. This Technical Report presents the current state of information and experience in the practice of Type III environmental declarations.

Specifically, this Technical Report recognizes the need to resolve some outstanding issues related to Type III environmental declarations, including:

— methods of data collection and assessment, including the role of values and subjectivity, hereafter referred to as value-choices (5.2);

— choice of life cycle inventory analysis (LCI) data categories and life cycle impact assessment (LCIA) impact categories (5.3, 7.2);

— ensuring quality of environmental information in terms of relevance, accuracy and uncertainty (5.2.3, 5.5);

— the means of ensuring that environmental information is relevant and not misleading (clause 6, 7.2);

— how to communicate with purchasers and potential purchasers in an accurate and not misleading way (clause 7);

— ensuring international compatibility, maximum comparability, and the use of sufficiently specific product information (clauses 7 and 8).

5.2 Methodology options

5.2.1 General

The quantified environmental product information in a Type III environmental declaration shall be based on procedures and results from a life cycle study in accordance with the ISO 14040 series of standards. Type III environmental declarations that have emerged to date have been based on a life cycle approach using life cycle assessment (LCA). This clause describes methodological options for Type III environmental declarations and programmes and refers to the standards in the ISO 14040 series. Figure 1 shows the relationship between the different options. The common element is that each option is based on LCI in accordance with ISO 14040, ISO 14041 and ISO 14043. However, the route to the final declaration may vary (e.g. data analysis and inclusion of additional environmental information), as described below and in Figure 1.

— Option A: A life cycle inventory analysis (LCI in accordance with ISO 14040 + ISO 14041 + ISO 14043), or

— Option B: An LCI followed by life cycle impact assessment (LCIA in accordance with ISO 14040 + ISO 14041 + ISO 14042 + ISO 14043), or

— Option C: An LCI in accordance with ISO 14040 + ISO 14041 + ISO 14043, with some additional analysis of the data, but not strictly following ISO 14042 (referred to as alternative methodologies).

Results from other environmental analysis tools may also be used to provide additional environmental information that gives a complementary perspective to a Type III environmental declaration (see Figure 1). The inclusion of additional environmental information is optional. This information may or may not be derived from an analysis of the product's life cycle. It may concern other issues associated with the product's overall environmental performance; this could include for example relevant elements of sustainable development, such as economic or social elements.

A discussion of these methodologies and the issues which are raised in the context of Type III environmental declarations appears in annex A.

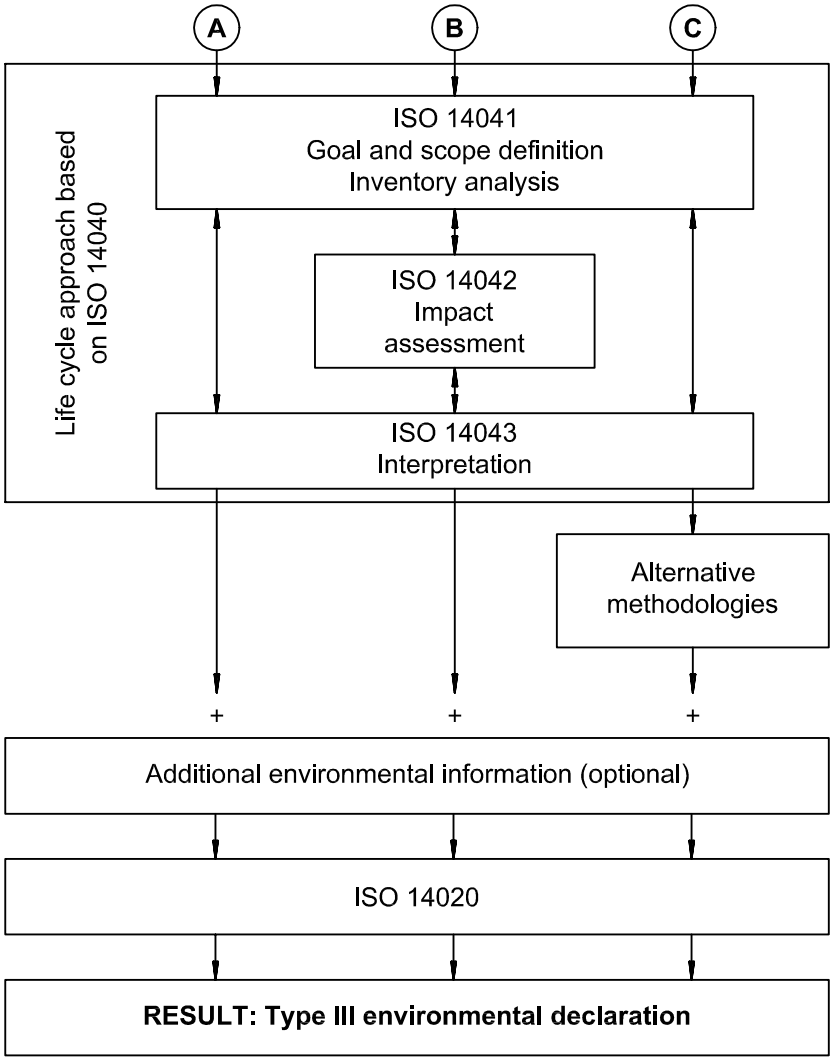
5.2.2 Considerations related to product comparisons

The main purpose of Type III environmental declarations is to provide quantitative environmental data, as described in definition 3.11 of this Technical Report. Although the Type III environmental declarations do not contain comparative assertions, the information can be used to make comparisons between products. Therefore, the developer of the Type III environmental declaration should carefully consider the requirements in ISO 14040 and elsewhere in the LCA series concerning "comparative assertions" and use these requirements as guidance in developing his technical approach, regardless of the specific methodology on which the technical approach may be based.

5.2.3 Critical review

Critical review is a technique to verify whether the LCA study has met the requirements of relevant International Standards ISO 14040, ISO 14041, ISO 14042 and ISO 14043. The evaluation shall be in accordance with the critical review process of 7.3.3 in ISO 14040:1997. The critical review process shall ensure that the methods used to carry out the LCA are scientifically and technically valid, that the data used are appropriate and reasonable in relation to goal and scope of the study, that the interpretations reflect the limitations identified and the goal of the study, and that the report is transparent and consistent.

For the purposes of this Technical Report, critical review shall also be used for evaluation of the alternative methodologies. For all forms of Type III environmental declaration, the critical review should also include an evaluation of the content and format of the external communication and how it is likely to be interpreted by end users. This evaluation should include a review for conformity to the principles defined in ISO 14020 and in the programme procedures.



NOTE See also A.1.2, A.1.3 and A.2.

Figure 1 — The three different methodological options for Type III environmental declarations and programmes

5.3 Pre-set categories of parameters

5.3.1 Identifying pre-set categories of parameters for a Type III environmental declaration

For all forms of Type III environmental declarations, it is necessary to ensure consistency, comparability and completeness of the pre-set categories of parameters across the product's life cycle for the different types of end users. The pre-set categories of parameters need not necessarily be the same for all product categories. Regardless of the methodology used, 5.3 of ISO 14042:2000 provides guidance on identification of pre-set categories of parameters (referred to in ISO 14042 as "impact categories" and "category indicators").

5.3.2 Options for identifying pre-set categories of parameters

Several options are currently used or are under consideration for identifying appropriate pre-set categories of parameters for a product system. The choice of one or more of these options for a future standard will be influenced by choice of methodology. The options for a future standard include:

— identifying a single group of pre-set categories of parameters that will be applicable to all types of product;

— identifying minimum pre-set categories of parameters, with an informative annex that describes optional supplementary parameters that may be selected to meet the requirements of a specific product category and audience;

— identifying a general list of potential pre-set categories of parameters, and directing the user to apply a specific methodology to choose which of these categories of parameters to use (pre-set);

— allowing for a programme to identify a minimum group of pre-set categories of parameters that will be applicable to all products, and could be supplemented by additional categories of parameters which are relevant to different product systems.

5.3.3 Examples

When LCI is used to assess the relative environmental aspects associated with a product system, the pre-set categories of parameters will be based on the results of an LCI study as outlined in ISO 14041, e.g. material and energy flows to and from the product system under study. In the case of LCIA, the result is a profile of category indicators as outlined in ISO 14042. A stepwise procedure should be established for periodic revisions and modifications to the category of parameters chosen.

Two Technical Reports are under development within ISO with examples on how to apply ISO 14041 (i.e. ISO/TR 14049) and ISO 14042 (i.e. ISO/TR 14047).

Examples of pre-set categories of parameters are provided in A.1.4.

5.4 Additional environmental information

Additional environmental information besides the core set of indicators should be possible in a Type III environmental declaration. In general the information will relate to the environmental performance of a product.

Under this precondition there are several kinds of additional environmental information:

— information that is derived from LCA but not communicated in the typical LCI or LCIA based formats, e.g. recycled material content;

— information that has no relation to the product's LCA study, but is based on consideration of the product's life cycle and a part of the product's environmental profile, e.g. information on toxic substances like pesticide content of textiles.

The quality of such additional environmental information should be verifiable, e.g. through critical review.

Information and instructions on product safety that are not related to the environmental performance of the product should as a general rule not be part of a Type III environmental declaration (for instance instructions on proper use, first aid or specific disposal).

5.5 Quality assurance (data and pre-set types of information)

The scientific and technical information collected and reported in a Type III environmental declaration should be also of sufficient quality to ensure the credibility of the information contained and presented in the declaration.

In practice, relevant information derived from LCA or alternative methodologies will be based upon a mixture of measured, calculated and estimated data. The quality of data used to develop a Type III environmental declaration is dependent upon its accessibility or availability, or by data precision and accuracy (e.g. gaps, types of data, etc.). As a minimum, data quality requirements for LCA or alternative methodologies should address the following alphabetical list, described in more detail in ISO 14041:1998, 5.3.6:

— consistency and reproducibility of the data collection methods;

— geographical coverage;

— precision, completeness and representativeness of the data;

— sources of the data and their representativeness;

— technology;

— time-related coverage; and,

— uncertainty of the information.

In addition to assessing the quality of data, it is important to assure the quality of methods used to convert raw data into information provided on a Type III environmental declaration. Upon completion of data collection, classification and modelling, numerous statistical techniques (e.g. uncertainty, sensitivity, etc.) can be used to better understand the relevance and strength of a study's results. These techniques can be utilized to help determine whether information provided in a Type III environmental declaration is potentially misleading or inaccurate.

6 Interested-party input

6.1 General

The process of developing and administering Type III environmental declarations and programmes shall include an open consultation with interested parties. The scope of interested-party roles needs to be considered when developing Type III environmental declarations and programmes. Reasonable efforts should be made to achieve a consensus throughout the process (ISO 14020).

Consultation is an ongoing process that occurs in the selection of product categories, selection of pre-set categories of parameters, establishing product-specific information requirements within each category of parameters and the procedures for periodic review of the required information.

There are multiple purposes and opportunities for interested-party input. Interested parties should have the opportunity to provide input that reflects their special interests, addresses technical issues and ensures overall specific credibility.

ISO 14024 may be a useful reference with respect to interested-party issues.

6.2 Suggested levels for interested-party input

Initial development of all Type III environmental declarations and programmes may consider obtaining interested-party input in, for example, the following stages:

— selection and definition of product categories;

— critical review of technical analysis used to determine product categories;

— selection, development and modification of product environmental information relevant to the Type III environmental declaration and identification of product function characteristics;

— critical review of product environmental information (including LCA results, ISO 14040:1997, clause 7);

— certification/Type III information (if applicable);

— definition of content and format of external communication;

— selection of pre-set categories of parameters.

To help ensure appropriate input, the process should consider how to ensure open participation, transparency and ongoing consultation with interested parties. In whatever level of input is determined adequate, the interested-party input process should be designed to:

— ensure adequate access to the details and sources of data and information used;

— encourage an appropriate mandatory review time;

— consider comments in a timely manner;

— setting the third-party programme administrative requirements, where applicable (for guidance see 5.7 to 5.12, 5.14 to 5.17, 6.2 and clause 7 of ISO 14024:1999).

6.3 Concepts for establishing product-specific information requirements

During the consultation process, interested parties should be involved in determining the requirements and units to be used for reporting product-specific information within each category of parameter as another element to ensure and facilitate comparability between Type III environmental declarations within the same product category.

For the results from the life cycle inventory analysis this could include, for instance, information about functional unit, system boundary setting and allocation rules. For the results from the life cycle impact assessment this could include, for instance, information about assumptions made and methodologies used.

A table of potential pre-set categories of parameters is presented in A.1.4.

6.4 Possible options for addressing interested-party input

Two options for addressing interested-party input in a future standard have been identified.

— Provide detailed guidance that outlines and addresses the issues, or

— simply incorporate ISO 14020 provisions on interested-party input and ISO 14040 reference to critical review.

7 Declaration format and communication

7.1 General

Information for communication shall be appropriate for the product category and target audience and shall convey relevant environmental information in a standardized way. Harmonization of the presentation and requirements for the basic information within product categories shall be agreed between interested parties. This agreement shall be reached in an open consultation process.

Words, numbers or symbols used for non-environmental claim purposes shall not be used in a manner that is likely to be misunderstood as making an environmental claim (ISO 14021:1999, 5.9.2).

External communication shall follow general principles and format determined during the open consultation with interested parties to facilitate comparability between Type III environmental declarations.

7.2 Establishing the information needs of the user

The design and format of Type III environmental declarations shall be developed with the needs of the end users in mind. There is a variety of possible end users with different needs. These users can be divided into two categories: consumer end users and industrial/commercial end users.

In the case of the consumer end user, consistency in a Type III environmental declaration improves its comprehension. Therefore, it would be desirable to have as universal a framework (template) as possible. Contents shall, therefore, be based on a full cradle-to-grave LCA of the product.

In the case of the industrial or commercial end user, the template requirements may take a flexible approach in order to reflect end-user needs, greater end-user technical expertise and end-user ability to have a dialogue with a supplier. One result is that contents need not be cradle-to-grave, but can instead focus on those aspects of the product's life cycle that are most relevant to the supplier.

Recommendations for consideration in the development of consumer Type III environmental declarations include:

— third-party certification;

— common format within a product category;

— full life cycle approach;

— interested-party input to the design of Type III environmental declaration programme and contents;

— addressing of impact categories in accordance with LCIA (ISO 14042) or alternative methodologies for analysing LCI data.

7.3 Type III environmental declaration designs and formats

7.3.1 General

In the development of an International Standard for Type III environmental declarations, decisions must be made with respect to the feasibility and extent that format and presentation can be standardized. At the moment, there are very few Type III environmental declarations in the marketplace. A wide variety of possibilities of formatting and presentation is available.

7.3.2 Possible options for Type III environmental declaration designs and formats

There is the question of the extent to which a future International Standard should specify a declaration format, or allow flexibility. Key options here include:

— a single universally recognized Type III environmental declaration describing content and format to be applied to all products and services, worldwide;

— universal national or regional formats to be applied to all products sold in that area, but that may vary from one area to another to recognize cultural differences and differences in the relative importance of different environmental issues;

— a basic template of information to be expected globally for all products, plus other information determined by the developer to be significant for a specific product category;

— a different Type III environmental declaration format for different product categories, based on the types of information that are considered most significant for that category. Within a category, however, the content and format are to be standardized;

— different types of Type III environmental declaration requirements for different types of user (e.g. industrial purchasers versus consumers), or;

— others.

7.3.3 Issues for consideration in declaration formatting

In general, issues for consideration in declaration formatting include:

— whether/how to include uncertainties?

— how to manage missing data versus information where an environmental aspect for a particular product is either “zero” or not detected (e.g. no detectable air emissions)?

— how to aggregate different types of information from an LCA in ways that are not misleading?

— how to communicate technical aspects of the life cycle assessment, such as the extent to which time, geography and dose/response issues have been managed (i.e. in the case of life cycle impact assessment), and chosen allocation methods and system boundaries?

— whether the data (or what part of the data) are either average or specific to sites and products?

— how to ensure that end users’ Type III environmental declarations do not overstate, or understate, the environmental significance of different numerical values for a given type of information?

— whether to communicate data graphically, numerically, or some combination of both?

— whether or how to communicate non-numerical information (e.g. environmental management systems)?

— how to explain the determination of relevancy of results or outputs and their interpretation?

— whether or not all data from a life cycle must be reported, or whether specific types of information may be selected and others omitted?

— the practicalities of space, especially on package declarations where space is normally at a premium;

— how can the Type III environmental declaration be formatted so as not to distract from other important information, such as use instructions, safety/health warnings nutrition information (in the case of food products), some of which is legally required in many countries?

— should the Type III environmental declaration contain information on baselines or “benchmarks?”

— should the Type III environmental declaration define the boundaries of the LCA study?

— for consumer Type III environmental declarations, must the declaration be on the package or otherwise at the point of purchase, or could it be supplied by some other means?

— is interested-party input needed?

— what are the practical costs and distribution implications of the choice of and amount of text that such Type III environmental declarations may require (e.g. more text may create difficulties in translation and repackaging)?

— how does the Type III environmental declaration design and format balance the amount of information with the need for multiple languages of the users and various cultures in which the information will be used?

— how will the appropriateness of translation from one language to another be ensured?

— whether and how to make purchasers and potential purchasers aware of limitations of the specific methodology used?

— how to inform the reader of the declaration where to get additional information about the method and further data?

— others?

7.4 Combining Type III environmental declarations with other environmental labels

Type I and Type II labels, or declarations of conformity with ISO 14001 (EMS), should not be merged together directly with a Type III environmental declaration. This is in order to ensure consistency with other International Standards for environmental labelling (i.e. ISO 14020, ISO 14021 and ISO 14024). However, the use of other labels separately from a Type III environmental declaration on the same product, package, report, Internet site, etc. cannot be excluded. Thus, it is important that practical guidelines be developed to minimize or avoid the possibility that the end user will be confused or misled by the presence of two or more forms of environmental declarations on the same product or package. As a basic rule, however, there must be clear differentiation between the Type III environmental declaration and any other declaration that accompanies it. This should apply to all forms of Type III environmental declaration communications.

Whether and how Type III environmental declarations may include or accompany declarations about conformity to environmental management systems also has not been evaluated. International Standards, Guides and other materials provide requirements and recommendations that need to be considered. They include ISO 14021, ISO Guide 2 and a brochure on publicizing ISO 14001 certification.

7.5 Experience and research

Practical experience is necessary in the marketplace to determine how the end user will analyse and interpret different approaches. This should include qualitative and quantitative end-user research to determine how the details of Type III environmental declaration frameworks and formats are understood and accepted by the end user. Finally, Type III environmental declaration developers and interested parties need to evaluate the implications of using universal approaches versus having the flexibility to vary declaration analysis and content from one category or geographic region to another.

8 Procedures for establishing Type III environmental declarations and programmes

8.1 General

In the development of a Type III environmental declaration there are at least three possible steps: the preparation of the declaration, verification that the proper methods were used and certification that not only were the methods proper, but that the information is correct.

The procedures related to development and use of a Type III environmental declaration include:

a) who will develop the Type III environmental declaration,

b) who, if anyone, is to be involved in certification of a Type III environmental declaration,

c) the question of whether a developer of a declaration shall meet some qualifying criterion or criteria in order to do the development work,

d) how, if at all, may work done in one country be recognized in another country, and

e) how developing capabilities to accomplish the work may be shared around the world.

The procedures necessary to develop an effective Type III environmental declaration may vary widely from sector to sector and from one programme to another. ISO 14024 may provide general guidance for procedures applicable to Type III environmental declaration programmes conducted by third-party practitioners.

Private or public organizations may operate Type III environmental declaration programmes. These organizations may

— provide supporting documentation on general information about Type III environmental declarations;

— develop general guidelines for Type III environmental declaration programmes;

— provide supporting documentation about minimum Type III environmental declaration programme requirements and product-specific environmental information;

— provide supporting documentation about interpretation of this Technical Report for the third party review process;

— develop and provide supporting documentation of the necessary competence for those third parties carrying out critical reviews.

The organizations may review the Type III environmental declaration programme requirements and determine the appropriate form of verification as a part of the open consultation process with interested parties. Once the requirements have been reviewed, a plan of supervision and control should be prepared.

Examples of various forms of Type III environmental declaration programme are shown in annex B.

8.2 Setting minimum programme requirements

Minimum requirements should be determined at the outset of the programme for all Type III environmental declarations. These should be in alignment with the principles in ISO 14020 and the generic LCA methodology according to relevant International Standards for life cycle assessment.

8.3 Selection of product categories

Product categories may be proposed by any interested party. A product category proposal should be documented, summarizing key findings and considerations leading to the proposal of the product category for the programme. It should include an evaluation of whether users of the proposed product are interested in having a Type III environmental declaration available for their decision-making, the potential for environmental product innovation, suitable definition of functional unit and product function characteristics.

8.4 Related requirements

The fundamental question is: can an entity meet the requirements of any standard, both technically and process-wise? The options depend upon the laws of any particular nation in which the work is to be used and the credibility of the work itself. Both of these issues shall be addressed by the entity to use the Type III environmental declaration (the commissioner). Any commissioner shall meet the legal requirements and likely desires for credibility of the declaration so that its usefulness is enhanced.

8.5 Certification

An organization in charge of a Type III environmental declaration programme may determine the requirements of the programme as well as forms of verification. The act of certification of a Type III environmental declaration is the responsibility of the organization.

The certification of a Type III environmental declaration remains an option with the law, and who may do it will be governed by law and by the need for credibility.

8.6 Accreditation

Whether or not accreditation is needed is a commercial and regulatory issue related to the practice itself. The development likely will occur within individual nations and further practice of this activity will determine its usefulness.

8.7 Mutual recognition

In order to have a truly international declaration, the issue of mutual recognition will need to be addressed. This issue deals with organizations that wish to recognize one another’s work. When private bodies develop this kind of recognition, the credibility of work from one country within another country may be enhanced. The requirements of national laws and international agreements will also need to be observed.

8.8 Technology transfer

The development of the ability to conduct Type III environmental declarations work needs to be spread around the world to enhance the likelihood of acceptance. The development of harmonized formats of LCA data documentation (future ISO 14048) will facilitate this.

Type III environmental declarations and non-confidential documentation and data shall be made publicly available.

8.9 Periodic review

Periodic reviews shall be undertaken at predetermined time intervals to modify and update the information in the Type III environmental declaration programmes according to procedures determined by the competent body, if established, together with the interested parties, participating in an open consultation process. Periodic reviews may be carried out separately for each product category.

Annex A
(informative)

Review of methodologies and their application to Type III environmental declarations

A.1 Life cycle assessment, LCA (ISO 14040 series)

A.1.1 Description

LCA is a technique for assessing the environmental aspects and potential impacts associated with a product, by

— compiling an inventory of relevant inputs and outputs of a product system;

— evaluating the potential environmental impacts associated with those inputs and outputs;

— interpreting the results of the inventory analysis and impact assessment phases in relation to the objectives of the study.

LCA studies the environmental aspects and potential impacts throughout a product's life (i.e. cradle-to-grave) from raw material acquisition through production, use and disposal. The general categories of environmental impacts needing consideration include resource use, human health and ecological consequences.

LCA consists of four phases: goal and scope definition; life cycle inventory analysis, life cycle impact assessment and life cycle interpretation of results (see Figure 1, ISO 14040:1997).

LCA is still at an early stage of development. Some phases of the LCA technique, such as impact assessment, are still in relative infancy. Considerable work remains to be done and practical experience gained in order to further develop the level of LCA practice. Therefore, it is important that the results of LCA be interpreted and applied appropriately.

The scope, boundaries and level of detail of an LCA study depend on the subject and intended use of the study. The depth and breadth of LCA studies may differ considerably depending on the goal of a particular LCA study. However, in all cases, the principles and framework established in ISO 14040 should be followed.

LCA is one of several environmental management techniques (e.g. risk assessment, environmental performance evaluation, environmental auditing and environmental impact assessment) and may not be the most appropriate technique to use in all situations. LCA typically does not address the economic or social aspects of a product.

Because all techniques have limitations, it is important to understand those that are present in LCA. The limitations include the following.

— The nature of choices and assumptions made in LCA (e.g. system boundary setting, selection of data sources and impact categories) may be subjective.

— Models used for inventory analysis or to assess environmental impacts are limited by their assumptions, and may not be available for all potential impacts or applications.

— Results of LCA studies focused on global and regional issues may not be appropriate for local applications, i.e. local conditions might not be adequately represented by regional or global conditions.

— The accuracy of LCA studies may be limited by accessibility or availability of relevant data, or by data quality, e.g. gaps, types of data, aggregation, average, site-specific.

— The lack of spatial and temporal dimensions in the inventory data used for impact assessment introduces uncertainty in impact results. This uncertainty varies with the spatial and temporal characteristics of each impact category.

A.1.2 Life cycle inventory analysis, LCI (ISO 14041)

A.1.2.1 Description

The development of Type III environmental declarations based on LCI consists of the first two phases of LCA; goal and scope definition and inventory analysis and the fourth phase; life cycle interpretation (ISO 14043).

The goal and scope definition phase is important because it determines why an LCA is being conducted (including the intended use of the results) and describes the system to be studied and the data categories to be studied. The purpose, scope and intended use of the study influence the direction and the depth of the study, addressing issues such as the geographic extent and time horizon of the study and the quality of data necessary.

The LCI involves the collection of the data necessary to meet the goals of the defined study. It is essentially an inventory of input/output data with respect to the system being studied.

In the interpretation phase of LCI (see clause 7 in ISO 14041:1998) the data are evaluated in light of the goal and scope, the collection of additional data, or both. The interpretation phase also typically results in an improved understanding of the data for reporting purposes. Since LCI is a collection and analysis of input/output data and not an assessment of the environmental impacts associated with those data, the interpretation of LCI results alone cannot be the basis for reaching conclusions about relative environmental impacts.

A.1.2.2 Output for a Type III environmental declaration

LCI results are typically expressed as inputs in terms of natural resources, materials and units of energy consumed. Outputs are expressed, for example, as air, water, and solid waste emissions to the environment. The selection of reported inputs and outputs from the LCI in a Type III environmental declaration is often based on identifying the most relevant inputs and outputs, as well as the interpretation of the LCI results. All inputs and outputs are calculated relative to the functional unit.

A.1.2.3 Limitations

The following paragraphs describe some of the specific limitations arising from the use of LCI for the purpose of a Type III environmental declaration.

— LCI communicates inputs and outputs only, and thus contains no characterization of the potential environmental relevance or impacts. Thus, a Type III environmental declaration based on LCI may lead an end user to overestimate or underestimate the actual importance of different inputs and outputs. For example, high volume emissions could appear to be more harmful than low volume emissions, even if the former is far less toxic than the latter.

— For products that have recycled material streams, LCI results may be based on allocation procedures across different product systems. These allocations may be difficult to communicate for Type III environmental declarations. This may be especially difficult for end users, but not necessarily the more sophisticated industrial or commercial users.

— LCI results may aggregate emissions across unit operations, different places and times, and may also aggregate different types of emissions together. Such aggregations may lead to loss of transparency. For example, volatile organic emissions may be aggregated on a mass basis and reported as total volatile organic compounds (VOC) and not as emissions of individual compounds.

The results of the LCI shall be interpreted according to the goal and scope of the study. The interpretation shall include a data quality assessment and sensitivity analyses on significant inputs, outputs and methodological choices in order to understand the uncertainty of the results. The interpretation of an inventory analysis shall also consider the following in relation to the goal and scope of the study:

a) whether the definitions of the system functions and the functional unit are appropriate,

b) whether the definitions of the system boundaries are appropriate,

c) limitations identified by the data quality assessment and the sensitivity analysis.

The results should be interpreted with caution because they refer to input and output data and not to environmental impacts. In particular, an LCI study alone shall not be the basis for comparisons.

In addition, uncertainty is introduced into the results of an LCI due to the cumulative effects of input uncertainties and data variability. Uncertainty analysis as applied to LCI is a technique in its infancy. Nevertheless it helps to characterize uncertainty in results using ranges and/or probability distributions to determine uncertainty in LCI results and conclusions. Whenever feasible, such analysis should be performed to better explain and support the LCI conclusions.

The data quality assessment, sensitivity analyses, conclusions and any recommendations from the LCI results shall be documented. The conclusions and recommendations shall be consistent with findings from the above-mentioned considerations.

Many of the limitations of LCI are relevant for the impact assessment phase of the LCA study.

A.1.2.4 Research needs

In order to support the use of LCI for Type III environmental declarations, research is needed to understand how LCI-based Type III environmental declarations can be accurately communicated to end users. In addition, LCI-based Type III environmental declaration programmes also benefit from more general research in LCI data collection, improvement of data quality and availability and reduction of costs.

A.1.3 Life cycle impact assessment, LCIA (ISO 14042)

A.1.3.1 Description

Key features of the LCIA are listed below:

— The LCIA phase, in conjunction with other LCA phases, provides a system-wide perspective of environmental and resource issues for one or more product system(s).

— LCIA assigns LCI results to impact categories. For each impact category the category indicator is selected and the category indicator result, hereafter referred to as indicator result, is calculated. The collection of indicator results, hereafter referred to as the LCIA profile, provides information on the environmental issues associated with the inputs and outputs of the product system.

— LCIA is different from other techniques such as environmental performance evaluation, environmental impact assessment and risk assessment, as it is a relative approach based on a functional unit. LCIA may use information gathered by these other techniques.

The general framework of the LCIA phase is composed of several mandatory elements that convert LCI results to indicator results. In addition, there are optional elements for normalization, grouping or weighting of the indicator results and data quality analysis techniques. The LCIA phase is only one part of a total LCA study and shall be coordinated with other phases of LCA as stated in annex A of ISO 14042:2000. The elements of the LCIA phase are illustrated in Figure 1 of ISO 14042:2000. Separation of the LCIA phase into different elements is necessary for several reasons.

— Each LCIA element is distinct and can be clearly defined.

— The goal and scope definition phase of an LCA study can consider each LCIA element separately.

— A quality assessment of the LCIA methods, assumptions and other decisions can be conducted for each LCIA element.

— LCIA procedures, assumptions and other operations within each element can be made transparent for critical review and reporting.

— The use of values and subjectivity, hereafter referred to as value-choices, within each element, can be made transparent for critical review and reporting.

The mandatory LCIA elements are listed below.

a) **Selection of impact categories, category indicators and characterization models:** identification of the impact categories, related category indicators and characterization models, category endpoints and the associated LCI results that the LCA study will address. For example, the climate change impact category represents emissions of greenhouse gases (LCI results) using infrared radiative forcing as the category indicator (see Table 1 in ISO 14042:2000).

b) **Assignment of LCI results** (classification) to the impact categories.

c) **Calculation of category indicator results** (characterization).

The indicator results for different impact categories together represent the LCIA profile for the product system.

Optional elements and information as listed below can also be used, depending on the goal and scope of the LCA study:

d) **Calculating** the magnitude of category indicator results relative to reference information (normalization).

e) **Grouping:** sorting and possibly ranking of the impact categories.

f) **Weighting:** converting and possibly aggregating indicator results across impact categories using numerical factors based on value-choices.

g) **Data quality analysis:** better understanding the reliability of the collection of indicator results, the LCIA profile.

A.1.3.2 Output for a Type III environmental declaration

The key difference between LCI and LCIA-based Type III environmental declarations is that in LCIA-based Type III environmental declarations the LCIA profile is characterized via category indicators, rather than expressed in absolute terms. For example, the climate change impact category represents emissions of greenhouse gases (LCI results) using infrared radiative forcing as the category indicator (ISO 14042). As in LCI, LCIA results are expressed on a functional unit basis.

A.1.3.3 Limitations

All of the limitations described in clause 8 in ISO 14042:2000 are relevant for Type III environmental declarations. Some of these are especially relevant and are mentioned below.

— LCIA results do not predict impacts on category endpoints, exceeding of thresholds, safety margins or risks. For example, LCIA typically excludes spatial, temporal, threshold and dose-response information, and combines emissions or activities over space and/or time. This may diminish the environmental relevance of the indicator results.

— LCIA is, wherever possible, a technical and scientific procedure. However, value-choices are used in the selection of impact categories, category indicators and characterization models, and in normalization, grouping, weighting and other procedures. The user of a Type III environmental declaration may have difficulty appreciating and understanding these value-choices.

— The listing of category indicators may indicate that all categories are of equal importance from an environmental perspective, and that the category indicator with the highest magnitude may be misinterpreted by the end user as the most important environmentally, or that a small value is environmentally insignificant.

In addition to the specific items above, there are other practical restrictions or limitations described in ISO 14042 that should be considered during the development of a Type III environmental declaration.

A.1.3.4 Research needs

Research is needed to understand how LCIA-based Type III environmental declaration end users interpret different LCIA category indicator results, relative to the limitations described above. The outcome of this research may influence the design, execution and user interpretation of Type III environmental declarations.

Research is also needed to optimize the accuracy and relevance of the information in a Type III environmental declaration relative to the work efforts and costs of data collection and characterization modelling for an LCIA study.

EXAMPLE Example of a method for impact assessment:

The CML method [8] generally follows the classification and characterization steps of LCIA (assignment and characterization modelling steps in ISO 14042) into a singular step and includes valuation. Specific environmental issues considered by the researchers to be important are selected according to their perceived environmental priority. The environmental issues are then weighted by means of classification factors, based on value-choices about the relative importance of different issues. These factors are applied to the inventory results by an equivalence factor. The inventory result is then converted into a contribution to a value-based approximation of presumed environmental effects. The results are summarized in tabular form. These effects or partial effects are then normalized by comparison of each one with a selected reference level, typically the annual total world contribution for a particular environmental issue.

A.1.4 Examples of pre-set categories of parameters

Table A.1 gives a non-exhaustive list of examples of potential pre-set categories of parameter suggested by emerging Type III environmental declaration programmes. This list is illustrative and does not imply acceptability for a Type III environmental declaration.

Table A.1 — Examples of pre-set categories of parameter

LCI results	Data from LCIA (Category indicator results)	Aggregation	Value-choice
Energy consumption (joule/functional unit)	Resources	Primary energy. Across the life cycle.	Regional and temporal allocations are considered equivalent.
Water consumption (m^3/functional unit)	Depletion of water resources	All kinds of waters, i.e. surface water, ground water, salt water, sweet water, etc. Across the life cycle.	All kinds of waters are considered equivalent. Regional and temporal allocations are considered equivalent.
Non-renewable resource consumption (ton iron ore/functional unit)	Depletion of mineral resources	All kinds of mineral resources, i.e. different minerals. Across the life cycle.	All kinds of mineral resources are considered equivalent. Regional and temporal allocations are considered equivalent.
Cadmium, arsenic (mg/functional unit)	Toxicity to human health	Carcinogenity of air-borne substances	Selection of toxic substances and endpoints.
SO_x (kg/functional unit)	Acidification	pH-based equivalents	“State-of-the-art indicator”. Regional and temporal allocations are considered equivalent.

A.2 Alternative methodologies for analysing LCI results

A.2.1 General

This clause provides information about potentially relevant alternative methodologies for analysing LCI results to prepare Type III environmental declarations.

Inclusion of a particular methodology in this clause does not necessarily mean that such methodology automatically transfers to a subsequent International Standard. Application of these and other emerging methodologies will be evaluated in the context of deciding whether a standard on Type III environmental declarations is technically feasible and desirable.

Type III environmental declarations can optionally include additional environmental information. A.2.7 contains a discussion of such information.

For each methodology, a brief discussion is provided, including its description, outputs for a declaration and overall limitations of the method in the context of a Type III environmental declaration and future research needs.

A.2.2 Criteria for methodology selection

The alternative methodologies described in this clause were chosen based on the following general criteria:

— the methodology shall be scientifically sound, so that it is sufficiently thorough and comprehensive enough to support a Type III environmental declaration that is accurate and reproducible (ISO 14020:1998, 4.4.1);

— published methodologies that are recognized and widely accepted in scientific or professional disciplines or are otherwise scientifically defensible (ISO 14020:1998, 4.4.2);

— existing practice;

— the methodology comprises a life cycle approach that assesses the environmental relevance of the LCI results.

A.2.3 Life cycle stressor-effects assessment (LCSEA)

A.2.3.1 Description

LCSEA is a relatively new method aimed at resolving many of the limitations and uncertainties created by standard LCIA analysis, by incorporating environmental data from specific locations in the life cycle [6], [7]. In LCSEA, LCI data is left unaggregated and unallocated, so that it can be more closely related to individual receiving environments in the product's life cycle. Category indicators like those in LCIA are required to be characterized with appropriate spatial, temporal measurements of emissions (stressors), plus threshold values and the overall intensity of the corresponding endpoints in the environment (effects). These data are directly integrated into the calculations of an overall category indicator, leading to a profile that is intended to be more site- and system-specific in its prediction of potential environmental impacts than LCIA.

A.2.3.2 System boundaries

The boundaries of LCSEA are designed to encompass the life cycle stages of a product, as defined by ISO 14040, as well as settings from which resources are obtained, and the receiving environments of emissions.

A.2.3.3 Requirements for data collection

As noted above, the scope of basic life cycle data collection in LCSEA is similar to that of LCI, except that LCI data are not aggregated in LCSEA. In addition, data shall be gathered about the spatial and temporal nature of environmental emissions and the nature of receiving environments, so that potential effects on the environment can be linked to specific emissions. This also applies to the use of materials and resources.

A.2.3.4 Output for the Type III environmental declaration

Like LCIA, LCSEA provides a profile of category indicators. However, these indicators are derived from an analysis of de-aggregated LCI data.

A.2.3.5 Limitations

Data collection and management in LCSEA is significantly more complex than in LCI or LCIA. LCI data are maintained a de-aggregated form. Information is needed on the spatial and temporal aspects of emissions and resource use. Detailed data is needed on specific receiving environments in order to relate potential effects to a specific stressor.

LCSEA results may not provide a quantified measure of data variability or uncertainties, due to the large complexity of the data analysis process. As currently proposed in Type III environmental declaration programmes using LCSEA, results are often expressed as a single value without “error bars”, making comparison between product systems difficult and potentially misleading.

Similar to LCI and LCIA, the listing of LCSEA category indicators may indicate that all categories are of equal importance from an environmental perspective, and that the category indicator with the highest magnitude may be misinterpreted by the end user as the most important environmentally, or that a small value is environmentally less relevant.

As noted above, Type III environmental declarations implicitly invite comparisons between products. Like LCIA, there is considerable discussion within the scientific community about the basis from which category indicators are defined for different products or environmental aspects.

The process of linking emissions to effects at each stage of a life cycle inventory is substantial, and there is considerable discussion about its economic feasibility on a widespread basis.

A.2.3.6 Research needs

LCSEA studies have been completed for a very limited number of products. In the context of Type III environmental declarations, a primary research need is whether or not systems can be developed to manage the logistics of the method, as well as the development of widely accepted models that accurately relate emissions to effects on a life cycle basis. Questions are also often asked about how data are re-aggregated in a system profile, after the stressor-effect relationship has been developed.

A.2.4 Weighting methods

A.2.4.1 Description

Several programmes exist which take the results of LCI and LCIA studies, or similar types of life cycle data, rank them in order of importance and transform them into aggregated numerical indices. While based on quantitative life cycle data, these approaches rely heavily on value-choices to prioritize specific environmental issues according to the concerns of the practitioners. The use of weighting and valuation under ISO 14042 is not permissible for comparative assertions between products. Furthermore, the use of a single overall score as a result of an LCA study is not supported by ISO 14040. Thus, these methods are likely to fall outside the scope of these International Standards in the context of Type III environmental declarations. Indeed, ISO 14042 specifically notes that “Different individuals, organizations, and societies may have different preferences, therefore it is possible that different parties will reach different weighting results based on the same indicator results or normalized indicator results.” Examples of weighting systems include the Swiss Ecopoints and the Swedish EPS System.

a) Swiss Ecopoints [9]

   “Eco-factors” or weighting factors for different emissions in air, water and top-soil/groundwater as well as for the use of energy resources are applied to the results of an LCI. Inventory results are multiplied by the appropriate weighting factor, added together and then totalled into a single general score. The eco-factors are based on the actual pollution level (annual inventory flow) in Switzerland and on the pollution considered as

critical (critical flow). Critical flows are deducted from the scientifically supported goals of Swiss environment policy. Their determination embodies value-choices about the relative hazard to the environment posed by emissions or energy use.

b) Environmental Priority Strategies, EPS

In this Swedish method [10], emission loading and resource use are converted into common units (environmental load unit) through the use of combined characterization and weighting factors (environmental load indices). These are first reported in tables of individual indices, but also aggregated and condensed into a single score. The EPS results may consists of tables of environmental load indices for each specific inventory flow. Each index is value-based and focused on what the researchers view as “safeguard subjects” such as human health, biodiversity, production, etc. Judgements are based on the average risks posed by emissions. In addition, for each index, a factor is developed which conveys a “willingness to pay” for damages. The results are then reported as a monetary value.

A.2.4.2 Limitations

In all such weighting programmes, the limitations described above for LCI apply. In addition, each of these methods introduces a substantial number of value-choices about the relative importance of different environmental burdens. They also often make subjective decisions about how to translate and express different inventory data in an environmental context.

A.2.4.3 Research needs

Beyond the noted research for LCI and LCIA data, all weighting systems generate concerns about transparency in the context of Type III environmental declarations. Research concerning how end users will interpret the findings and how programmes will communicate the value-choices that are inherent in such approaches will be critical before such techniques can be standardized in a Type III environmental declaration programme.

A.2.5 Life cycle management (LCM)

A.2.5.1 Description

LCM is a life cycle analysis approach for identifying and comparing relevant economic costs due to the environmental considerations associated with products or manufacturing processes. LCM is typically a relative comparison of alternative products or processes. It has not been the focus of development of International Standards, but is most often employed as an environmental systems analysis tool for manufacturers. LCM combines traditional cost analysis with indirect overhead costs associated with environmental emissions, occupational health and safety, recycling, and product disposal issues. This approach may be suitable for the industrial user of a Type III environmental declaration, but is unlikely to be applicable to general consumer communications.

A.2.5.2 System boundaries

LCM focuses on those environmental issues that affect business manufacturing operations, consumer use and disposal. The starting point is defined by the product manufacturing process and does not normally extend back into the production of raw materials or use of resources.

A.2.5.3 Output for a Type III environmental declaration

The results of an LCM are usually expressed as the economic costs associated with a product. They may be aggregated or reported separately, according to the specific issue associated with a cost. Results may be expressed relative to some product functional unit (e.g. dollars per 1000 units manufactured).

A.2.5.4 Requirements for data collection

Information is collected for a specific manufacturing process and its associated costs, plus the costs associated with consumer use and disposal. When comparing alternative products or processes, data (information/description and costs) shall be collected for the same categories for the approach to be usable.

A.2.5.5 Limitations

Many of the same limitations associated with LCI apply to LCM, such as the potential lack of relevance to the environmental impact of a product, data uncertainties, variable boundaries between different products, etc. In addition, LCM attempts to translate environmental burdens into simple economic terms. For some issues, this is straightforward, such as quantifying the cost of wastewater collection and treatment. However, for other issues, especially those that are beyond the control of the manufacturer (or handler of product waste), the cost is less clearly defined, and value-choices are necessary. These judgements may vary from one environmental issue and product to another, and make comparisons difficult in the context of Type III environmental declarations.

A.2.5.6 Research needs

Prior to considering LCM for Type III environmental declarations, enterprises need to develop specific factors for data collection which relate specific environmental issues to costs for individual business operations. In addition, research is needed to understand how end users will interpret the results of such analyses, especially whether they view economic costs as directly related to environmental information.

A.2.6 Building for environmental and economic sustainability (BEES) method

A.2.6.1 Description

BEES [11] is a methodology that takes a multidimensional life cycle approach, considering both economic and environmental impacts during the entire life of the product. Although its original application was intended for buildings and building products, the concept may be applicable to many other product categories. The environmental life cycle part of the BEES approach is designed to follow the LCA guidance in ISO 14040. The economic performance is intended to use the ASTM life cycle cost (LCC) approach [14]. It should be noted that the BEES method has not been the focus of development of International Standards, but is most often employed as an environmental system analysis tool for building manufacturers.

A.2.6.2 System boundaries

In the BEES methodology, the system boundaries are the same as those described in the LCA, ISO 14040 series.

A.2.6.3 Output for a Type III environmental declaration

The results of the BEES approach are expressed as both environmental aggregates and cost aggregates, combined or separate. If combined, a weighting ratio is often applied to the data. These ratios are based on value-choices. The results are expressed relative to a functional unit to facilitate product comparisons (e.g. per 100 square metres of flooring).

A.2.6.4 Data collection requirements

The BEES approach appears to have data requirements similar to LCI, and in addition an economic/cost component that translates into not only initial capital and material costs but also the costs of maintenance, replacement, etc. of durable building product systems.

A.2.6.5 Limitations

Most of the limitations associated with the LCM methodology indicated in the above can be extrapolated to BEES. In addition, the expectation that BEES complete a full life cycle inventory analysis of the product means that the limits of LCI are relevant as well.

A.2.6.6 Research needs

All of the research needs identified in prior methodologies can be applied to BEES. In addition, it is anticipated that more accounting research needs will emerge, considering the implicit goal of internalizing environmental costs and translating them into information that could appear on a Type III environmental declaration.

A.2.7 Additional environmental information

A.2.7.1 Description

Certain products currently carry declarations containing environmental attribute information for the potential purchaser, purchaser or user to consider when making decisions beyond time-of-purchase. Generally, such additional environmental information can include environmental information related to a specific product's use, storage, disposal or retirement of the actual unused product, container or packaging or packing materials [13]. Some examples of additional environmental information which also go beyond single-attribute claims include:

— precautions for safe use;

— instructions for efficient use or information on range of inherent efficiency;

— potential hazards related to the use of the product;

— ingredient-related information (e.g. name, action, quantity, chemical characteristics, toxicity, etc.);

— first aid instructions;

— specific disposal instructions or claims for unused product or container;

— other specific environmental information concerning the chlorinated fluorocarbon (CFC) content (or absence of CFCs) or the absence of ozone-depleting chemicals.

A.2.7.2 Research needs for additional environmental information

Presenting product specific environmental information to purchasers, potential purchasers, or users is challenging. Often, end users cannot readily perceive the environmental attributes of a product during use and disposal. Alternatively, end users selectively perceive only environmental attributes which have personal meaning. Moreover, individuals make unique value-choices on a variety of different combined environmental and product attributes. Future research in these areas may prove to be useful for Type III environmental declarations as well as for other environmental information labels.

Annex B
(informative)

Examples of roles of organizations involved in Type III environmental declaration programmes

Form of programme	Parties involved in			
	making a declaration	**developing and maintaining a framework of a declaration programme and procedures**	**conducting a critical review**	**certifying that a declaration complies with necessary rules and procedures**
Programme without certification	Company or organization	Company or organization	Independent reviewer	Not applicable
Programme with certification	Company or organization	Private or public organization (e.g. industry association, third party practitioner, competent body)	Independent reviewer (could be same as programme developer)	Certification body (could be same as programme developer)
Programme with accredited certification	Company or organization	Private or public organization (e.g. industry association, third party practitioner, competent body)	Independent reviewer (could be same as programme developer)	Accredited certification body

Who does what in a single-company life-cycle-based environmental declaration:

Single company	Company or organization	Company or organization	Independent reviewer	Not applicable[a]

[a] Today there are several individual companies developing declarations of this nature but based on the lack of sector or third-party participation, these approaches may not be considered as Type III environmental declarations.

Bibliography

[1] ISO 14001:1996, *Environmental management systems — Specification with guidance for use.*

[2] ISO/TR 14047[2)], Environmental management — Life cycle assessment — Examples of application of ISO 14042.

[3] ISO 14048[2)], *Environmental management — Life cycle assessment — Life cycle assessment data documentation format.*

[4] ISO/TR 14049[2)], *Environmental management — Life cycle assessment — Examples of application of ISO 14041 to goal and scope definition and inventory analysis.*

[5] ISO/IEC Guide 2:1996, *Standardization and related activities — General vocabulary.*

[6] *Life Cycle Stressor Effects Assessment (LCSEA)* - ISO TC 207/SC3/WG1/TG Type III, N22, Annex 1 rev., Kyoto Meeting, April 1997.

[7] Appendix 1, *Wood in our Future*, Proceedings of a Symposium, National Research Council, National Academy Press, Washington D.C., 1997.

[8] HEIJUNGS, R., *et al.*, *Environmental Life Cycle Assessment of Products: Guide and background* - 2 volumes - CML University of Leiden. The Netherlands, 1992.

[9] BRAND, G., *et al.*, *Ecobalances: Method of eco-scarcity — Ecofactors, 1997.* Swiss Agency for the Environment, Forest and Landscape. Environment Series No. 297. Bern, 1999.

[10] STEEN, B., *EPS-default valuation of environmental impacts from emission and use of resources.* Version 1996. Swedish Environmental Protection Agency, AFR report 111, 1996.

[11] *Building for Environmental and Economic Sustainability,* the BEES Method of the NTIS.

[12] *Environmental Information Profile Data Sheet,* Canadian Pulp and Paper Association.

[13] WINTERS, J., EPA 742-R-98-009, 1998, *Environmental labeling — Issues, Policies, and Practices Worldwide.*

[14] ASTM E917-9:1994, *Practice for measuring life-cycle costs of buildings and building systems.*

2) To be published.

ICS 13.020.50

Price based on 25 pages