



Environmental Aspects of Product Standards: The Role of Voluntary Environmental Standards in Sustainable Consumption and Production

*A Study by Pollution Probe Funded by the
Industry Canada Contributions Program*

Adapted from a review prepared for Pollution Probe

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June 22, 2007

Acknowledgements

Pollution Probe is pleased to acknowledge the work of Bruce Farquhar who served as principal researcher for this project. Thanks also go to Elizabeth Everhardus, Director, Communications and Special Projects and Ken Ogilvie, Executive Director of Pollution Probe for their contributions as co-authors, along with Bruce, to complete this study. Krista Friesen of Pollution Probe also made a valuable contribution by preparing the case study on mercury-containing products.

Special thanks go to interviewees for this study from three of Canada's nationally accredited standards development organizations: Jeanne Bank (Canadian Standards Association), Rae Dulmage (Underwriters Laboratories of Canada) and Jim Ferraro (Bureau de normalisation du Quebec). Thanks also go to Ahmad Husseini and David Zimmerman of the Canadian Standards Association, and James Riordan and Susan Pecman of Environment Canada for reviewing and commenting on a draft of the report.

Kevin Brady of Five Winds International served as the external evaluator for the report, as required by Industry Canada. Financial support from Industry Canada to conduct the research on which this report is based is gratefully acknowledged.

The views expressed in this report are the responsibility of Pollution Probe and not necessarily those of Industry Canada or the Government of Canada.

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Acronyms

ACEA	Advisory Committee on Environmental Aspects (IEC)
ANEC	The European consumer voice in standardisation
BNQ	Bureau de normalisation du Québec
BSI	British Standards Institute
CCME	Canadian Council of Ministers of the Environment
CEN	European Committee for Standardisation
CEN/EHD	CEN Environmental Help Desk
CENELEC	European Committee for Electro-technical Standardization
CGSB	Canadian General Standards Board
COPOLCO	Consumer Policy Committee of ISO
CSA	Canadian Standards Association
DIN	German National Standards Body
DIN/EHD	DIN Environmental Helpdesk (Germany)
EACSR	External Advisory Committee on Smart Regulation
ECOS	European Environmental Citizens Organisation for Standardisation
EHD	Environmental Help Desk (CEN)
EPR	Extended Producer Responsibility
EU	European Union
ETSI	European Telecommunications Standards Institute
IPP	Integrated Product Policy
IEC	International Electro-technical Organization
ISO	International Organisation for Standardisation
LCA	Life Cycle Assessment
LCI	Life Cycle Inventory
NGO	Non-governmental Organisation
NOPP	National Office of Pollution Prevention (Environment Canada)
SCC	Standards Council of Canada
SDO	Standards Development Organization
TC	Technical Committee
ULC	Underwriters Laboratories of Canada
US EPA	United States Environmental Protection Agency
WEEE	Waste Electrical and Electronic Equipment

Executive Summary

This report compares and contrasts efforts in Canada with international initiatives to address the environmental aspects of product standards. The aim is to identify initiatives that could be undertaken to implement policies and practices equivalent to those of leading jurisdictions around the world.

Standards are used in support of regulatory objectives in a variety of ways. The European Union (EU), in particular, has a systematic approach to the use of standards across most product sectors. Standards set at the EU level and voluntarily achieved by product manufacturers give a legal presumption of conformity with regulatory requirements. In the United States, federal agencies are required to defer to voluntary standards where compliance with such standards will meet regulatory objectives. In Canada, voluntary standards have been used in regulation on an ad-hoc basis. The recently announced Cabinet Directive on Streamlining Regulation (April 2, 2007) promotes the use of relevant international standards, guidelines and recommendations as a basis for technical regulations and for conformity assessment procedures when they can achieve federal regulatory objectives; however, it is more oriented to constraining the use of regulations than to ensuring an integrated approach to regulation and standard-setting.

Voluntary product standards underpin a number of environmental protection initiatives. Standards have been developed in various countries in the areas of life cycle assessment, environmental labelling and claims, waste management and energy efficiency. All products have an environmental impact — this may be in respect of the materials and energy used in construction, in emissions associated with the use of a product, or in its manufacture and eventual disposal at the end of the product's life cycle.

There are many ways to reduce the environmental impacts of a product. These can be summarised as:

- Preventative methods, which involve cleaner production
- Recycling and the use of recycled materials in new products
- Purification/cleaning measures and environmentally responsible disposition
- Redress and cleaning provisions

These can be incorporated into standards through a number of means during the standards drafting process. For example, in the case of European standards, the following methods are used:

- Environmental clause in standard
- Environmental checklist as an informative annex
- Environmental checklist tailored to Technical Committees' specific needs
- Environmental standards from Product Technical Committees
- Standards that address environmental requirements
- Measurement standards from environmental Technical Committees

This report describes product standards initiatives at the international, European and selected national levels, including the US. The most developed infrastructure for

addressing the environmental aspects of product standards is found in Europe, so this report focuses largely on the EU standards system, as well as the international standards systems of the International Organisation for Standardisation (ISO) and the International Electro-technical Commission (IEC). Leading edge work on product standards in the US and Asia is also instructive, however, and should be considered in future policy development in Canada. The European Union, in particular, has a clear policy commitment to the environment and has developed an integrated product policy that addresses environmental issues throughout the life cycle of products. This policy commitment is implemented within the standards development process through a framework of guidance and information that includes a Help Desk, training and extensive documentation.

Canada faces challenges in keeping up with standards development in the area of environmental aspects of product standards since it is not often a market leader, given the relatively small size of the domestic market compared to the US, EU and Asian markets. However, Canada has performed well in international standards-setting bodies, such as ISO, and is well respected for its achievements. Nevertheless, it is clear from this research paper that Canada is slipping behind leading regions, countries and even states (in the US) in this vitally important area of standardization.

Pollution Probe believes it is not in Canada's environmental or economic interests to continue with the status quo. It is time that a serious national effort is made to modernize Canadian thinking about the role that standards play in sustainable consumption. The first hurdle that must be passed is the perception that standards and regulations are alternatives, or substitutes, and not part of a comprehensive approach to better environmental and economic performance. The first step, therefore, should be to bring relevant government and industry officials, as well as consumer and environmental NGOs, up-to-date on what is happening internationally and in the EU, US and leading Asian nations.

Pollution Probe makes the following five recommendations as a result of the research and analysis contained in this report:

- The federal government, led by Environment Canada (EC), Natural Resources Canada (NRCan) and Industry Canada (IC), and in full cooperation with the Standards Council of Canada (SCC) and the four accredited Standards Development Organizations (SDOs), should host an international conference on the environmental aspects of product standards. The conference should bring together a broad range of stakeholders across Canada involved in, or potentially involved in, the development of product standards.
- The conference should be followed by a series of workshops on specific topics for which greater education and discussion are identified as needed and appropriate.
- The SCC and SDOs, led by the Canadian Standards Association (CSA), should prepare a report that lays out a strategy for Canada to become more fully engaged in international initiatives on the environmental aspects of product standards. The goal

should be to put in place a systematic approach to standards development, along the lines of the EU's New Approach, but taking account of learnings from the EU and tailoring the approach to Canadian needs and circumstances.

- EC, NRCan and IC should review the European Commission Directives under the New Approach and prepare a paper on how Canada can better apply sustainable consumption policy tools, such as Life Cycle Assessment (LCA) and Design for the Environment (DFE). These tools should be integrated into new and revised legislation, regulations and standards (e.g., Health Canada should include LCA in a revised *Hazardous Products Act*, and Regulatory Impact Assessments should require LCA, or at least an assessment of the environment impact of products being regulated). The “Sustainable Consumer” concept developed by the Office of Consumer Affairs in Industry Canada should be integrated into new policy development.
- EC, NRCan and IC should cooperate to create a financial mechanism to support the development of standards-related capacity and competence in the Canadian consumer and environmental NGO communities, similar to what the EU does for ANEC (the European consumer voice in standardisation) and ECOS (European Environmental Citizens Organisation for Standardisation). Canadian standards policy, as called for in the National Standards Strategy of the SCC, should specify ways to ensure transparency in standards-setting and the full engagement of civil society in work on the environmental aspects of product standards.

1. Introduction

This report compares and contrasts efforts in Canada with international initiatives to address the environmental aspects of product standards. The aim is to identify initiatives that could be undertaken in Canada to implement policies and practices equivalent to those of leading jurisdictions around the world.

1.1 Why the Environmental Aspects of Product Standards Matter

There is increasing awareness of the environmental impact of consumer products. Consumers and governments alike are concerned about the environmental impacts of consumption. The public wants government leadership, especially with regard to Canada meeting its climate change (greenhouse gas) targets and commitments to reducing the environmental and health-related impacts of air and water pollution, as well as waste generation and disposal. Consumers are concerned about the environment, but often do not act consistently in their purchasing decisions, preferring instead to rely on governments to regulate products to ensure safety and environmental integrity. The Canadian public is generally not aware, however, of the role that voluntary standards can and do play in reducing the environmental impacts of products.

During the past decade, the European Union has taken the lead in developing consensus-based voluntary standards (that must be codified in regulations by member states within specific timelines for certain product sectors) for end-of-life electrical products, recycling of hazardous waste, eco-design criteria for energy-using products, and consideration of the environmental aspects of a broad range of consumer products. Standards, in general, now play an important role in public policy in the EU, with increasing attention paid to the role of standards in supporting environmental objectives. The EU is also pioneering novel ways of addressing environmental issues across a range of technical standards-setting bodies by producing guidance material and establishing Help Desks to assist European and national standards-setting bodies achieve sustainable consumption targets.

Other international initiatives being implemented, or under active development, have a direct bearing on the design, use and disposal of products, including the International Organisation for Standardisation (ISO) in support of ISO Strategy 2005–2010, and, in particular, standards and guidelines developed under the ISO 14000 series of environmental management standards.

This report examines EU and US standards development, as well as ISO voluntary standards initiatives on the environmental aspects of products. It identifies weaknesses in Canada's approach to the use of standards designed to improve environmental performance and recommends initiatives that Canada can take to close the gap with the EU and the US. The report also contains a case study on standards for mercury-containing products, which shows the extent to which Canadian mercury product regulations and voluntary standards are falling behind leading international practice.

1.1.1 The use of standards in support of regulatory objectives

Consultations have been held in recent years in Canada by the External Advisory Committee on Smart Regulation (EACSR) on the use of standards to support regulatory objectives. The Standards Council of Canada made an extensive submission on this issue to the Committee,¹ as did the Office of Consumer Affairs of Industry Canada.² EACSR also commissioned research into regulatory practices in other countries, most notably the European Union and the United States.³ The situation in the EU and US is summarised below and is contrasted with the current situation in Canada.

European Union

The European Union uses the most systematic reference to standards in developed economies. There are many product sectors for which adherence to a voluntary European standard creates a legal presumption of conformity with regulatory requirements. There is no in-depth analysis by the public authorities of every standard before this presumption is established. Rather, a number of checks and balances are built into the standards development system; for example, by the direct participation of interested stakeholder groups that, in the case of consumer and environmental interest groups, receive financial support for their participation from European and national authorities. After the standards are developed, there is a safeguard mechanism that allows national authorities to challenge the right of a particular standard to continue to give a presumption of conformity. The presumption of conformity can be removed, if warranted. The EU has used voluntary standards to promote the reduction of technical barriers to trade among member states while seeking to preserve a high level of consumer protection. The competence of the EU has extended into environmental protection and other aspects of product performance. This development has resulted in a number of regulatory initiatives in which standards play an important role.

United States of America

All US federal agencies are required by law to consider the use of voluntary consensus standards as an alternative to promulgating regulations. Extensive guidance is laid down to help federal agencies in this regard. Furthermore, agencies are required to report annually to the Office of Management and Budget on their adoption of voluntary standards and agency-specific regulations and on their participation in voluntary standards development. The on-the-record rulemaking espoused by the Administrative Procedures Act also requires federal agencies to set down in respect of every rule they seek to promulgate the steps they have taken to consider voluntary standards and to explain why they have not taken on board the provisions of relevant voluntary standards. The agencies are required to document their response to comments from interested stakeholders. The Administrative Procedures Act requires federal register notices to be

¹ External Advisory Committee on Smart Regulation (EACSR), Submission by the Standards Council of Canada (SCC) 2004-02-11.

² Towards the Systematic Use of Standards and Voluntary Codes in Support of Public Policy, Bruce J. Farquhar, Consultant report for Office of Consumer Affairs, Industry Canada, 2004.

³ Regulatory Management Practices in the European Union and Regulatory Management Assessment: United States, prepared by The Regulatory Consulting Group Inc., Ottawa, Canada, June 2003.

issued prior to the publication of a draft rule. In the case of some agencies, there is a requirement to publish an advance notice of rulemaking at an even more preliminary stage.

The effect of these provisions is that while federal agencies do not have written in legislation a blanket requirement to defer to voluntary standards, they are obligated to evaluate on a case-by-case basis whether they can rely on voluntary standards. The reporting requirements and the transparency provided by the provisions of the Administrative Procedures Act ensure that federal agencies pay more than lip service to this duty.

Canada

Canada lags its major trading partners in the use of voluntary standards. With the exception of the national electrical code, there is no framework for the systematic use of standards in support of regulatory objectives. As in the US, the use of standards is considered on a case-by-case basis. However, the incentives to do so in Canada are not as strong. There is no reporting requirement, and the system of regulatory impact assessments has been criticised for the lack of attention given to the consideration of regulatory alternatives. Even if a federal rulemaking process results in a decision to rely on a voluntary standard, it has to be formally called up by legislation. This creates an additional administrative burden on regulatory authorities and, due to the nature of the legal reference, may cause problems when a voluntary standard is revised.

Many of these issues were recognised by the External Advisory Committee on Smart Regulation (EACSR). In its final report, EACSR recommended that the drafting of Canadian statutes and regulations should allow for modern regulatory techniques, such as the incorporation of standards, and promoted the use of international standards to the extent possible.⁴ In response to the EACSR report, the Federal Government issued a new Government Directive on Streamlining Regulation (April 2, 2007). The Directive discusses the appropriate mix of government instruments for action and states that departments would be expected to make use of voluntary consensus-based standards or guides when they adequately fulfill intended policy objectives. Where it discusses compliance with international obligations, the Directive states that agencies are expected to use relevant international standards, guidelines and recommendations as a basis for technical regulations and for conformity assessment procedures when they achieve the intended regulatory objectives. The Directive also promotes the adoption of voluntary consensus-based standards as a basis for furthering cooperation with provincial and territorial governments.⁵

Health Canada, through its legislative renewal program, has also acknowledged that voluntary standards could play a more important role. Health Canada has promoted the concept of the safety of a product being addressed on a more holistic basis, addressing all stages of the life cycle of the product from cradle to grave. This implies that some

⁴ Smart Regulation: A Regulatory Strategy for Canada, Report to the Government of Canada External Advisory Committee on Smart Regulation, September 2004.

⁵ Cabinet Directive on Streamlining Regulation, Government of Canada, April 2, 2007.

environmental aspects of the products, such as waste and the use of raw materials, should be addressed. Legislative renewal has been under way since 1999 without substantive proposals being laid before Parliament. The latest thinking appears to be that the scope of the proposals will be scaled down and the pieces of legislation that Health Canada enforces will be revised individually and not as part of a consolidated Health Protection Act. It remains to be seen how issues related to the use of standards and the life cycle of products will be addressed.

2. The Use of Standards for Environmental Protection

A broader review of environmental standards is given in Pollution Probe's report "A Taxonomy of Canadian Environmental Standards."⁶ In this report, the focus is on voluntary standards of the type developed within the national standards system and by international standards development organisations, such as ISO and the International Electro-technical Commission (IEC).

2.1 Environmental Protection Standards in ISO and IEC

Many examples exist in the work of ISO and IEC in which product-related environmental issues are addressed in voluntary standards. These include:

- Life cycle analysis
- Product labelling
- Eco-design
- Definition of specific environment-related test methods

2.1.1 Life cycle assessment

ISO14040 series

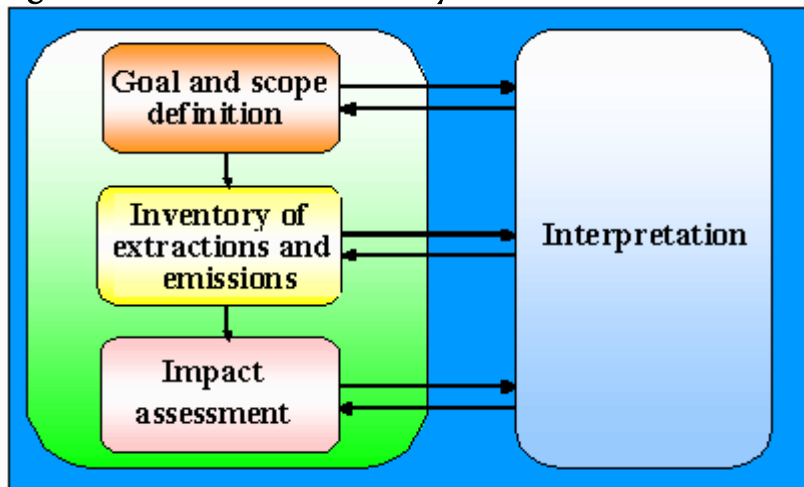
The technical framework for the Life Cycle Assessment (LCA) methodology has been standardized by ISO. According to ISO14040, LCA consists of four phases, as shown Figure 1:

1. Goal and Scope Definition
2. Inventory Analysis
3. Impact Assessment
4. Interpretation

These phases are not generally followed in a single sequence. LCA is an iterative process, in which subsequent iterations can achieve increasing levels of detail (from a screening LCA to a full LCA). LCA has proven to be a valuable tool to document and analyze the environmental considerations of product and service systems. ISO14040 provides the general framework for doing LCA. Prior to the year 2000, ISO14041 provided guidance for determining the goal and scope of an LCA study and for conducting a life cycle inventory. ISO14042 was about the life cycle impact assessment phase, and ISO14043 provided guidance for the interpretation of results from an LCA study. ISO14041, 14042 and 14043 were consolidated and replaced by ISO14044 in the year 2000. Technical guidelines describe how to apply the standards.

⁶ A Taxonomy of Canadian Environmental Standards, Dr. Dianne Saxe, Pollution Probe, August 2003.

Figure 1: The Phases of Life Cycle Assessment (according to ISO14040)



Goal and scope definition, the product(s) or service(s) to be assessed are defined, a functional basis for comparison is chosen, and the required level of detail is defined.

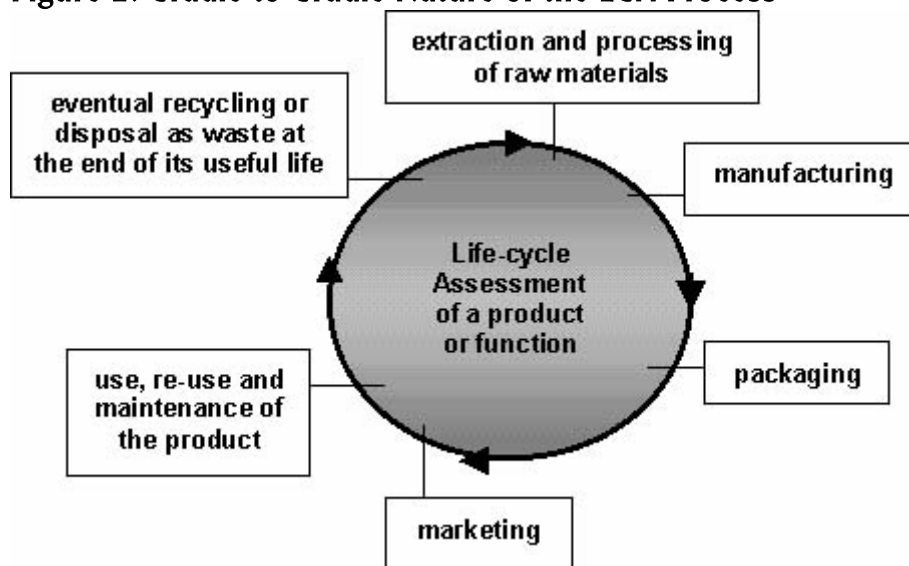
Inventory of extractions and emissions, the energy carriers and raw materials used, the emissions to atmosphere, water and soil, and different types of land use are quantified for each process, then combined in the process flow chart and related to the functional basis.

Impact assessment, the effects of the resource use and emissions generated are grouped and quantified into a limited number of impact categories, which may then be weighted for importance.

Interpretation, the results are reported in the most informative way possible, and the need and opportunities to reduce the impact of the product(s) or service(s) on the environment are systematically evaluated.

The iterative nature of the LCA process and the different stages in a product's life are illustrated in Figure 2 below.

Figure 2: Cradle to Cradle Nature of the LCA Process



Source: ISO and UNEP website.

2.1.2 Product labelling, environmental declarations and claims

One group of the ISO14000 series of standards is product-oriented. It includes standards on environmental labelling and declarations. The product-oriented standards are concerned with determining the environmental aspects and impacts of products or services over their life cycles, and with the application of environmental labels and declarations on, or to, products. These standards are intended to help an organization gather the information needed to support planning for, and decision making on, its product/service and to communicate specific environmental information about a product/service to customers, end-users and other interested parties.




ISO describes three basic forms of environmental labelling approach:

- Type I environmental labels are “voluntary multiple criteria third-party programs” that award labels to products that meet certain criteria. They are, in essence, a “seal of approval.”
- Type II environmental labels are “self-declared” information labels by manufacturers about specific environmental attributes.
- Type III environmental labels are “declarations generally based on a life cycle approach,” providing information about multiple attributes.

ISO has developed “standards” for Type I, Type II and Type III labels (i.e., ISO14024, 14021 and ISO14025). In addition, ISO has created an umbrella “principles” guidance document (ISO14020) that describes overarching elements that all programs should address.

Figure 3: Summary of ISO standards for LCA and environmental claims

TABLE: ISO 14000 STANDARDS RELATED TO PRODUCT SYSTEMS

<p>Using environmental declarations and claims</p> 	<p>Conducting life cycle assessment (LCA)</p> 	<p>Understanding the standards</p> 
<p>ISO 14020 This document provides general principles which serve as a basis for the development of ISO guidelines and standards on environmental claims and declarations.</p>	<p>ISO 14040 This document provides the general principles, framework and methodological requirements for the LCA of products and services.</p>	<p>ISO 14050 This document helps an organization to understand the terms used in the ISO 14000 series standards.</p>
<p>ISO 14021 This document provides guidance on the terminology, symbols and testing and verification methodologies an organization should use for self-declaration of the environmental aspects of its products and services.</p>	<p>ISO 14041 This document provides guidance for determining the goal and scope of an LCA study, and for conducting a life cycle inventory.</p>	
	<p>ISO 14042 This document provides guidance for conducting the life cycle impact assessment phase of an LCA study.</p>	
<p>ISO 14024 This document provides the guiding principles and procedures for third-party environmental labeling certification programs.</p>	<p>ISO 14043 This document provides guidance for the interpretation of results from an LCA study.</p>	
<p>ISO/ TR 14025 This document provides guidance and procedures on a specialized form of third-party environmental labeling certification using quantified product information labels.</p>	<p>ISO /TR 14047 This document provides illustrative examples on how to carry out Life Cycle Impact Assessment.</p>	
	<p>ISO /TR 14048 This document provides information regarding the formatting of data to support life cycle assessment.</p>	
	<p>ISO /TR 14049 This document provides examples that illustrate how to apply the guidance in ISO 14041.</p>	<p>ISO Guide 64:1997 This document helps the writers of product standards to address environmental aspects in those standards.</p>

Source: UNEP Evaluation of Environmental Impacts in Life Cycle Assessment, Meeting Report Brussels, 29–30 November 1998, and Brighton, 25–26 May 2000. [Note: ISO 14040 has been updated and ISO 14041, 14042 and 14043 have been replaced by ISO 14044 since 2000.]

TEXT BOX 2.1: Canada's Environmental Choice^M Program

A leading example of a product ecolabelling program is Canada's Environmental Choice^M Program and its EcoLogo^M. The Environmental Choice^M Program (ECP) provides a market incentive to manufacturers and suppliers of environmentally preferable products and services, and thereby helps consumers identify products and services that are less harmful to the environment. Established in 1988, the ECP was the second national ecolabelling initiative undertaken. There are now more than three dozen such programs worldwide. The Global Ecolabelling Network (GEN) is an international association of ecolabelling programs, including the Environmental Choice Program.

The Program's official symbol of certification — the EcoLogo^M — features three stylized doves intertwined to form a maple leaf, representing consumers, industry and government working together to improve Canada's environment. A key aspect of the certification process is the requirement for third party verification of compliance to ECP certification criteria as a condition for certification and licensing. This process ensures the Program's credibility and includes:

- a review of each applicant company's product and process information;
- an examination of the company's quality assurance (QA)/quality control (QC) measures; and,
- where deemed necessary by ECP officials, an audit of the company's facilities for purposes of initial certification.

2.1.3 Eco-design

Both the ISO and its counterpart in the electro-technical sector, the IEC, have prepared guides dealing with incorporating environmental aspects at the product design stage.

ISO/TR 14062:2002 Environmental management — Integrating environmental aspects into product design and development

One of the documents contained in the ISO14000 family is a technical report on integrating environmental aspects into product design and development.

IEC Guide 114:2005 Environmentally conscious design — Integrating environmental aspects into design and development of electro-technical products

IEC has also developed its own guide for integrating environmental aspects into the design and development of electro-technical products.

Definition of specific environment-related test methods

A number of technical committees develop test methods that can be applied for environmental purposes. Amongst these is IEC Technical Committee 59 (Performance of household and similar electrical appliances).

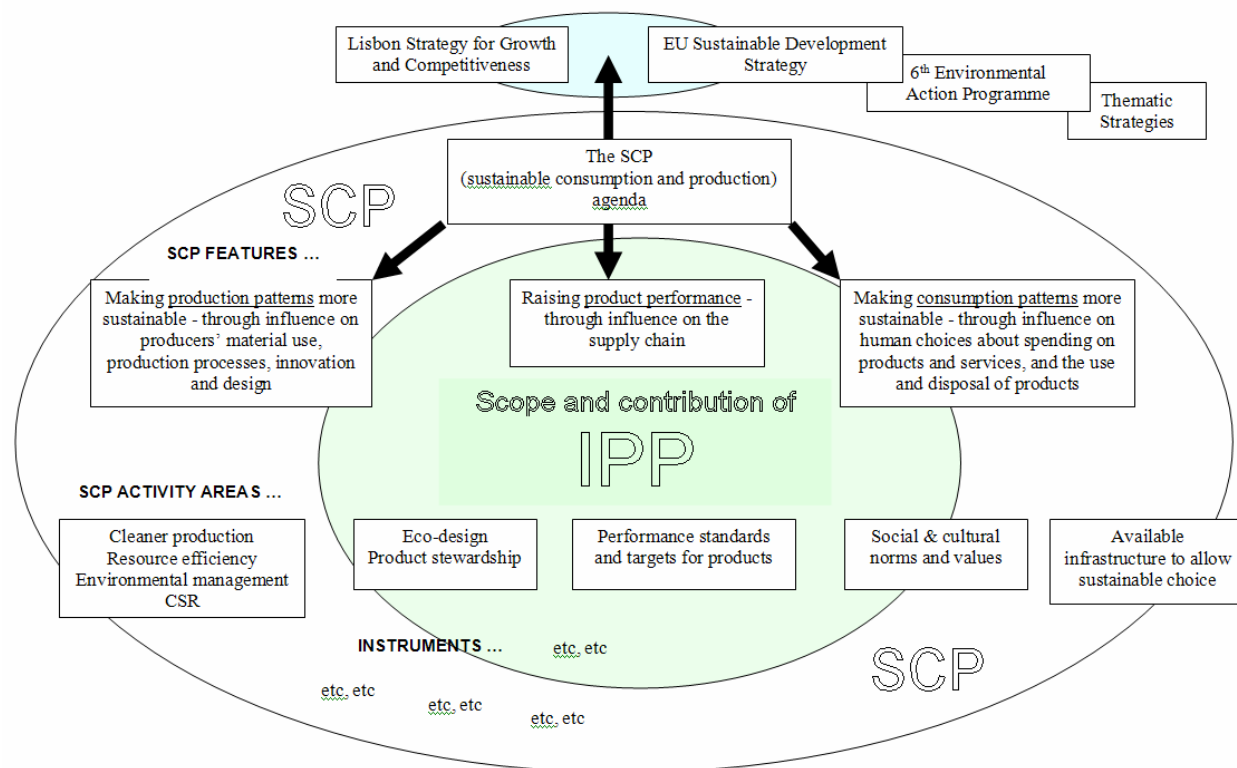
Definition of specific environment-related test methods

With respect to the use of standards in support of legislation, the largest range of regulatory initiatives is found within the European Union. These are presented in greater detail below.

European Commission Green Paper on an Integrated Product Policy⁷

In principle, all products and services fall within the scope of this European Commission (EC) Green Paper. The following diagram shows the relationship between Integrated Product Policy (IPP) and the broader European policy framework on Sustainable Consumption and Production (SCP).

Figure 4: The Relationship between Sustainable Consumption and Production (SCP) and Integrated Product Policy (IPP)



Source: UK DEFRA

The proposed strategy calls for the involvement of all parties concerned at all levels of action and throughout the life cycle of the products. Eco-design must be promoted by manufacturers so as to ensure that products on the market are more environmentally friendly. Distributors should put green products on the shelves and inform consumers of their existence and benefits. Consumers should preferably choose green products and use

⁷ Green Paper of 7 February 2001 on integrated product policy (presented by the Commission) [COM(2001) 68 final - Not published in the Official Journal].

them in such a way as to prolong their shelf life and reduce their impact on the environment. Non-governmental organisations (NGOs) play a role in identifying problems and solutions, with a view to creating products that are more environmentally friendly.

The IPP strategy focuses on three stages in the decision-making process that strongly influence the life cycle environmental impacts of products: (1) application of the polluter pays principle in fixing the prices of products, (2) informed consumer choice, and (3) eco-design of products.

With a view to extending eco-design across a broader range of products, steps must be taken to produce and publish information on the environmental impact of products throughout their life cycle. Life Cycle Inventories (LCIs) and LCAs are effective instruments to this end. The Green Paper notes that eco-design guidelines and a general strategy for integrating the environment in the design process could be used as instruments for the promotion of the life cycle concept within companies.

2.2 European Commission Communication on an Integrated Product Policy⁸

The Communication on an Integrated Product Policy (2003) presents the European Commission's strategy for making products more environment-friendly. It focuses on two approaches:

- establishing general conditions that will improve the environment-friendliness of products throughout their life cycle;
- concentrating on products that have the greatest potential for improvement from an environmental standpoint.

To implement the strategy, the communication recommends:

- the creation of an appropriate economic and legal framework: this includes measures concerning taxes and subsidies, standardisation, voluntary agreements and public procurement;
- the promotion of life cycle thinking: this includes making life cycle data available, integrating a product dimension in environmental management systems, and promoting IPP within companies and in relation to specific products;
- the transmission of product information to consumers: this includes taking greater account of environmental criteria in public procurement and corporate purchasing, as well as measures on eco-labelling.

Other initiatives support this strategy, such as:

- pilot projects applying IPP to specific products, such as energy-using appliances;
- periodic meetings of interested parties;
- a survey to assess the extent to which ecological criteria are taken into account in public procurement,⁹ a handbook on greener procurement for public authorities,¹⁰ and the continuous gathering and disseminating of information on product life cycles;

⁸ Communication from the Commission to the Council and the European Parliament of 18 June 2003 - Integrated Product Policy - Building on Environmental Life-Cycle Thinking [COM(2003) 302 final — Not published in the Official Journal].

- a website on the environment and public procurement;¹¹
- an exercise to identify products with the greatest potential for improvement from an environmental standpoint;
- an IPP implementation report (from 2006).

2.2.1 Identifying products with the greatest potential for environmental improvement

The Commission announced in its Communication on Integrated Product Policy (COM(2003) 302 final) that it will seek to identify and stimulate action on products with the greatest potential for environmental improvement. This work is being carried out in **three phases**.

The **first phase** consists of research to identify the products consumed in the EU with the greatest environmental impact from a life cycle perspective. In the **second phase**, ways will be identified to reduce the life cycle environmental impacts of some of the products with the greatest environmental impact. In the **third phase**, the European Commission will seek to address policy measures for the products that are identified as having the greatest potential for environmental improvement at least socio-economic cost.

EIPRO — Environmental Impact of PROducts (Phase 1)

The **first phase** of the project identifies the products that are consumed in the EU having the greatest environmental impact from a life cycle perspective. Consumption by society has been grouped into almost three hundred product categories and assessed in relation to different environmental impact categories, such as acidification, toxicity, global warming and ozone depletion.

A study completed in May 2006 shows that products from only three areas of consumption — **food and drink, private transportation and housing** — are responsible for 70–80 per cent of the environmental impact of private consumption. These products account for some 60 per cent of total consumption expenditure. All other areas of consumption account for no more than 20–30 per cent of most environmental impacts.

IMPRO — Environmental Improvement of PROducts (Phase 2)

The **second phase** of the work will attempt to identify possible ways in which life cycle environmental impacts can be reduced for some of the products with the greatest impacts. The analysis will first consider improvement potentials that are technically feasible. Following this, the associated socio-economic impacts will be analysed, covering the following aspects:

- Estimate and compare the environmental impacts of the products under a full life cycle perspective;

⁹ ICLEI European Secretariat, Eco-Procurement Programme, Study contract to survey the state of play of green public procurement in the European Union, Final Report, Freiburg, July 2003.

¹⁰ Buying Green, a handbook on environmental public procurement, European Commission, 2004.

¹¹ http://ec.europa.eu/environment/gpp/index_en.htm

- Identify the main environmental improvement options related to the products, addressing all the different life cycle stages, and estimate the size of the environmental improvement potentials;
- Assess the main improvement options for their feasibility and potential social and economic impacts; for example:
 - What could be achieved at the various life cycle stages and what would be the overall environmental benefit of these options?
 - What are the potential trade-offs among the different options and among the different types of environmental benefits?
 - What are the different barriers (economical, social, market, etc.)?

The first three groups of products, which are among those with the greatest environmental impacts currently analysed, include:

- passenger cars
- meat products
- housing

The IMPRO project will be carried out in 2006–2007. The final results are expected by the end of 2007.

Policy implications (Phase 3)

Following the IMPRO project, the European Commission will, in the **third phase**, seek to address policy measures for the products that are identified as having the greatest potential for environmental improvement at the least socio-economic cost.

EEIO — Environmentally Extended Input-Output Tables (Phase 3)

Related to the first phase of the project, a study named **Environmentally Extended Input-Output Tables and Models for Europe** was initiated. This study explores how methodologies based on analysis of environmentally extended input-output tables can be further developed and applied in policy making.

2.2.2 Product information

Another initiative from the IPP has been the establishment of a working group on product information. The final report of the group acknowledged that standards bodies have taken the lead in showing more clarity of vision than public authorities in their role as ‘framework shapers’.¹² In particular, the report draws attention to ISO, which has worked for more than a decade to produce standards for the ‘building blocks’ of product information, from principles for the life cycle assessment of environmental impacts through to principles for operating different types of product labels and declarations. These management and technical standards do not, in themselves, add up to a ‘policy vision’ (which is not their purpose), but they can help governments build and deliver such a vision. The working group urged the commission to come forward with a proposal for a

¹² Final Report of the Integrated Product Policy Working Group on Product Information: Making Product Information Work for the Environment, November 2006.

supporting legal and regulatory framework that will enable the market to deliver key outcomes — ensuring a fair and competitive market, stimulating standardisation and comparability in key areas, and building awareness and the use of product information.

2.3 Regulatory Initiatives

2.3.1 Eco-design requirements for energy-using products¹³

One of the main roles of harmonised standards is to help manufacturers apply the implementing measures adopted under the Directive on eco-design. The Commission foresaw that standards could be essential in establishing measuring and testing methods and that, in the case of generic eco-design requirements, harmonised standards could contribute considerably to guiding manufacturers in establishing ecological profiles of their products. The Commission states that the standards should clearly indicate the relationship between their clauses and the requirements dealt with.

Once the reference to a standard has been published in the Official Journal of the European Union, compliance with it should raise a presumption of conformity with the corresponding requirements set out in the implementing measure adopted on the basis of this Directive, although other means of demonstrating such conformity should be permitted.

A standardisation mandate has been drawn up by the European Commission and communicated to the European standards organisations.¹⁴ CEN/CENELEC/ETSI [ETSI is the European Telecommunications Standards Institute] have been asked to draw up a comprehensive standardisation programme, with a view to producing standards that will assist in the realisation of the objectives of the draft Directive, which are to improve the overall environmental performance of energy-using products and ensure free movement of compliant equipment in the internal market.¹⁵ Such standards should help the manufacturers comply with the requirements of the future implementing measures to be proposed by the Commission after the adoption of the energy-using products framework Directive by Council and the European Parliament.

Standardisation efforts on the following items should be considered:

- use of materials derived from recycling activities

¹³ Directive 2005/32/EC of the European Parliament and of the Council of 6 July 2005 establishing a framework for the setting of eco-design requirements for energy-using products.

¹⁴ Brussels, 7 January 2004, DG ENTR/G3 M 341 — EN Mandate to CEN/CENELEC/ETSI for programming of Standardization Work in the field of Eco-Design Of Energy-Using Products.

¹⁵ A mandate is a formal request from public authorities to the European standards organisations to tackle a particular issue through standards. In this particular case, the mandate is a programming mandate and is a request to draw up a programme of standards activities to address the issue at hand. The ESOs are free to reject a mandate, but that would serve to undermine the confidence that the European public authorities place in European standardisation, so usually some negotiation takes place.

- use of substances classified as hazardous to health and/or the environment, according to Directive 67/548/EEC5 and taking into account legislation on the marketing and use of specific substances, such as 76/769/EEC6 or 2002/95/EC
- use of consumables
- energy consumption throughout the life cycle
- water consumption throughout the life cycle
- ease of reuse and recycling, as expressed through the number of materials and components used, marking of plastics according to ISO, use of standard components, and time necessary for disassembly
- avoidance of technical solutions potentially detrimental to the reuse and recycling of components and whole appliances
- extension of lifetime, as expressed through minimum guaranteed lifetime and minimum time for availability of spare parts
- amounts of waste generated and amounts of hazardous waste generated
- emissions to air (greenhouse gases, acidifying agents, volatile organic compounds, ozone depleting substances, persistent organic pollutants, heavy metals, fine particulate and suspended particulate matter)
- emissions to water (heavy metals, substances with an adverse effect on the oxygen balance, persistent organic pollutants)
- pollution through physical agents (noise, vibration, radiation, electromagnetic fields)

The proposed standardisation work may also include standardisation of checklists or other appropriate tools for integrating environmental aspects in product design from a life cycle perspective, as well as templates for information supply along the chain to product manufacturers and from them to end-users, and treatment facilities so as to minimise the impact on the environment during use and end of life management.

2.3.2 Waste electrical and electronic equipment (WEEE)¹⁶

Under the terms of this Directive, Member States shall ensure that producers or third parties acting on their behalf, in accordance with Community legislation, set up systems to provide for the treatment of WEEE using best available treatment, recovery and recycling techniques. The systems may be set up by producers, both individually and collectively. To ensure compliance with Article 4 of Directive 75/442/EEC, the treatment shall, as a minimum, include the removal of all fluids and a selective treatment in accordance with Annex II to the Directive.

Other treatment technologies ensuring at least the same level of protection for human health and the environment may be introduced in Annex II under the procedure referred to in Article 14(2).

For the purposes of environmental protection, Member States may set up minimum quality standards for the treatment of collected WEEE. Member States that opt for such

¹⁶ Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment (WEEE), OJ L37/24 13.2.2003.

quality standards shall inform the Commission thereof, which shall publish these standards.

Article 11.2 of the Directive provides that Member States shall ensure that any producer of an electrical or electronic appliance put on the market after 13 August 2005 is clearly identifiable by a mark on the appliance. Furthermore, in order to enable the date upon which the appliance was put on the market to be determined unequivocally, a mark on the appliance shall specify that the latter was put on the market after 13 August 2005. The Commission is required to promote the preparation of European standards for this purpose. To this end, the Commission has issued a standardisation mandate to the European standards organisations to prepare the necessary standards.¹⁷

2.3.3 Restricting the use of hazardous substances in electrical and electronic equipment¹⁸

In order to prevent the generation of hazardous waste, Directive 2002/95/EC requires the substitution of various heavy metals (lead, mercury, cadmium, and hexavalent chromium) and brominated flame retardants (polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE)) in new electrical and electronic equipment put on the market since 1 July 2006.

2.3.4 Batteries¹⁹

Directive 2008/66/EC aims at minimising the negative impacts of batteries and accumulators on environment, and also at harmonising requirements for the smooth functioning of the internal market. To achieve these objectives, the Directive introduces measures to prohibit the marketing of some batteries containing hazardous substances. It contains measures for establishing schemes aiming at a high level of collection and recycling of batteries, with quantified collection and recycling targets. The Directive sets out minimum rules for producer responsibility, as well as provisions for the labelling of batteries and their removability from equipment.

¹⁷ Mandate to CEN/CENELEC/ ETSI For Standardization Work In The Field Of Waste From Electrical And Electronic Equipment, M/336 EN, 12 June 2003.

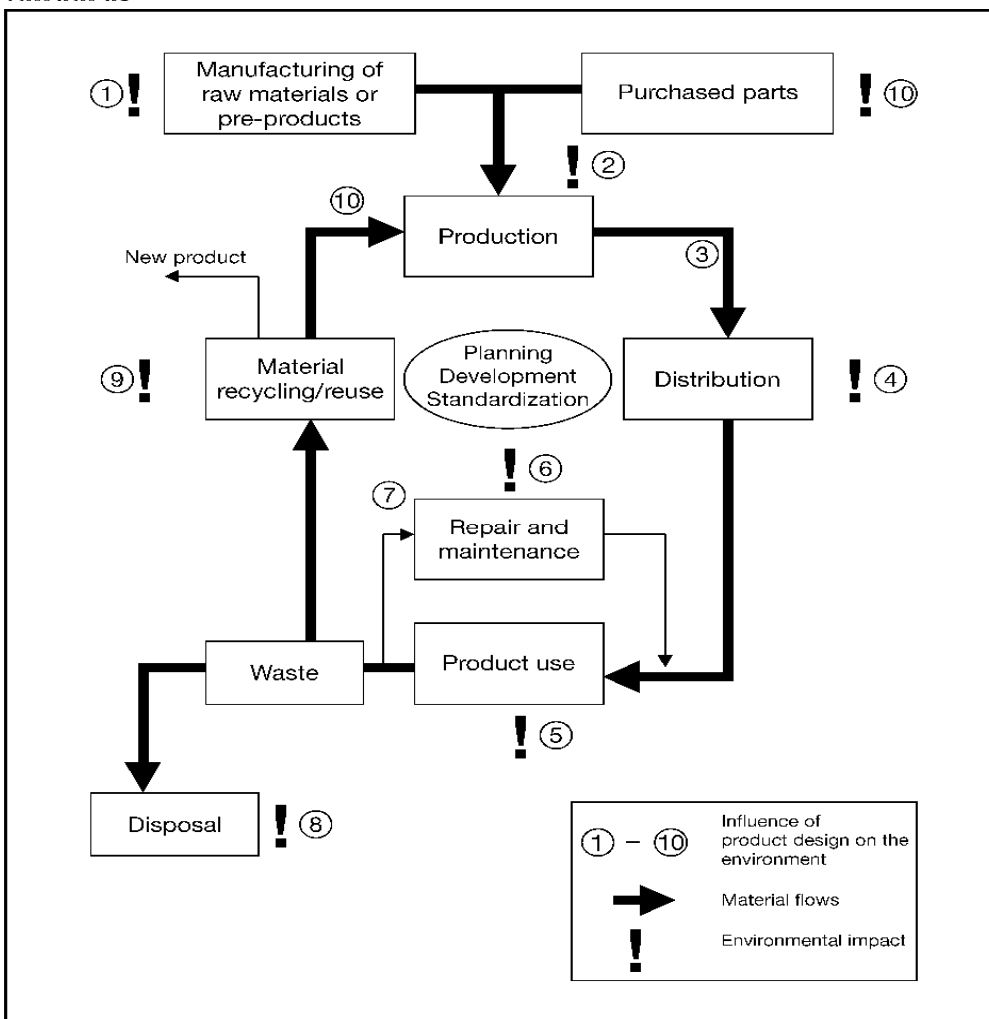
¹⁸ Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment, OJ L37/19 13.2.2003.

¹⁹ Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators, and repealing Directive 91/157/EEC, which entered into force on 26 September 2006.

3. Environmental Aspects of Product Standards

Product standards define many aspects of a product's construction. Product standards can influence environmental impacts, even if they are not considered to specifically address an environmental issue. When product standards only address one stage of the life cycle of a product, its design and manufacture, provisions contained in the standard may also impact on other stages of the product life cycle. It is estimated that more than 80 per cent of all product-related environmental impacts are determined during the product planning phase. Figure 5 identifies stages during the life cycle of a product in which product standards may have an environmental impact.

Figure 5: Potential Environmental Impacts during the Life Cycle Stages of Product Standards



Source: DIN Fachbericht 108 — Guide for the consideration of environmental aspects in product standardization and development.

The impacts are described in the box below.

Key to Diagram

1. Provisions in standards can influence the environmental impacts during acquisition and processing of raw materials. This relates to the type (and quantity) of approved or prescribed materials, as well as technical delivery conditions for raw materials.
2. The environmental impacts during production can depend on quality requirements for the products, on provisions for materials, etc.
3. Standardization can influence the competitive situation between products with different pollution levels (e.g., competitive advantage of standardized products over non-standardized products).
4. Provisions regarding size, shape and mass of products can influence the input for transportation and the resulting environmental impacts.
5. Provisions in standards can influence and limit the environmental impacts of product use (e.g., the release of hazardous substances, energy consumption).
6. Standards can influence reusability (e.g., returnable bottles) by setting quality requirements (mechanical stability), as well as the possibility of (and the efforts for) upgrading, maintenance and repair (e.g., detachable joints, standardized components).
7. Standardization can influence the service life of a product, as well as the option for (and costs of) future recycling.
8. Provisions in standards can influence the environmental impacts of disposal (e.g., heavy metal additives to polymers, required for compliance quality standards, can be set free during end-of-life processes).
9. Provisions in standards can influence the environmental impacts of recovery processes (e.g., provisions for substances to be used or added, which lead to environmental problems during waste treatment).
10. Technical delivery conditions or quality standards for purchased parts or recycled materials can influence the environmental impacts during production and recovery processes. The use of recycled materials influences the environmental impact of products during both raw material acquisition and recovery phases.

Source: DIN Fachbericht 108 — Guide for the consideration of environmental aspects in product standardization and development.

4. How Product Standards Can Reduce Environmental Impacts

Having established that product standards themselves can influence environmental impacts, this section considers how to address these impacts in product standards. The following section has been adapted from a report published by the Danish Environment Ministry²⁰ and from information contained in the management documentation system of CEN, the European committee for standardisation.²¹ The first section deals with the methodologies that can be applied within standards for reducing environmental impacts. The second section identifies how standards developers can incorporate these methodologies in different ways in the drafting process.

4.1 How to Reduce Environmental Impacts

4.1.1 Methodologies for the reduction of environmental impacts

One of the main principles in environmental work with products is to reduce the overall environmental impact connected to the product itself, rather than moving environmental impacts from one phase in the life cycle to another. The methodologies for environmental improvement can be broadly described as:

- Preventative methods, which involve cleaner production (i.e., the development of production processes that have a reduced impact on the environment, including the introduction of new technologies (cleaner technology), design for the environment (the development of products so that environmental impact is reduced by substituting less environmentally damaging substances), and environmentally correct project planning (constructing buildings and structures so that they are less environmentally damaging));
- Recycling (i.e., reusing, reclaiming and reutilising products and materials) and the use of recycled materials in new products;
- Purification/cleaning measures (i.e., scrubbing of flue gas, waste water and “end-of-pipe solutions”) and environmentally responsible deposition;
- Redressing and cleaning provisions (i.e., cleaning up past pollution, such as soil purification and restoration of waterways).

Various ways of reducing environmental impacts are discussed below. A new standard under development, ISO 14062 “Environmental Management — Integrating environmental aspects into product design and development”, provides guidelines on how to include environmental considerations in the product development phase.

4.1.2 Optimised process control

Production processes are defined according to product specifications and are generally optimised along economic production parameters, such as production speed, use of raw

²⁰ Guidelines for the Inclusion of Environmental Aspects in Product Standards, Niels Juul Busch, Stig Hirsbak, Anette Berrig, Jesper Jerlang, Danish Environment Ministry, March 2004.

²¹ www.cen.eu/boss

materials and time of delivery. Production processes are also adjusted so that they remain within environmental requirements.

When production specifications change — either to maintain customer satisfaction or due to new standards being introduced — the production processes often change as well. On such occasions, it can be advantageous to review opportunities for optimising the production process with respect to both environmental and economic factors. It is important, for example, to ensure that the use of raw materials, subsidiary materials and energy consumption are optimised and that wastage is kept to a minimum. Most production processes today are automated, or semi-automated, so optimisation generally occurs in the use of materials. This also includes a reduction in faulty production, which will also decrease wastage. It does not often occur that standards directly affect production processes, but as standards set requirements for products, they can indirectly lead to changes in production processes and thereby lead to production process optimisation. It is important in all such assessments that life cycle thinking is established so that economic assessments of the production processes take into account all environmental costs during production.

Text Box 4.1: Example of optimised process management

The product standard on surface treatment of steel constructions (EN/ISO 12944-5: Corrosion protection of steel structures by protective paint systems — Part 5: Protective paint systems) discusses a large number of surface treatments that comply with the standard's requirements for durability, but all of which have various economic, technical and environmental consequences associated with the painting process (e.g., both water-based and organic solvent-based products, which require different painting methods and drying processes and have different environmental consequences). Here, the technical and economic aspects should be optimized in conjunction with the environmental aspects, which typically will result in the application of water-based painting systems.

4.1.3 Optimised construction

There are many environmental advantages to be gained through resource optimisation in construction work, as Text Box 4.2 indicates.

Text Box 4.2: Example of resource optimisation (masonry)

Design of masonry structures — "Design of Masonry Structures Standard EC 6" (EN 1996-1-1) describes the technical and construction requirements for project planning, construction and implementation of masonry. EC 6, which was under development for seven years and was published in 2005, is the only recognized standard on the subject. The most important environmental aspect is reducing the use of materials in masonry. A reduced consumption of materials will, in turn, reduce the use of primary resources (clay, chalk, sand, etc.), energy consumption, discharges, and so on. The aim has been to include the results of a continuing optimisation of masonry constructions and materials. This optimization is

necessary in order to ensure masonry's economic and quality competitiveness with other building materials, but this process also includes a number of environmental improvements.

Practical example — In EC 6, it is possible to calculate masonry's adherence and tensile strength in bending, so that it can be determined whether masonry has sufficient bearing capacity and whether steel pillars are necessary. In some cases, masonry constructions are built as a front wall and a back wall held together by wire bindings. The bearing capacity of the construction is determined by the individual wall's thickness and rigidity. Until 2002, EC 6 only contained a calculating formula that took the individual subsidiary wall's thickness into account. In other words, both subsidiary walls were considered to have the same rigidity. If different materials were used in each wall, then the construction would either be over-dimensioned or under-dimensioned, leading to either a waste of resources or a safety hazard. A model has now been introduced that includes both rigidity and thickness, which allows for the correct dimensioning of each wall and, therefore, the optimisation of both safety and environmental aspects. The possibility of using different materials in subsidiary walls means more flexibility in the planning of construction.

4.1.4 Substitution of environmentally hazardous substances

Substitution occurs for many reasons, such as production technology, customer pressure and/or safety, but it can also occur for environmental reasons. For example, substituting environmentally harmful substances in a product with less hazardous substances can result in reduced discharge of such substances to the environment.

Text Box 4.3: Examples of substitution

1. The European Standard for Admixes in Concrete, EN 934-2, allows for the use of superplastifying substances that contain formaldehyde, which is an environmentally hazardous substance. As other products on the market have the same plastifying effect, but do not contain formaldehyde, it could be advantageous to specify that formaldehyde be substituted by less hazardous substances.
2. "ISO 12944-5: Corrosion protection of steel structures by protective paint systems — Part 5: Protective paint systems" discusses the use of different paints and application techniques and mentions a number of substances that are effective in different forms of corrosion prevention. For example, the use of paints with PVC and epoxyester as a binding agent, volatile organic compounds, and pigments containing tin are discussed. All of these substances are problems, either for the environment or in the workplace, yet the standard only includes peripheral references to requirements for the labelling of the paints for occupational safety reasons. The standard is under revision, and it has been recommended that environmental considerations be taken into account in order to substitute these hazardous substances. The standard mentions both water-based

paints and paints based on organic solvents. It is, therefore, already possible to choose among different types of solvents and, on this basis, choose the most environmentally appropriate solution.

4.1.5 Including recycling in product development

Most products become waste materials sooner or later and have to be handled in a responsible fashion. The deposition of refuse has become more complicated and expensive over the years. This is due to environmental problems involved in depositing refuse in landfills, lack of approved space for refuse handling, and capacity problems at refuse handling plants. In some cases, there can also be resource shortages as raw materials become scarce. It is sensible, both environmentally and economically, to consider whether a product can be recycled when disposed of, or whether existing recycling can be expanded. Planning increased recycling is best carried out in the product development phase, when one can increase the possibility of recycling by avoiding laminates and composite materials. Furthermore, the labelling of individual components can lead to increased recycling. Text Box 4.4 gives examples of the inclusion of recycling in product development.

Text Box 4.4: Examples of the inclusion of recycling in product development

1. Many car factories label components so that it is easier to identify materials when the car is scrapped. Work is currently being done on ensuring that insulating foam and the steel chassis in fridges are more easily separated after use. Similar projects are under way in the electronics sector.
2. One way of making concrete more environmentally friendly is to include more reactive waste products from other industries, such as flue ash from power stations and sediment from sewage plants. As these waste products may also include heavy metals, this can lead to problems when the structure is demolished, as the cement may not be recyclable. Crushed cement is often used as a filling material, or as a bearing layer, and leaching of the heavy metals may occur. It is important, therefore, to think through all aspects using a long-term perspective before recommending recycling.
3. In connection with the EU directive on the collection of discarded electronic and electrical apparatus, a computer-based tool, called eco-design, has been developed. Eco-design makes it easier for product developers to consider recycling in the design phase. An eco-design guide for electronics can be downloaded at www.ecodesignguide.dk

4.1.6 The use of recycled materials

Another possibility for improving a product's environmental profile is by using recycled materials instead of raw materials. This is based on the presumption that there are clear environmental advantages in doing so, although this is not always the case.

There are many environmentally and financially appropriate uses of materials with recyclable materials content; for example, the use of recyclable fibres in the manufacture of cardboard boxes. In this case, a virtually closed cycle exists, as most cardboard boxes have a high percentage of recycled fibres (often more than 90 per cent) and many of the boxes are collected for recycling again. Other examples include newspapers, egg boxes, beer and soft drink bottles, and steel reinforcements.

Text Box 4.5: Example of using recycled materials

In the building sector, widespread recycling of materials takes place. For example, concrete incorporates large amounts of flue ash, which is a waste product from flue gas cleaning filters in power stations fired by pulverised coal, and micro silica, which is a waste product from flue gas filters used in the production of ferrosilicium and silicium metals. Guidelines for using these products appear in the European product standard EN 206-1 for concrete.

4.1.7 Cleaning of discharges (i.e., pollution abatement and control)

The previously mentioned methodologies for improving a product's environmental profile are preventative and aimed at the product design phase. This is a phase in which product standards can have a large influence on the overall environmental impact of the product. Additional methods can be used to ensure that a product's environmental profile improves. These include purification and cleaning measures, such as installations for the cleaning of flue gas and wastewater produced during production. All concrete factories in Denmark, for example, must have sediment basins to ensure that water with concrete sludge does not enter the sewage system and that the sludge is collected and properly disposed of or recycled.

4.2 Additional Ways to Address Environmental Aspects in Product Standards

The previous section describes methodologies that can be applied to address environmental impacts. This section deals with how these aspects can be addressed in the drafting of standards. Ways to address environmental aspects in European Standards include:

- Environmental clause in standard
- Environmental checklist tailored to Technical Committees' (TCs) needs
- Environmental standards from product TCs
- Standards that address environmental requirements

4.2.1 Environmental clause in standard

The following product standards — either published or still under development — contain clauses that address environmental issues.

CEN/TC 52 — EN 71-5: Safety of toys — Chemical toys (sets) other than experimental sets. When preparing the standard, consideration was given to the minimisation of

environmental impacts caused by the use of the methods of analysis. Recommendations are given in an annex “Environmental, Health and Safety Precautions”.

CEN/TC 234 — prTS 15399:2006: Gas Supply System — Guidelines for management systems for gas distribution network. This Technical Specification contains a section on how to address environmental aspects and assess the environmental impacts of a Gas Distribution Systems Operator.

CEN/TC 282 — prEN 1473: Installation and equipment for liquefied natural gas — Design of onshore installations. This standard recommends assessing potential environmental impacts on the population living near an LNG plant, including emissions control, water discharge, noise and traffic.

4.2.2 Environmental checklist tailored to Technical Committee needs

Some TCs have adapted environmental checklists to suit the particular needs of the product:

CEN/TC 88 — Thermal insulating materials and products

CEN/TC 177 — Reinforced AAC components used in prEN 12602

CEN/TC 229 — Pre-cast concrete products

4.2.3 Environmental standards from product Technical Committees

The following standards address environmental aspects associated with products.

CEN/TC 121: EN 14717 — Welding and allied processes — Environmental checklist. This standard provides checklists for the assessment of the environmental aspects of welding fabrication of metallic materials, including site and repair work. Informative annexes indicate recommended actions for avoiding and reducing environmental impacts outside the workshop.

CEN/TC 132: prEN 15530 — Aluminium and aluminium alloys — Environmental aspects of aluminium products — General guidelines for their inclusion in standards. This standard gives guidance for standards writers dealing with aluminium products or semi-finished products intended for use in aluminium products.

4.2.4 Standards that address environmental requirements

CEN/TC 261 — Packaging. The following standards comply with requirements of the Packaging and Packaging Waste Directive (94/62/EC), which states in the preamble: "Whereas in order to minimise the impact of packaging and packaging waste on the environment, and to avoid barriers to trade and distortion of competition, it is also necessary to define the essential requirements governing the composition and the reusable and recoverable (including recyclable) nature of packaging."

EN 13427 — Requirements for the use of European Standards in the field of packaging and packaging waste

EN 13428 — Requirements specific to manufacturing and composition — Prevention by source reduction

EN 13429 — Reuse

EN 13430 — Requirements for packaging recoverable by material recycling

EN 13431 — Requirements for packaging recoverable in the form of energy recovery

EN 13432 — Requirements for packaging recoverable through composting and biodegradation

5. Current Initiatives on Environmental Aspects in Product Standards

In this section, initiatives are described that provide procedures and policies to address environmental aspects in product standards.

5.1 European Union

A well-developed infrastructure is emerging in the European Union to promote addressing the environmental impacts of product standards. The following infrastructure components can be identified:

- Political commitment
- Policies and procedures
- Guidance and information material
- Training

The main initiatives in each of the components are summarised below.

Political commitment:

- EU Treaty
- EU Environmental policy
- EU Communication and Council Resolution on environmental aspects of product standards

Policies and procedures:

- CEN/EHD
- CEN Guide 4
- CEN Environmental checklist
- CENELEC Environmental database

Guidance and information material:

- CEN Training

5.1.1 Political commitment

At the heart of the European Union is a Treaty on the creation of a common market among its member states.²² The European Commission, in bringing forward proposals for the development of laws that directly affect the establishment or functioning of the common market and concern environmental protection, is required to take as a base a high level of protection, taking into account any new development based on scientific facts.²³

²² European Union, Consolidated Versions of the Treaty on European Union and of the Treaty Establishing The European Community 29.12.2006, OJ C 321 E/1 Articles 2, 3(1)(h).

²³ Art. 95(3)

The Treaty also requires European Community policy on the environment to contribute to the pursuit of a number of specific goals, namely, Article 174:²⁴

- preserving, protecting and improving the quality of the environment
- protecting human health
- prudent and rational utilisation of natural resources
- promoting measures at the international level to deal with regional or worldwide environmental problems

At the same time, the Treaty aims to achieve a high level of protection, taking into account the diversity of situations in various regions of the Community. Furthermore, the policy is to be based on the precautionary principle and on the principles that preventive action should be taken, environmental damage should as a priority be rectified at source, and the polluter should pay.

Developments in European standardisation

Standardisation covers an increasing number of sectors. It is now considered to be a useful tool for environmental protection, in that it:

- has an influence on the way products and services impact on the environment, particularly in the context of the Integrated Product Policy;
- implements standardised test methods and methods of measurement in order to facilitate the enforcement of Community environmental legislation. This is the case with horizontal standards used to simplify the measurement of levels of pollutants in sludge, as well as in soil or bio-waste;
- promotes the use of environmental technologies and supports initiatives that have environmental benefits. Standardisation can, for example, help in the marketing of technologies, such as micro-cogeneration, which make it possible to simultaneously develop heat and electricity in a building;
- draws upon environmental management standards that aim to improve the environmental performance of businesses, such as the ISO14000 series of environmental management standards.

Europe's ability to create environmental standards can lead to the development of international standards. The European standards organisations have formal cooperation agreements with their international counterparts.

European Commission Communication on the integration of environmental aspects in European standardisation²⁵

This 2004 Communication was drawn up following an internet consultation. Representatives from business and industry, NGOs, public authorities and standards organisations had the opportunity to voice their opinions on the best way to take action for the environment. The Communication was developed as a joint effort by the

²⁴ Article 174

²⁵ Communication from the Commission to the Council, the European Parliament and the European Economic and Social Committee; Integration of Environmental Aspects into European Standardisation, {SEC(2004)206} Brussels, 25.02.2004 COM(2004)130 final.

Commission's Directorates-General of Environment and Enterprise in order to encourage action at the European level. This collaboration ensured that the environment was brought into focus, while still respecting the fact that the use of standards is voluntary. The Communication concentrates on areas in which there is consensus among stakeholders on how progress can best be achieved; for example, by:

- encouraging environmental thinking among technical experts who write standards. This can be done by highlighting good examples of how environmentally friendly standards have led to business benefits;
- prioritising the most important standards for the environment. In Europe, more than 13,500 standards have been published so far, and this number is growing. In order to make best use of resources, experts need to identify standards that have the most potential to improve the environmental performance of products, production processes and services;
- improving the participation of environmental experts and representatives of environmental interests in the Technical Committees that develop standards. Participation in these committees is open, but some groups may need more encouragement to get involved. For example, the Commission funds the European Environmental Citizens Organisation for Standardisation (ECOS) to ensure that environmental concerns are expressed and considered when standards are developed;
- increasing the use of environmental tools, such as checklists, guides and helpdesks, all of which have already been put in place by the standards bodies themselves, but incentives are needed to motivate standards writers to use these tools.

Environmental standards

The environmental quality of the standards produced in the EU can be improved. Particular attention is also focused on the quality of the standards drawn up in the acceding countries. The main aim is to:

- improve environmental training of the experts who compile or revise European standards and allow all stakeholders access to environmental information. The dissemination of technical know-how should be encouraged at the European and national levels;
- set priorities for the topics to be dealt with, taking into account issues of public interest related to EU environmental policy. The Commission can use the European standardisation mandate to flag these priorities;
- promote the active participation of all parties concerned by standardisation. The European standardisation bodies, such as CEN/EHD (i.e., European Committee for Standardisation/ Environmental Help Desk) and CENELEC (i.e., European Committee for Electro-technical Standardization), work on the basis of national delegations. The Member States should thus support participation by civil society and the scientific community in the process of drawing up standards. The Commission is pursuing the same objective by linking up with the ECOS consortium of environmental organisations;
- make systematic use of tools that help integrate environmental aspects in standards. Regular meetings will be held to share experiences and assess the progress made.

5.1.2 Policies and procedures in European standards bodies

This section of the report describes the infrastructure that has been established by the European Committee for Standardisation (CEN) to address the environmental aspects of product standards. Before doing this, it is useful to consider some of the background on the creation of the current infrastructure.

The main thrust of the discussion over the years has been how on to ensure that Technical Committees (TCs) proactively address environmental aspects in product standards. There are two schools of thought — one proposes requiring the TCs to address environmental aspects and having this requirement supervised by a third party, or to be required to do mandatory reporting. The other school of thought places the emphasis on voluntary efforts and advocates the provision of information and training. Consumer and environmental groups have advocated the first approach and industry has supported the second approach.

It should be borne in mind that there is difficulty endemic in the standardisation process in marshalling TCs since the committees are, in essence, sovereign. The CEN central secretariat cannot dictate terms to the TCs since the conclusions of the committees are arrived at by a process of consensus. Even the European Commission can only remove a reference to a standard from the Official Journal, thereby denying the standard a presumption of conformity with appropriate European legislation, but it cannot delete the standard. The European Union can, and does, provide incentives to try to ensure that the results of the standardisation process meet public policy objectives. The Commission can also help provide checks and balances, for example, through providing funding support for stakeholders and by establishing mandates for standards work directly in support of public policy objectives, but they cannot dictate to TCs.

CEN Environmental Help Desk

The CEN/EHD is a service that assists and supports CEN Technical Committees with the integration of environmental aspects in European standards.

The tasks of the EHD are to:

- Develop environmental awareness among CEN Technical Committees to encourage a systematic integration of environmental aspects in standards;
- Structure environmental information and supporting tools available to TCs to facilitate an environmental approach when drafting standards;
- Provide expertise to defined environmental projects within standardisation.

Environmental awareness

Regular communication with TCs is key to supporting the development of environmental awareness and disseminating information to TC members in their environmental approach to standardisation.

The EHD delivers environmental workshops to TCs, sectors and CEN national members in order to:

- Explain how industry, standardization and environment interrelate;
- Highlight the benefits of integrating environmental aspects in standards;
- Provide an environmental approach most suitable to the work of the respective TC.

The Environmental Framework

To support the development of environmental awareness and encourage an environmental approach in the standards drafting process, the EHD provides TCs with an Environmental Framework in which they can find solutions to specific sector- or product-related environmental issues.

Environmental Projects

The EHD contributes to various environmental tools:

- Environmental Training Programme for standards writers on environmental topics and for environmental experts on standardization matters;
- Revision of ISO Guide 64: Guide for addressing environmental considerations in product standards (ISO/TC 207);
- Questionnaire on Environmental Aspects in Standardization and on relevant tools and approaches (ISO/TC 207);
- Development of the Environmental Database (CENELEC).

5.1.3 Guidance and information material

Four-step process to address environmental aspects of product standards

The CEN/EHD describes a four-step process to addressing environmental aspects in product standards.

STEP 1: Identify the environmental aspects related to the subject of the standard.

STEP 2: Indicate environmental aspects to be addressed in the standard.

STEP 3: Incorporate into the standard requirements to deal with the selected aspects.

STEP 4: Document the results of the assessment of the environmental aspects.

CEN Guide 4: Guide for the inclusion of environmental aspects in product standards

This Guide provides practical guidance on the consideration and inclusion of environmental aspects in product standards. It is intended for standards writers. Its purpose is to:

- describe the environmental aspects in product standards;
- outline the relationship between product standards and the environment;
- help avoid provisions in product standards that may lead to adverse environmental impacts;
- emphasize that addressing environmental aspects during the development of product standards is a complex process and requires balancing competing priorities;
- recommend the use of life cycle thinking and recognized scientific techniques when environmental aspects of a product are being standardised.

In order to achieve these objectives, the Guide:

- sets forth general considerations that should be taken into account when developing product standards in order to achieve a proper balance between product function and environmental impacts;
- outlines ways in which provisions in product standards may affect the environment during the stages of a product's life cycle;
- addresses techniques for identifying and assessing the environmental impacts of provisions in product standards;
- highlights ways to reduce adverse environmental impacts resulting from provisions in product standards.

To reflect the diversity of environmental impacts that products can have, it is stated that the Guide may need to be supplemented by Sector Guides.

Inputs and outputs to be considered in the development of product standards

The Guide discusses inputs and outputs that need to be considered in the development of product standards. Inputs in the form of materials and energy have to be considered. Guidance is given with respect to both these inputs. Guidance is also given with respect to the following outputs: emissions to air, emissions to water, recycling, energy recovery, and waste and other releases (see following Matrix).

Inputs and Outputs Matrix

Environmental aspects (Inputs and Outputs)		Product life cycle			
		Production and Preproduction	Distribution (including packaging)	Use	End of life
		A	B	C	D
1	Resource use				
2	Energy consumption				
3	Emission to air				
4	Emission to water				
5	Waste				
6	Noise				
7	Migration of hazardous substances				
8	Impacts on soil				
9	Risks to the environment from accidents or misuse				

Techniques for identifying and assessing impacts

The Guide goes on to identify a number of techniques for identifying and assessing environmental impacts. These include LCA and the CEN environmental checklist.

The Environmental Checklist

The environmental checklist is part of CEN Guide 4 and facilitates addressing environmental aspects in European Standards. It is a simple tool that helps standard writers to systematically assess potential environmental aspects of the product, process or service that is covered by the standard, and it uses a life cycle approach. A completed checklist provides an indication of the clauses of the standard that address environmental aspects for each stage of the life cycle of the product. The completed environmental checklist can be used during the various stages of the standard drafting process. Furthermore, it may be published as an informative annex to the standard.

CEN Strategic Advisory Body on Environment

The CEN Strategic Advisory Body on Environment (SABE) acts as a platform in which the sectors and major stakeholders address environmental topics. SABE also advises the CEN Technical Board on environmental issues and follows up on the work of both the CEN and ISO environmental committees.

CENELEC Environmental Database

Since December 2006, the new CENELEC environmental database has been online. This database offers a tool for standard writers in TCs and other stakeholders. The database allows free access to information about environmental aspects already incorporated in CENELEC standards, as well as various search options according to environmental aspect, stage of a product's life cycle, and target group for information.

The database was established to:

- provide transparency about the uptake of environmental thinking by standardisation;
- encourage and assist technical bodies to consider environmental issues as part of their activities;
- serve as a knowledge base for standards writers and stakeholders involved in standardisation for environmental aspects already addressed in standards, and allow for the identification of existing and transferable approaches;
- identify areas for improvement of the environmental profile of standards.

A regular update cycle is defined for the database, which allows for dynamic integration of new information according to feedback and progress made in standardisation work in CENELEC technical committees. Currently, a feasibility study is being conducted to explore the expansion of the database to include CEN standards.

5.1.4 Training

CEN training programme for standards writers and environmental experts active in standardisation

As of 2007, CEN (under leadership of the British Standards Institute) is planning to arrange a twelve month pilot training programme aimed at both standards writers and environmental experts active in standardisation.

The training programme for standards writers comprises raising awareness of systematic integration of environmental aspects into standards, tools available for this purpose, and practical examples of how to address environmental aspects in standards. It also gives an overview of the environmental framework within CEN. Ten training sessions are foreseen in total.

For environmental experts involved in standardisation, the training programme offers information on how to effectively and efficiently contribute to the standardisation process, as well as information on the basic procedures and principles of standardisation. Four training sessions are foreseen in total.

The participants in the training seminars will be nominated by the national and European standardisation institutions, respectively, and by environmental NGOs.

5.2 International Initiatives

5.2.1 International Organisation for Standardisation

ISO is the largest international voluntary standards development organisation in the world. It is responsible for product standards in most sectors, except for the electro-technical sector and telecommunications. ISO is also responsible for a number of management standards, including the landmark ISO9000 family of Quality Management Standards and the ISO14000 family of Environmental Management Standards.

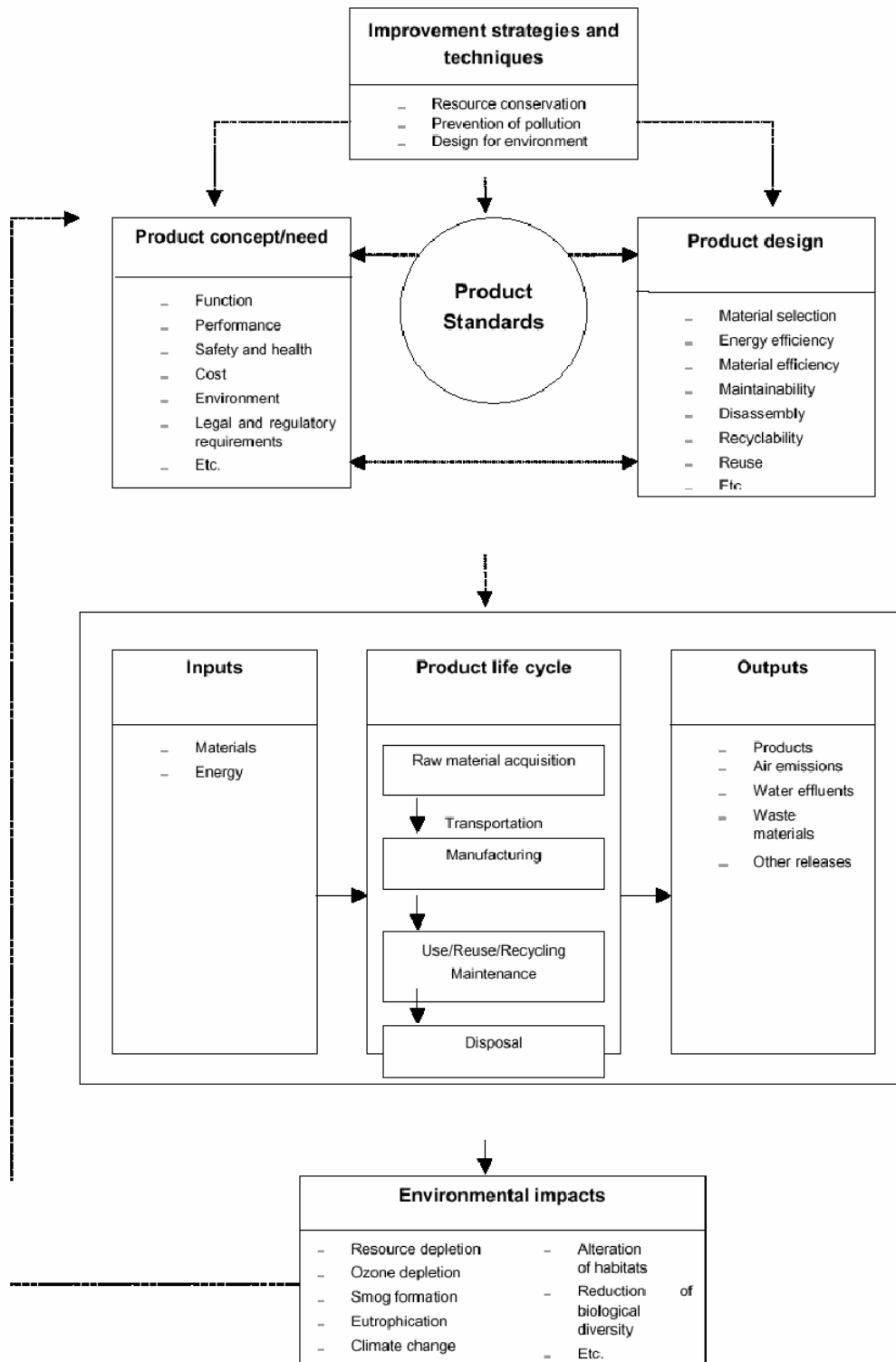
ISO Guide 64: Guide for the inclusion of environmental aspects in product standards

ISO has developed a guide for the inclusion of environmental aspects in product standards. ISO Guide 64 was published in 1997. It is based on a guide originally drafted by the German national standards body, DIN. The Guide takes a very general approach based on life cycle analysis thinking (see Figure 6).

The contents of the Guide are as follows

- scope, references, definitions
- general considerations
- influence of provisions in product standards on the environment
- inputs and outputs to be considered
- techniques for identifying and assessing environmental impacts
- relationship of product standards to strategies and techniques for environmental improvement

Figure 6: Conceptual Relationship between Provisions in Product Standards and the Environmental Impacts Associated with the Product during its Life Cycle



Source: ISO Guide 64

The approach is very general. Concerns have arisen about who actually uses the Guide in practice, and to what extent it impacts on the development of product standards. This has led to a decision to revise the Guide. A new work item was accepted in December 2004, and work began in 2005, with a view to having a revised Guide published by 31st July 2007. The aim is to make a thorough revision of the Guide, taking into account other Guides, such as IEC Guide 109, CEN Guide 4, the Danish Guidelines for integration of environmental aspects in product standards, and adding examples and practical guidance in order to create a more usable document.

ISO 17422:2002: Plastics — Environmental aspects — General guidelines for their inclusion in standards

The ISO technical committee on plastics has developed its own standard, which describes best practices in addressing environmental aspects related to plastics in product standards.

5.2.2 International Electro-technical Commission (IEC)

The IEC is the sister organisation of ISO and deals with standards in the electro-technical sector. IEC has developed its own environmental policy statement — “IEC recognizes the growing importance of preserving the environment and the role electro-technical standardization has to play to foster sustainable development. Therefore, it is the responsibility of IEC staff and technical committees, members and experts, to contribute actively to the evolving standards framework for the benefit of the environment. For this purpose, the IEC cooperates with ISO and regional standards development organizations, such as CENELEC. With respect to product-related standards, IEC technical committees must assess and continuously improve new and existing standards in view of reducing adverse environmental impacts over the whole life cycle of products. The IEC will monitor and annually report progress according to this policy.”

IEC Guide 109, second edition 2003–2006

IEC has developed its own guidance document to help technical committees address environmental aspects during the elaboration of product standards. The Guide converges, as far as possible, with ISO Guide 64. The Guide helps fulfil the IEC environmental policy by illustrating how environmental aspects can be included in electro-technical product standards.

IEC/TC 111 — Environmental standardization for electrical and electronic products and systems

IEC Technical Committee 111 is concerned with environmental standardisation of electrical and electronic products and systems. IEC/TC111 has the primary role in coordinating the environmental aspects of the work of IEC TCs. Its scope includes:

Standardisation of environmental aspects:

- to prepare the necessary guidelines, basic and horizontal standards, including technical reports, in the environmental area, in close cooperation with product committees of IEC, which remain autonomous in dealing with the environmental aspects relevant to their products;

- to liaise with product committees in the elaboration of environmental requirements of product standards in order to foster common technical approaches and solutions for similar problems, and thus assure consistency in IEC standards;
- to liaise with ACEA (i.e., Advisory Committee on Environmental Aspects) and ISO/TC 207;
- to monitor closely the corresponding regional standardization activities worldwide in order to become a focal point for discussions concerning standardization.

The Technical Committee has a number of working groups:

WG 1 : Material declaration for electrical and electronic equipment

WG 2 : Environmentally conscious design for electrical and electronic products and systems

WG 3 : Test methods for hazardous substances

The Technical Committee has two Project Teams:

PT 3: HWG 3: Sample disjointment

PT 62476: Guidance for assessing compliance of finished goods with respect to restriction of use of hazardous substances

Advisory Committee on Environmental Aspects (ACEA)

The object of ACEA is to promote activities in the IEC relevant to reducing any detrimental impact of electro-technical products on the natural environment, and to be at the disposal of the Standardization Management Board to advise on, guide and coordinate IEC work relating to environmental issues, in order to ensure consistency and avoid duplication and conflict in IEC standards. ACEA has a secondary coordination role. ACEA reports to the Standardization Management Board of IEC

5.3 National Initiatives

5.3.1 Danish guidelines

The Danish Environment Ministry published a set of guidelines in March 2004.²⁶ The objective of the guidelines is to give practical advice and instruction on how to address environmental aspects in product standards. The target group is experts working on the development of product standards.

The guidelines describe the interaction between product standards and the environment, and the role product development and standards have in this interplay. CEN's environmental checklist is also introduced as an instrument for undertaking an initial screening of a product's environmental impact. The guidelines go on to give an overview of how a product's principal environmental aspects can be identified, which will allow for the drawing up of a strategy to incorporate these aspects in production. The guidelines then provide ideas for reduction of the environmental impact of a product during its manufacture.

²⁶ Guidelines for the Inclusion of Environmental Aspects in Product Standards, Niels Juul Busch, Stig Hirsbak, Anette Berrig, Jesper Jerlang, Danish Environment Ministry, March 2004.

5.3.2 Germany — DIN Environmental Protection Helpdesk

For more than ten years, the DIN Environmental Protection Helpdesk (DIN/EPH) has supported DIN standards committees with integrating environmental aspects in national, European and internal standards. The Helpdesk operates as an impartial coordinating and consultation body. The steering committee for the DIN/EPH comprises all interested parties, including industry, environmental authorities, environmental and consumer NGOs, scientists and labour unions.

One of the tasks of the DIN/EPH is the identification of standards projects concerning environmental aspects. If necessary, the DIN/EPH comments on the projects or on the draft standards, as well as publishes standards. Members of the secretariat of the DIN/EPH may present these comments at the meetings of the relevant DIN committees, or they may work on these committees on a continuing basis. DIN/EPH bases its work on ISO Guide 64 and IEC Guide 109, both of which have been adopted as DIN guides,²⁷ as well as DIN's own guide DIN-Fachbericht 108: Guide for the consideration of environmental aspects in product standardization and development (2001).

The DIN/EPH plays a decisive role in the activities of the "Strategic Advisory Body on Environment" (CEN/SABE) in the European Committee for Standardization (CEN) and provides the chairperson of the working group "Environment Issues in Standardization" (ENIS) of SABE.

5.3.3 British Standards Institute standardisation policy statement

The British Standards Institute (BSI) has adopted a standardisation policy statement that addresses a number of issues, including the environment and recycling. With respect to the environment, the statement contains the following points.

“In developing standards, committees shall:

- start to discuss the integration of environmental aspects as early as possible in the standardization process;
- seek to reduce the consumption of natural resources;
- avoid specifying specific substances and materials by using generic names for them, where possible;
- avoid specifying the use of environmentally damaging substances and materials;
- specify best available techniques which aim to reduce the consumption of energy and materials;
- promote the reuse and the recycling of products, the use of recycled materials in products, and waste minimization;
- establish requirements for recycling (e.g., the separability of products and for the marking of materials to encourage recycling).”

²⁷ DIN Fachbericht 59 and 54, respectively.

And with respect to recycling:

“No new or amended British Standard publication, with the exception of British Standards of European or international origin, shall be approved if that standard includes a requirement that prevents the use of recycled materials where this is practicable without undermining the performance, safety or other intended outcomes of the standard. All such standards that do not meet these policy requirements shall be subject to special approval by the Technical Committee (or equivalent) that is endorsed by BSI Senior Management and SPSC.”

The full text of the relevant sections of the policy statement is annexed to this report. These very explicit commitments to addressing environmental aspects in product standards are backed up with references to guidance material, such as the CEN checklist, CEN guide and ISO and IEC guides. BSI is now taking the lead in providing training to committee members.

6. Current Situation in Canada

Sustainable development, including the concept of sustainable consumption, is important in Canada and globally. Sustainable consumption and production were explicitly supported in Agenda 21 of the Earth Summit, which stated the following:

“... the major cause of the continued deterioration of the global environment is the unsustainable pattern of consumption and production, particularly in industrialized countries, which is a matter of grave concern, aggravating poverty and imbalances.” (Agenda 21, Chapter 4.3)

Environment Canada ran a workshop in Aylmer, Quebec from 25–27 May 1997 on *Sustainable Consumption and Production* as part of Canada’s commitment to following up on Agenda 21 commitments. By 1997, Canada had initiated a number of programs related to sustainable consumption, including:

- improving the efficiency of resource use (e.g., *National Packaging Protocol* with objectives and milestone targets for diverting 50 per cent of packaging from disposal by the year 2000);
- providing substitute goods (e.g., *Eco-labelling* through the Environmental Choice Program to give consumers the information they need to choose environmentally friendly substitutes);
- reducing consumption (e.g., environmental education and awareness campaigns to encourage reduced resource use, and product standards to reduce the demand for specific goods and services).

Canada is an active participant in the Marrakech Process, which was launched in 2003 and is part of a 10-year framework of programmes in support of regional and national initiatives to accelerate the shift towards sustainable consumption and production. The framework is meant to strengthen international cooperation and increase the exchange of information and best practices to facilitate the implementation of national and regional programmes to promote sustainable consumption and production.

The objectives of the 10-year framework are:

- To identify specific activities tools, policies, measures and monitoring and assessment mechanisms, including, where appropriate, life-cycle analysis and national indicators.
- To adopt and implement policies and measures aimed at promoting sustainable consumption and production patterns, applying, inter alia, the polluter-pays principle.
- To develop production and consumption policies to improve products and services.
- To develop awareness-raising programmes on the importance of sustainable consumption and production patterns, particularly among youth and relevant segments in all countries, through, inter alia, education, public and consumer information, advertising and other media.
- To develop and adopt consumer information tools to provide the information related to sustainable consumption and production.
- To increase eco-efficiency, with financial support from all sources, where mutually agreed, for capacity-building and technology transfer.

The Marrakech Process has six confirmed task forces in operation, each led by a designated European country (e.g., the United Kingdom leads the task force on Sustainable Product Policies and Sweden leads the task force on Sustainable Lifestyles). The Marrakech Process will be making policy recommendations in the 2010/2011 cycle of the United Nations Commission for Sustainable Development.

Provincial programs supplement and in many ways go beyond federal programs in Canada. British Columbia, for example, was an early initiator of product stewardship regulations and programs for used lubricating oil and used paint. In September 1992, a regulation on used lubricating oil came into effect, making British Columbia the first Canadian province to require sellers of lubricating oil to provide a return facility or contract with a local return facility for consumers to return used oil free of charge. In September 1994, British Columbia's post-consumer paint stewardship program regulation became the first product stewardship program in North America to place the full financial and operational responsibility for the life cycle management of paint on the producing industry, with no government funding provided.²⁸ More recently, on March 31, 2006, British Columbia included Extended Producer Responsibility in the Recycling Regulation under the *Environmental Management Act*. The product stewardship plan is considered to be the most comprehensive in Canada.

The focus of this paper is on standard development activities at the national and international levels; however, the British Columbia examples show the large role that provinces can and do play in Canada on matters related to sustainable consumption.

The overall consumption of the richest fifth of the world's population is sixteen times that of the poorest fifth. In terms of waste, an article published in the Journal of Cleaner Production documented that Canada generates one of the highest per capita volumes of waste in the world. "... according to Statistics Canada, Canadians generated an average of 971 kg of solid waste per capita in 2002 [and] total waste generation has continued to rise by more than 10 per cent since 1998."²⁹ Thus, Canada is far from the best performer in terms of reducing the amount of energy and materials consumed in products and subsequently disposed in landfill sites, rather than being reused and recycled.

In March 2002, Environment Canada and the Manitoba Ministry of Conservation co-hosted a follow-up workshop to the one held in May 1997. The focus of the workshop was on Extended Producer Responsibility (EPR). Its objectives were:

- to share information and perspectives on Canadian and international EPR Programs, policies and planned initiatives;
- to improve idea-sharing, cooperative approaches and communication on EPR programs to enhance product stewardship responsibilities for designated products or materials in Canada; and

²⁸ IndEco, Sustainable Consumption: Issues and Challenges, A Background Paper prepared for Environment Canada for the 25-27 May 1997 workshop on *Sustainable Consumption and Production*, IndEco Strategic Consulting Inc., 1997.

²⁹ Kate McKerlie et al., *Journal of Cleaner Production* 14, 616-628, 2006.

- to improve the performance and measurement of existing, planned and future EPR programs.

A number of resources accompanied this workshop, including a background paper, agenda and a series of speaker presentations. A final proceedings manual was prepared.

The National Office of Pollution Prevention (NOPP) of Environment Canada runs a Product Policy Program that promotes the use of integrated approaches to manage and prevent environmental impacts from the manufacture, use and disposal of products and materials. This includes the development and promotion of product-focused policies and tools that take into account the whole life cycle of products and services, from product design to end-of-life management. The NOPP is specifically concerned with the development and implementation of risk management options for toxic substances. It also contributes to the establishment of industry-led product take-back programs. Technical support is provided to the Environmental Choice Program (Environment Canada's eco-labelling program).

The NOPP works on sustainable consumption strategies in collaboration with the emerging North American Sustainable Consumption Alliance. In addition, there is a program on waste prevention and one dedicated to mercury reduction, through ongoing efforts related to releases from industrial sources and a range of products, including dental amalgam, fluorescent lamps, automotive switches, thermometers, thermostats, batteries and appliances, with an emphasis on a life cycle approach. While notable achievements have been made on reducing mercury emissions from several prominent sources, there has been limited progress in reducing mercury uses and waste disposal from mercury-containing products, such as fluorescent lamps, thermometers, thermostats and automotive switches (see Mercury Case Study in Annex 3). Recently, the Minister of the Environment issued a Notice that a *Pollution Prevention Plan in Respect of Mercury Releases from Mercury Switches in End-of-Life Vehicles Processed by Steel Mills* will have to be developed by vehicle manufacturers and steel mills to remove and recycle up to 90 per cent of the switches. The Pollution Prevention Plan has not yet been approved, so there are no statistics on its' effectiveness.

The following section of the report gives mercury as a case study of the weakness of product policy in Canada relative to the US and the EU regulatory and standards systems.

6.1 Mercury Case Study

Annex 3 contains a case study on standards for mercury-containing products. The case study was prepared by Pollution Probe for this report. It reviews regulations and standards that exist in the EU, the US and Canada for four categories of mercury-containing products — fever thermometers, thermostats, switches in vehicles and fluorescent lamps. Mercury-free alternatives are available for all of these products, except fluorescent lamps (although LED technology containing no mercury promises to fill some of this gap).

The case study clearly shows that Canada has fallen far behind the EU in mercury product regulations and standards, and that the US is also ahead of Canada, at least in many

leading states, and also, to a considerable extent, at the federal level. The EU, in particular, operates as a common market, with product standards playing an increasingly important role in sustainable production and consumption. The European Environment Commission launched a comprehensive mercury strategy in January 2005 that contains twenty measures to reduce mercury emissions. The strategy builds on previous Directives, such as the one in 2003 on Waste Electrical and Electronic Equipment (WEEE), which bans the use of heavy metals and brominated fire retardants in the manufacture of new electrical and electronic equipment if the equipment contains more than permitted levels of these substances. The WEEE definition of electronic waste is broad and includes fluorescent lamps, high intensity discharge lamps and low pressure sodium lamps. It requires producers to set up collection systems for electrical and electronic waste from households and other end users.

In February 2006, the European Environment Commission put forward a proposal to ban mercury in fever thermometers and to establish uniform rules for marketing of measurement devices containing mercury on the internal EU market, as the current rules in the member states differ. Mercury-containing switches were phased-out of vehicles manufactured in the EU in the mid-1990s. For mercury-containing lamps, the EU requires a mandatory label for certain products to indicate conformity with the essential health and safety requirements set out in European Directives. Thus, the EU has a comprehensive mercury strategy that uses a mix of regulations, standards and other mechanisms to significantly reduce human-generated emissions of this toxic substance to the environment. The amounts of mercury allowed and used in products has decreased considerably (e.g., by nearly 75 per cent in fluorescent lamps) and has been banned altogether in some products. European performance on recycling of mercury is the best in the world (e.g., approximately 80 per cent of the mercury in existing fluorescent lamps is recycled by Germany and the Netherlands, with other European countries catching up quickly).

The situation in the US is more varied, with some strong federal initiatives and several states showing leadership in banning or restricting the use of mercury-containing fever thermometers and thermostats, and phasing out the use of existing stocks of mercury-containing products. Some states require wholesalers to serve as collection points for mercury thermostats, or require manufacturers to initiate and pay for collection programs (e.g., vehicle switch collection and recycling). Various municipalities have also shown leadership on these issues (e.g., Freeport, Maine; Duluth, Minnesota; Madison, Wisconsin).

The US Environmental Protection Agency (EPA) announced on March 29, 2007, that it was establishing a stakeholder panel process to provide the US Government with a range of options for better managing non-federal mercury supplies. The charge to the panel is to consider: 1) how the various stocks of mercury should be managed, both in the short-term and the long-term, and 2) how current and future supply and demand affect this determination for each of the various stocks (see Docket Identification Number EPA-HQ-OPPT-2007-0148). In addition, an EPA "Roadmap for Mercury" is available on the EPA website (www.epa.org).

The situation in Canada is weaker by far than the EU, and also the US in many respects, in eliminating or reducing mercury use in products. The Government of Canada does not ban or regulate mercury-containing products, although it does have the power to do so under the *Canadian Environmental Protection Act*, the *Hazardous Products Act*, and the *Food and Drugs Act*. None of these statutes, however, is tailored to the direct and effective control of toxic chemicals in consumer products. Several provinces have legislative authority to ban or regulate mercury-containing products. Municipalities could also ban the sale or use of these products if there is satisfactory evidence that they pose a material hazard. In January 2002, the Province of Ontario passed the *Waste Diversion Act* to promote the reduction, reuse and recycling of waste and to provide for the development, implementation and operation of waste diversion programs. In December 2006, the Minister of the Environment filed a regulation under the Act designating Municipal Hazardous or Special Waste and directed that a program be implemented in multiple phases. Phase 2 of the program will include mercury-containing products (e.g., fluorescent lamps, switches and thermostats, thermometers, barometers, or other measuring devices). The timing and collection/diversion targets for Phase 2 products had not been specified as of March 2007.

In conclusion, Canada lags far behind the EU in addressing concerns related to mercury in products, especially in relation to regulations and standards banning or limiting the use of mercury in products, but also in standards and programs applying to the recycling or management of end-of-life products. There is no national mercury strategy, and Canada (along with the US) has consistently refused to support a binding global mercury treaty, as called for by EU countries and others at UNEP Governing Council meetings (most recently in February 2007). The EU standards-setting infrastructure is well-developed and is facilitating the systematic incorporation of environmental aspects of product standards as part of the common market.

The EU is achieving better performance than Canada or the US on mercury elimination and reduction in products, as well as greater recycling of existing and new mercury stocks. The US EPA recently initiated a stakeholder process to advise it on the management of non-federal mercury supplies. Environment Canada is currently holding consultations on a Risk Management Strategy (RMS) for the development of control instruments to manage the environmental effects of mercury used in products. The development and publication of the proposed RMS tools are expected in the fall of 2007. It is not clear at this point what the next steps, if any, will be in either Canada or the US.

6.2 Survey and Interviews of Canadian Standards Development Professionals

As part of the research for this study, Pollution Probe surveyed and interviewed three professionals from Canadian Standards Development Organizations (SDOs). Canada formally recognizes (i.e., accredits) four SDOs — Canadian Standards Organization (CSA), Underwriters Laboratories of Canada (ULC), Bureau de normalisation du Quebec (BNQ), and Canadian General Standards Board (CGSB). Of these four SDOs, the CSA has subject area recognition for the development of environment-related standards. CSA has by far the most environment-related standards of the four SDOs. This does not mean, however, that the CSA has exclusive purview over such standards.

Professionals from CSA, ULC and BNQ were interviewed for this study. An open interview approach was used that allowed the professionals to freely express their views, rather than respond directly to the questions.

Three questions were asked:

- What kind of resource materials have Canadian SDOs developed at the national level to support committees that may deal with the environmental aspects of product standards?
- Do Canadian SDOs use resource materials from other jurisdictions when dealing with the environmental aspects of product standards?
- Do standards developers in Canada participate in relevant international work on the environmental aspect of product standards?

6.2.1 Canadian Standards Association (CSA)

The CSA professional noted that the role of the consumer program at CSA is to assemble consumer representatives to sit on various committees and put forward an appropriate consumer voice on the committees. The role of CSA staff is *not* to develop documents. Staff must ensure that consumer representatives are properly trained and have the information and resources they need to do the best job possible. It is the CSA program manager's job to understand "environment" as an issue in order to be able to judge a consumer representative's performance.

ISO and IEC Guides have been adopted by CSA as national standards. ISO Guide 64 is called CAN CSA Guide 64 and it is the document that is highlighted under CSA's core programs, to be referred to no matter what standard is concerned (i.e., a product or service standard). CSA's training program provides training for CSA managers on Guide 64.

CSA itself is ISO14000 certified. Therefore, as part of its registration and organizational commitment to continuous improvement, it looks for ways to improve training, including training on the environment as a "horizontal issue". This involves both CSA members and staff.

The harmonization agenda is the driver for various managers to interface with the environmental aspects of product standards. IEC/TC111 is a generic Technical Committee on the environmental aspects of product standards. Canada does mirror committee work on this TC. In addition, IEC/TC108 has a special project dealing with electrical equipment and electronic waste.

The environmental aspects of product standards has become top-of-mind in the construction area too. The Steering Committee on Buildings, Products and Materials has adopted a resolution to support sustainable development at a high level.

CSA has established its *Climate Change Program* in recognition of the fact that environment is a "horizontal issue." The program operates with a matrix that covers the

full suite of programs offered by the CSA, including programs on energy efficiency, renewable energy, and so on.

6.2.2 Underwriters Laboratories of Canada (ULC)

ULC works on fire safety, thermal insulation, fire protection, live working, security, tanks and fire trucks. The current process for environmental aspects is defined by the committee membership. Traditionally, environmental aspects have been overridden by safety issues. Some members of some committees are uncomfortable with environmental aspects as they are perceived to be “add-ons.”

ULC asks members why they are on a committee and to self-identify what expertise they bring to the table. When there are issues, committee members often defer to government regulators to decide what the issue is and give them direction when there is disagreement (e.g., safety over environment).

Standards used to be certified product-by-product. Now, standards development takes a more holistic approach. IEC/TC111 is where there is a lot of attention paid to the environmental aspects of product standards. This TC is trying to address environmental aspects using a life cycle approach. In part, members are driven by fear of being preempted by regulation, so they are trying to get ahead of the game. This represents a fundamental mind-shift from the past.

Committee chairs and the program manager use a mentoring system. They provide information materials and steer new members to the sections that appear to be relevant to the issue at hand. They give the members new materials and help them bridge into the dialogue and discussions on specific standards. In particular, they give new members access to ISO/IEC Guides 105, 109 and 157. The truth is that a lot of people don't want to read the Guides. They ask ULC staff to tell them what they need to know and the mentoring relationship goes on from there. They also ask long serving members for their input.

ULC has discussed preparing a checklist to stimulate members' thinking on what can be involved with the environmental aspects of product standards. The Guide for Disabled Persons and the Guide for Recycled Goods are examples of guidance materials that are helpful. More thought should be given by the Standards Council of Canada to producing this kind of material.

ULC corresponds regularly with the Canadian Council of Ministers of the Environment (CCME) as a number of their standards are referenced in their codes and guides. ULC committee members are often careful not to overstep their subject area expertise and are therefore reluctant to go directly to the CCME for any concerns. Often, and perhaps more appropriately, ULC standards staff will start the dialogue on concerns the committee may have.

6.2.3 Bureau de normalisation du Québec (BNQ)

The BNQ operates as a national SDO, but most of its work takes place in Quebec. The BNQ was created by the Quebec government to respond to the needs of the Quebec regulatory system. The BNQ is national, in that it is accredited the same way that other SDOs are, it develops national standards of Canada and it is treated as equal by the SCC.

Onsite waste water treatment is an example of the BNQ developing a national standard. Several years ago the BNQ developed a standard for onsite wastewater treatment systems used in average Canadian climatic conditions and Quebec put regulations in place that made certification to this standard compulsory. When the federal government and some other provinces showed interest in this standard the BNQ organised a pan-Canadian technical committee using the Quebec standard as a seed document to develop a national standard for onsite wastewater treatment systems.

As well, the BNQ has prepared a national standard on composting and it is working on a standard for compostable plastic bags, which may become a national standard after the completion of a pilot project.

With regard to product standards, technical committee members have a certain awareness of environmental issues in the standards development process. Whenever there are important environmental issues, an environmental advocate will be identified and invited to join the committee. Presently there is a strong push for sustainable development by Quebec that is coming through all the ministries. Through a partnership with AFNOR (i.e., the French national standards organization), the BNQ will implement in Quebec the French standard SD 21000 on sustainable development.

A good example of environmental aspects for service standards is the work that the BNQ did in developing a series of sectorial customer service standards (e.g., hotels, campgrounds, cruise ships, etc.) for the Quebec tourism industry. They first developed a guidance standard which defined that each sectorial standard should include respect for the natural and human environment. Thus, such things as the 3Rs (i.e., reduce, reuse, recycle), conservation, odour and noise, and to increase the environmental awareness of employees had to be discussed by each of the sectorial standard development committees. Later, the BNQ took its guidance standard for tourism to an international working group of ISO where it was used as a seed document for the development of the new ISO Guide 76 for the development of service standards and as a result it contains similar environmental requirements.

With respect to the procedures at the BNQ, guidance material explicitly states that committees must look at environment and sustainable development issues. The BNQ has a checklist that includes looking at aspects to protect the environment. When an environmental aspect is identified, Guides 64 and 94 are taken into consideration.

The BNQ relies on industries, social groups, consumers, academics and government experts for their technical committees. This is how the BNQ interfaces with civil society. It looks first for the most qualified individuals and then finds additional members to cover

off what needs to be addressed in the standard. The BNQ also connects with CCME to use their targets and guidelines, which are referred to in regulations, and adopt them as part of environmental requirements. This way, the BNQ committees don't have to figure out appropriate levels of emissions since the numbers have already been through a process at the national level.

Where the BNQ has the secretariat of an international technical committee, such as ISO TC 197 on Hydrogen technologies, a lot of effort goes into getting experts from all over the world involved in the standard developments process. Formal liaisons are also established with many different groups of experts. In this way the BNQ assures that all technical and environmental aspects are dealt with in an adequate fashion.

6.2.4 Comments by Pollution Probe

The bulk of Canadian environmental standards work by SDOs is done by the CSA. Which has a well-developed stakeholder engagement capacity and seeks to implement the main elements of the National Standards Strategy. BNQ has reached out to various stakeholders to some degree, but relies mostly on academic, government and industry experts. It is not clear the extent to which the other SDOs engage stakeholders, such as consumer and environmental NGOs. The June 2006 report by Pollution Probe on consumer groups and environmental NGOs engaged in international standards work noted that neither ULC nor CGSB have formal consumer or public interest representative programs.

The weakness of civil society stakeholder engagement in Canada can be linked to both the lack of commitment by some SDOs to encouraging such engagement and to the weakness of Canadian consumer groups (i.e., poorly funded and hence very small in size) and the disinterest of most environmental NGOs (which are better funded, but still have funding issues similar to those of consumer groups). The Government of Canada does not provide significant financial support for consumer and environmental NGOs to do independent research (other than through Industry Canada's Contributions Program) and networking, or to participate in standards-setting initiatives. Instead, involvement of these groups is mostly voluntary and at their own expense, particularly in terms of salaries and other internal costs that must be borne. This contrasts sharply with the situation in the EU, in which both ANEC and ECOS receive government financial support for their work, which allows them to build capacity and be more effective participants in standards-setting initiatives, despite a number of concerns and issues that these groups have with the level of support they receive and the degree to which the standards-setting bodies take their concerns into account. Moreover, the existence of standards-supportive policies and infrastructure gives European NGOs good reason to try to influence standards-setting at both the European and international levels. The same cannot be said for Canada or the US where environmental NGOs, in particular, strongly focus on regulatory initiatives and tend to ignore, or even oppose, voluntary initiatives that could be linked to the regulatory system.

7. Comparison of Canada with EU and US Approaches to Product Standards

This report has emphasized the standards-setting work of ISO and IEC at the international level, as well as the work of governments and standards bodies in the EU, in establishing the policy frameworks and infrastructure in which voluntary standards have found a valuable and legitimate role in advancing the environmental aspects of product standards. Canada is an active participant in the ISO and IEC arenas, but often looks to the US for leadership in standardisation work. The US, however, has slipped behind the EU in the coherence and systematic nature of its work on environmental standards, particularly those related to products. A number of States have shown leadership and have become the vanguard for progress on many environmental issues. Canada is left hanging somewhere in the middle ground between the EU and US.

The federal government, mostly through Environment Canada (with the exception of Natural Resources Canada in the area of energy efficiency of products), has undertaken initiatives related to the environmental aspects of products; however, a systematic approach has not been implemented, as in the EU. The recent Cabinet Directive on Streamlining Regulation (April 2, 2007) promotes the use of relevant international standards, guidelines and recommendations as a basis for technical regulations and for conformity assessment procedures when they can achieve federal regulatory objectives; however, it is not a visionary document. Rather, it is more directed at constraining the use of regulation as a policy tool than creating a 'system' in which regulation and voluntary standards work together to accomplish public interest goals, such as a cleaner environment. The Directive does not appear to constrain the use of voluntary standards, especially those developed internationally and domestically through the National Standards System, so there may be an opportunity to build on it and promote a more integrated approach to standards and regulations.

The "New Approach" defined in 1985 in the EU was an innovative way to promote technical harmonisation in the European common market. It introduced a clear separation of responsibilities between the EC legislator and the European standards bodies (i.e., CEN, CENELEC and ETSI) in the legal framework allowing for the free movement of goods. EC Directives define the "essential requirements," such as protection of health and safety, which goods must meet when they are placed on the market. CEN, CENELEC and ETSI have the task of drawing up the corresponding technical specifications meeting the essential requirements of the Directives. Compliance with these specifications provides a presumption of conformity with the requirements. The specifications are referred to as "harmonized standards." These standards are required to be developed in an open and transparent process, built on consensus among all interested parties.

In Canada, the CSA operates in a similar way to European Standards bodies. The CSA has subject area recognition on "environment" by the SCC and is active internationally in the standards work of ISO. This work and its relationship to Canadian standards initiatives is described in Pollution Probe's report titled, *Comparative Study of Consumer Groups and*

*Environmental NGOs Engaged in International Standards Work.*³⁰ The report discussed standards-setting processes within ISO, but also described standards-setting work in the EU and US. The report noted that the most important sources of voluntary standards in Canada are the ones developed by US SDOs, which at that time accounted for 438 of the voluntary standards referenced in Canadian regulations, versus 266 that were accounted for by international standards. The four accredited Canadian SDOs accounted for 309 standards referenced in regulations. Thus, the Canadian standards scene can be viewed as highly interactive with both the US standards system and, to a lesser extent, international standards.

The EU, for its part, adopts many international standards, with almost 40 per cent of CEN's standards identical to ISO standards and 90 per cent of CENELEC's standards identical to IEC standards. There is a strong commitment by the EU for both participating in, and leading, the development of international standards. The EU is especially active in the area of environmental aspects of product standards and has concentrated most of its efforts on the EU common market. These standards are important to Canada since they establish opportunities for trade in more environmentally friendly products, but they can also set up barriers to trade for products that don't meet appropriate environmental standards.

As with States in the US, some Canadian provinces have taken leadership in environmental regulation and standards-setting. There is some coordination and cooperation on this work through the Canadian Council of Ministers of the Environment (CCME); however, there is no overall initiative that comes close to matching the systematic and integrated approach to the setting and use of standards that exists in the EU. Provincial environmental officials do sometimes engage with the CSA in mirror committees to ISO and IEC standards initiatives; however, very little attention is paid to the issue of the environmental aspects of product standards (except perhaps in the area of energy efficiency of products).

This report should not leave the reader with the impression that all is perfect in the EU. The European Environmental Citizens Organisation for Standardisation (ECOS) has recently prepared a position paper on the New Approach.³¹ The following extract from page 1 of this paper gives an idea of some of the internal debate that is occurring:

“ECOS acknowledges the fact that the New Approach to Technical Harmonization has contributed to the completion of the Internal Market and has been mainly a success in the field of safety and the free movement of goods. However, in recent years, while extending its use to environmental issues ECOS has observed serious shortcomings in ensuring that environmental considerations are adequately taken into account in New Approach standards. For instance, ECOS (as well as its sister organisation ANEC — the consumer voice in standardisation) opposed the

³⁰ Comparative Study of Consumer Groups and Environmental NGOs Engaged in International Standards Work, Farquhar J., Everhardus E., and Ogilvie K., Pollution Probe, 26 June 2006.

³¹ ECOS Position Paper on the Revision of the New Approach, European Environmental Citizens Organization for Standardisation, 26 July 2006.

publication of the “revised” packaging standards in 2005 — in vain. Furthermore, environmental NGOs are concerned that standardisation may lead to deregulation, while the procedures of its implementation are not up to democratic standards that should be mandatory for such a transfer of competences to private bodies. If the European Commission can not find a solution to how to make the New Approach work for the environment, ECOS needs to reject any expansion of the role of standardisation in the field of the environment. The current revision of the New Approach does not address ECOS’ expectations in that respect.”

8. Recommendations

Canada faces challenges in keeping up with standards development in the area of environmental aspects of product standards since it is not often a market leader, given the relatively small size of the domestic market compared to the US, EU and Asian markets, in particular. However, Canada has performed well in international standards-setting bodies and is well respected for its achievements. Nevertheless, it is clear from this research paper that Canada is slipping behind leading regions, countries and even states (in the US) in this vitally important area of standardization.

Pollution Probe believes that it is not in Canada's environmental or economic interests to continue with the status quo. It is time that a serious national effort is made to modernize Canadian thinking about the role that standards play in sustainable consumption. The first hurdle that must be passed is the perception that standards and regulations are alternatives, or substitutes, and not part of a comprehensive approach to better environmental and economic performance. The first step, therefore, should be to bring relevant government and industry officials, as well as consumer and environmental NGOs, up-to-date on what is happening internationally and in the EU, US and leading Asian nations.

Pollution Probe makes the following five recommendations as a result of the research and analysis contained in this report:

- The federal government, led by Environment Canada (EC), Natural Resources Canada (NRCan) and Industry Canada (IC), and in full cooperation with the SCC and the four accredited SDOs, should host an international conference on the environmental aspects of product standards. The conference should bring together a broad range of stakeholders across Canada involved in, or potentially involved in, the development of product standards.
- The conference should be followed by a series of workshops on specific topics for which greater education and discussion are identified as needed and appropriate.
- The SCC and SDOs, led by the CSA, should prepare a report that lays out a strategy for Canada to become more fully engaged in international initiatives on the environmental aspects of product standards. The goal should be to put in place a systematic approach to standards development, along the lines of the EU's New Approach, but taking account of learnings from the EU and tailoring the approach to Canadian needs and circumstances.
- EC, NRCan and IC should review the European Commission Directives under the New Approach and prepare a paper on how Canada can better apply sustainable consumption policy tools, such as Life Cycle Assessment (LCA) and Design for the Environment (DFE). These tools should be integrated into new and revised legislation, regulations and standards (e.g., Health Canada should include LCA in a revised *Hazardous Products Act*, and Regulatory Impact Assessments should require LCA, or

at least an assessment of the environment impact of products being regulated). The “Sustainable Consumer” concept developed by the Office of Consumer Affairs in Industry Canada should be integrated into new policy development.

- EC, NRCan and IC should cooperate to create a financial mechanism to support the development of standards-related capacity and competence in the Canadian consumer and environmental NGO communities, similar to what the EU does for ANEC and ECOS. Canadian standards policy, as called for in the National Standards Strategy of the SCC, should specify ways to ensure transparency in standards-setting and the full engagement of civil society in work on the environmental aspects of product standards.

Annex 1 — Extract from European Union Treaty

EUROPEAN UNION CONSOLIDATED VERSION OF THE TREATY ON EUROPEAN UNION AND OF THE TREATY ESTABLISHING THE EUROPEAN COMMUNITY
29.12.2006 OJ C 321 E/1

CHAPTER 3 APPROXIMATION OF LAWS

Article 94

The Council shall, acting unanimously on a proposal from the Commission and after consulting the European Parliament and the Economic and Social Committee, issue directives for the approximation of such laws, regulations or administrative provisions of the Member States as directly affect the establishment or functioning of the common market.

Article 95

1. By way of derogation from Article 94 and save where otherwise provided in this Treaty, the following provisions shall apply for the achievement of the objectives set out in Article 14. The Council shall, acting in accordance with the procedure referred to in Article 251 and after consulting the Economic and Social Committee, adopt the measures for the approximation of the provisions laid down by law, regulation or administrative action in Member States which have as their object the establishment and functioning of the internal market.

2. Paragraph 1 shall not apply to fiscal provisions, to those relating to the free movement of persons nor to those relating to the rights and interests of employed persons.

3. The Commission, in its proposals envisaged in paragraph 1 concerning health, safety, environmental protection and consumer protection, will take as a base a high level of protection, taking account in particular of any new development based on scientific facts. Within their respective powers, the European Parliament and the Council will also seek to achieve this objective.

Article 174

1. Community policy on the environment shall contribute to pursuit of the following objectives:

- preserving, protecting and improving the quality of the environment,
- protecting human health,
- prudent and rational utilisation of natural resources,
- promoting measures at international level to deal with regional or worldwide environmental problems.

2. Community policy on the environment shall aim at a high level of protection taking into account the diversity of situations in the various regions of the Community. It shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay.

In this context, harmonisation measures answering environmental protection requirements shall include, where appropriate, a safeguard clause allowing Member States to take provisional measures, for non-economic environmental reasons, subject to a Community inspection procedure.

3. In preparing its policy on the environment, the Community shall take account of:

- available scientific and technical data,
- environmental conditions in the various regions of the Community,
- the potential benefits and costs of action or lack of action,
- the economic and social development of the Community as a whole and the balanced development of its regions.

4. Within their respective spheres of competence, the Community and the Member States shall cooperate with third countries and with the competent international organisations. The arrangements for Community cooperation may be the subject of agreements between the Community and the third parties concerned, which shall be negotiated and concluded in accordance with Article 300.

Annex 2 — British Standards Institute Standardization Policy Statement

ENVIRONMENT

1. POLICY STATEMENT

In developing standards, committees shall:

- start to discuss the integration of environmental aspects as early as possible in the standardization process;
- seek to reduce the consumption of natural resources;
- avoid specifying specific substances and materials by using generic names for them, where possible;
- avoid specifying the use of environmentally damaging substances and materials;
- specify best available techniques which aim to reduce the consumption of energy and materials;
- promote the reuse and the recycling of products, the use of recycled materials in products, and waste minimization;
- establish requirements for recycling, e.g. the separability of products and for the marking of materials to encourage recycling.

2. BACKGROUND AND GUIDANCE

The following CEN Environmental Checklist should be used to assess the potential environmental aspect/impacts of a standard before it is prepared.

The checklist should be used as follows:

1. Identify each environmental aspect relevant to the product (do not assess its relationship to the standard) and write 'yes' if there is an environmental aspect or 'no' if there is no environment aspect. The identified environmental aspects may be detailed in a box below the matrix.
2. For each box with a 'yes', identify the aspects on which the standard has or may have an influence. Mark these boxes with three asterisks (***) .
3. The committee/working group draws up proposals for modifications, if any, of the standard to optimize the environmental aspects. It is essential to avoid shifting the environmental impacts from one life cycle phase to another, or from one medium to another, and to achieve overall improvement. Write the number of the standard clauses where the environmental aspects are addressed, in the appropriate boxes.
4. Provide any clarifying information in a box below the matrix.

Environmental aspects (inputs and outputs)	Product life cycle			
	A. Production and pre- production	B. Distribution (including packaging)	C. Use	D. Disposal
Resource use	YES***	YES	YES***	YES***
Energy consumption	YES***	YES***	YES***	YES***
Emission to air	YES***	YES	YES***	YES***
Emission to water	NO	NO	NO	NO
Waste	NO	NO	NO	YES***
Noise	NO	NO	YES***	NO
Migration of hazardous substances	YES***	NO	YES***	YES***
Impacts on soil	NO	NO	NO	NO
Risks to the environment from accidents and misuse	YES***	YES***	YES***	YES***

3. REFERENCES

ISO Guide 64/ CEN Guide 4, '*Guide to the inclusion of environmental aspects in product standards*' (currently under revision)

IEC Guide 109, '*Environmental Aspects — Inclusion in electro-technical product standards*'

Environmental Chapter of the CEN/BOSS, '*Consideration of environmental aspects in standards*'

ISO TR14062, '*Environmental management — Integrating environmental aspects into product design and development*' (currently under revision)

RECYCLING

1. POLICY STATEMENT

No new or amended British Standard publication, with the exception of British Standards of European or international origin, shall be approved if that standard includes a requirement that prevents the use of recycled materials where this is practicable without undermining the performance, safety or other intended outcomes of the standard. All such standards that do not meet these policy requirements shall be subject to special approval by the Technical Committee (or equivalent) that is endorsed by BSI Senior Management and SPSC.

British Standards and the British Electro-technical Committee shall actively seek adoption of this policy and approach by international and European standards bodies and their Technical Committees and other groups.

2. BACKGROUND AND GUIDANCE

In line with EU Directives and UK Waste Strategies, it is appropriate for BSI and its committees to promote the reduction of waste, its minimization, the maximum use of recycled materials in products and services, in part to stimulate the markets for recycled materials and reduce as far as is practical the use of raw materials, energy, etc. Although the Waste Strategies are primarily focused on household waste many of the principles they contain can be applied to all types of wastes. This policy is, therefore, broad in its application in support of the UK's wider aims in dealing with the generation, treatment and disposal of wastes, seeing many as raw materials or resources for other activities.

Technical committees and other groups developing standards and similar documents are encouraged, therefore, to apply the policy as broadly as possible for this reason.

3. REFERENCES

Although this policy is specifically intended to address the issue of recycled materials, it should also be recognized that the principal aims of standardization already include improvement in "the quality of life," i.e. health, safety and the environment, and "efficient use of resources". Refer also to Environment Policy when considering wider environment impacts.

Annex 3 — Mercury Case Study

Case Study: Standards for Mercury-containing Products

Prepared by Krista Friesen, Senior Project Manager, Pollution Probe

March 2007

Introduction

This case study reviews regulations and standards that exist in the European Union, the United States and Canada for four categories of mercury-containing products — fever thermometers, thermostats, switches in vehicles and fluorescent lamps. The purpose is to compare and contrast regulations and standards among leading jurisdictions and to identify weaknesses in Canada's approach to mercury product standards.

Mercury-free alternatives are available for virtually all products that contain mercury. One exception is fluorescent lamps, including compact fluorescent bulbs, in which mercury vapour is used to conduct electricity through the gaseous substance, causing fluorescent particles to "light up." There is no commercial alternative to using mercury in this application, although in the past decade lamp manufacturers have reduced the amount of mercury used by nearly 75 per cent.

Besides offering health and environmental benefits, mercury-free products offer consumers a number of other benefits. Electronic thermostats are generally programmable, so that the temperature of a house can be adjusted automatically at night or during the day if the house is empty. In addition to lowering energy costs, electronic thermostats can also reduce emissions of mercury and the many other pollutants associated with coal-based electricity production. Fever thermometers are another example in which mercury-free digital alternatives provide the added benefits of being easy to use, easy to read and unbreakable. Mercury tilt switches used in cars are an example in which simple and inexpensive mechanical or ball bearing switches have been available for many years and used by most of the non-North American vehicle manufacturers.

The serious environmental and human health impacts of mercury are not covered in this report, but can be easily accessed, given the extensive literature that exists on this toxic substance. Pollution Probe's *Primer on Mercury in the Environment* is a widely used educational document on this subject and is available at www.pollutionprobe.org/Publications/Primers.htm.

Standards/Regulations that Cover All Four Product Categories

European Union

Through the WEEE and RoHS Directives, the European Union (EU) has banned a wide range of electrical and electronic products that contain mercury. As well, the EU has a mercury strategy that aims to reduce emissions, decrease supply and demand, and protect against exposure.

WEEE and RoHS Directives

In 2003, the EU passed the Directive on Waste Electrical and Electronic Equipment (WEEE), which addresses the takeback of waste electrical and electronic equipment. The Restriction on Hazardous Substances Directive (RoHS), which accompanies the WEEE directive, “bans the use of heavy metals and brominated fire retardants in the manufacture of electrical and electronic equipment.”³²

The WEEE and RoHS directives were to be implemented in European member states by August 2004, with the collection, treatment and financing systems for WEEE in place by September 2005, and the first collection and treatment targets attained by December 2006.³³ Under the WEEE directive, the definition of electronic waste is broad, and includes just about any product used by consumers or businesses with a plug or a battery — including fluorescent lamps, high intensity discharge lamps and low pressure sodium lamps.³⁴

The WEEE directive requires producers to set up collection systems for electrical and electronic waste from households and other end users, and it requires member states to collect four kilograms per person by the end of 2006, although targets will not be compulsory until more data are available.³⁵

The RoHS regulations ban new Electrical and Electronic Equipment (EEE) containing more than the permitted levels of lead, cadmium, mercury, hexavalent chromium and both polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE) flame retardants from being put on the EU market as of July 1, 2006. However, a number of exempted applications for these substances exist and the regulations do not apply to the re-use of equipment that was put on the market before July 1, 2006.

Manufacturers need to ensure that their products — and the components and subassemblies of such products — comply with the requirements of the regulations in order to be put on the Single Market. The Regulations will also have an impact on companies that import EEE into the European Union on a professional basis, those that export to other Member States and those that re-brand other manufacturers' EEE as their

³² Letsrecycle.com. Waste Electrical and Electronic Equipment (WEEE) webpage. www.letsrecycle.com/legislation/weeefridge.jsp.

³³ Ibid.

³⁴ Raymond Communications. 2002. *Electronics Takeback Laws: A Summary*.

³⁵ Ibid.

own. Producers must demonstrate compliance by submitting technical documentation to the enforcement authority on request and must retain such documentation for a period of four years after the EEE is placed on the market.

Responsibility for the enforcement of the RoHS Regulations rests with the Secretary of State for Trade and Industry, who has appointed the National Weights and Measures Laboratory (NWML), an executive agency, to act on his behalf.

EU Mercury Strategy

In January 2005, the European Environment Commission launched its mercury strategy, which is a comprehensive plan addressing mercury pollution in both the EU and globally. The strategy contains twenty measures to reduce mercury emissions, cut supply and demand, and protect against exposure.

The following actions from the EU strategy relate directly to mercury-containing products:

Action 7 — The Commission intends to propose in 2005 an amendment to Directive 76/769/EEC¹³ to restrict the marketing for consumer use and healthcare of non-electrical or electronic measuring and control equipment containing mercury.

Action 8 — The Commission will further study in the short term the few remaining products and applications in the EU that use small amounts of mercury. In the medium to longer term, any remaining uses may be subject to authorization and consideration of substitution under the proposed REACH Regulation¹⁴, once adopted.

Action 10 — The Commission will undertake further study in the short to medium term of the fate of mercury in products already circulating in society.

As a follow up to Action 7, in February 2006, the Commission put forward the proposal to ban mercury in fever thermometers. The Commission expects that a ban on mercury in thermometers will lead to a significant reduction of mercury emissions. The proposal will also establish uniform rules for marketing of measuring devices containing mercury on the internal EU market, as the current rules in the member states differ.

United States

The United States (US) has universal waste regulations that streamline the collection requirements for certain hazardous wastes in the following categories: batteries, pesticides, mercury-containing equipment (e.g., thermostats) and mercury-containing lamps (e.g., fluorescent bulbs). The rule is designed to reduce hazardous waste in the municipal solid waste stream by making it easier for universal waste handlers to collect these items and send them for recycling or proper disposal.

In May 1995, the US Environmental Protection Agency (EPA) promulgated the final universal waste rule establishing streamlined collection and management requirements for universal waste batteries, pesticides, and thermostats. In July 1999, the EPA added mercury-containing lamps to the universal waste rule.

In July 2005, the US EPA added mercury-containing equipment to the universal waste rule. Handlers of this new category of universal waste must prevent mercury releases by using specific containers that will not release any mercury. Mercury-containing equipment includes devices, items or articles that contain varying amounts of elemental mercury, including several types of instruments that are used throughout electric utilities and other industries, municipalities and households. Some commonly recognized devices are thermostats, barometers, manometers, temperature and pressure gauges, and mercury switches, such as light switches in automobiles.

The US EPA estimates that there are 1,877 generators handling approximately 550 tons of mercury-containing equipment that will be affected by this rule. The Agency's analysis shows that adding used mercury-containing equipment to the universal waste program will improve implementation of, and compliance with, the federal hazardous waste program. The addition also will establish more facilities to consolidate mercury waste, as well as reduce emissions from mercury.

Individual US States

In addition to a number of product-specific regulations, which will be covered in later sections of the case study, several states have adopted mercury strategies. These strategies range from banning or phasing-out the sale of mercury-containing products, to labelling, to collection and recycling.

In 2002, **Connecticut** enacted a law that implements a phase-out of many mercury-added products. Effective July 1, 2006, the sale or distribution of mercury-added products containing more than 100 milligrams or 50 parts per million of mercury is prohibited (with some exceptions for mercury-containing lamps). This law requires product labelling for most mercury-added products and requires the manufacturers to initiate collection programs for many mercury-added products. In 2006, Connecticut enacted additional mercury product legislation that establishes universal waste rule requirements for mercury-containing equipment and changes the product labelling requirements for mercury-containing lamps.

Beginning July 1, 2005, no mercury-added product may be offered for sale or use or distributed for promotional purposes in **Illinois** without the prior written notification to the Illinois Environmental Protection Agency by the manufacturer of the product. This law provides that, on or before January 1, 2006, the Pollution Control Board must modify its rules governing universal hazardous waste, as appropriate, to promote the recycling, recovery, and proper management of elemental mercury and mercury-added products on a state-wide basis.

In **Maryland**, manufacturers and retailers are prohibited from selling, on or after April 1, 2006, specified products that contain mercury, unless a specified label is affixed to the product. In addition, the state requires a person with a specified number of fluorescent lamps to handle them through reclamation facilities, on or after October 1, 2006.

In 2006, **Massachusetts** enacted a law “An Act Relative to Mercury Management” that mandates manufacturers of mercury-added products to notify the Massachusetts Department of Environmental Protection (MA DEP) of components in their products that contain mercury, and the amount of mercury in them. The Act also requires product labelling for most mercury-added products, effective May 1, 2008 and requires manufacturers selling mercury-added products in the state to set up and pay for collection programs for their end-of-life products, effective May 1, 2007. The law bans the sale or distribution of motor vehicles containing one or more mercury-added switches, effective January 1, 2007, as well as bans the sale, or offer to sell, of mercury-added measurement devices, such as thermostats and thermometers, effective May 1, 2008. In addition, the law directs the MA DEP to implement a program to educate residents about proper disposal of mercury-added products, bans the disposal of mercury-added products in any manner other than recycling, disposal as hazardous waste or another approved method, and requires manufacturers of mercury-added lamps to implement a plan for educating users about recycling end-of-life lamps and meet specific recycling targets that increase over time.

Between 2002 and 2006, **Maine** enacted a number of mercury product laws that prohibit the sale, use or distribution of any product to which mercury is intentionally added, effective January 1, 2002 (unless the manufacturer has notified the Maine Department of Environmental Protection) as to the amount and purpose of the mercury, as well as ban the sale of certain mercury-containing products — mercury switches, relays and measuring devices, effective July 1, 2006, motor vehicles with mercury switches, mercury-added thermostats, effective January 1, 2006 and mercury-added fever thermometers, effective January 1, 2002. In addition, automobile manufacturers are required to establish a state-wide system to consolidate and recycle the switches, and it is required that mercury-added products sold in Maine after January 1, 2002, have an identifying label.

In **New York**, the sale and distribution of certain additional mercury-added products are prohibited and manufacturers of mercury-added consumer products that are allowed for sale are required to conspicuously label each product with notice that it must be properly disposed of or recycled (any such product that is not so labelled is prohibited from sale). The state established requirements for the recycling of mercury-added consumer products and has banned the disposal of consumer products with mercury, with an exemption for mercury-containing lamps from households and small businesses. In addition, manufacturers and trade associations dealing in mercury-added products are required to report certain information to the Department of Environmental Conservation.

Vermont has a law known as “Comprehensive Management of Exposure to Mercury,” which proposes to establish a comprehensive approach to reducing the exposure of citizens to mercury released in the environment through mercury-added product use and disposal. Elements of this law include a ban on the distribution or offering for sale of certain mercury-added novelties and products, requiring manufacturers of mercury-added products to provide certain notice to the agency and report on total mercury contained in certain products, and to modify the existing labelling requirements for mercury-added products and packaging by expanding the types of products subject to labelling. The law also proposes to ban the disposal of mercury-added products in landfills and incinerators,

to require source separation of discarded mercury-added products, and to require solid waste management facilities to inform customers of disposal bans and collection programs for mercury-added products. In addition, it proposes to continue a mercury public education and outreach program in the agency of natural resources and the department of health and to continue an advisory committee on mercury pollution to report annually to the legislature with recommendations on reducing mercury contamination and risk.

Canada

While the Government of Canada does not have regulations that ban or regulate mercury-containing products, it does have three statutes that are relevant to the control of toxic chemicals in consumer products. These are the *Canadian Environmental Protection Act* (CEPA), the *Hazardous Products Act* and the *Food and Drugs Act*. Although all of these statutes play a role in curtailing the use of hazardous chemicals in consumer products, none is tailored to the direct and effective control of toxic chemicals in consumer products.

Under Part 5 of the *Canadian Environmental Protection Act*, the federal government has clear authority to ban or regulate products containing substances that are listed on the Domestic Substances List (“DSL”). Mercury is item 8 on the DSL.

Section 93 of CEPA authorizes the Governor in Council to make extensive regulations for a product that contains a substance on the DSL. Such regulations could control, among other things:

- (e) the quantity of [mercury] that may be manufactured, processed, used, offered for sale or sold in Canada;
- (f) the purposes for which [mercury] or a product containing it may be imported, manufactured, processed, used, offered for sale or sold;
- (l) the total, partial or conditional prohibition of the manufacture, use, processing, sale, offering for sale, import or export of [mercury] or a product containing it;
- (o) the manner in which, conditions under which and the purposes for which [mercury] or a product containing it may be advertised or offered for sale; etc.

Environment Canada has authority under CEPA to regulate or ban products that contain mercury if there is a scientific case to do so, and if the human and ecological benefits of a ban outweigh its cost.

The *Hazardous Products Act* gives the federal government broad powers to prohibit or restrict (regulate) products that are considered to be a danger to the health or safety of the public. Among other things, a product may be prohibited or restricted if it contains a poisonous or toxic substance, such as mercury. A product becomes prohibited or restricted by an order made by the Governor in Council (i.e., by the federal Cabinet). The Order adds the product to either Part 1 or Part 2 of Schedule 1 to the Act. Anything in Part 1 of Schedule 1 is a prohibited product and anything in Part 2 of Schedule 1 is a restricted product. If a product is prohibited, no person shall advertise, sell or import it in Canada. If

a product is restricted, its advertisement, sale or import can be controlled by regulations.

The *Food and Drugs Act* provides for the prohibition and regulation of medical devices, including measuring devices, such as medical or veterinary thermometers or sphygmomanometers. It authorizes the Governor in Council to control devices that pose an unacceptable risk to human health. *Medical Devices Regulations* also exist under the *Food and Drugs Act* that provide some authority for the Governor in Council to restrict the sale of mercury thermometers if the evidence of danger to human health is sufficiently strong and if adequate alternate thermometers are available to do the same job at lower risk.

Environment Canada is currently holding consultations on a Risk Management Strategy (RMS) for mercury-containing products. This strategy will provide a framework for the development of control instruments to manage the environmental effects of mercury used in products. Environment Canada has completed the following reports related to the RMS — “Technical Background Study of Mercury-Containing Products”, “Socioeconomic Study of Mercury-Containing Products” and “Alternatives and Qualitative Screening of Management Tools” — and a quantitative assessment (cost-benefit analysis) of the management tools will be completed in the spring/summer of 2007. The development and publication of the proposed RMS tools are expected in the fall of 2007.

In addition to the RMS, on April 5, 2007, Environment Canada released the Canadian Consumer Battery Baseline Study (www.ec.gc.ca/nopp/docs/rpt/battery), which provides the first national estimates of the amount of heavy metals, such as mercury, cadmium and lead, that are potentially released into the environment through the disposal of batteries. The study suggests that the current rate of recycling of rechargeable batteries is very low. In addition to the tools from the RMS, Environment Canada will continue to work with the provinces and territories to share information and best practices to assist with recycling and waste reduction efforts.

Along with the federal statutes, the following provinces in Canada have authority to ban or regulate mercury-containing products.

Alberta — Section 162 of the *Environmental Protection and Enhancement Act* authorizes the Lieutenant Governor in Council (the provincial Cabinet) to make regulations respecting and prohibiting the importation into Alberta or the manufacturing, processing, use or sale of a hazardous substance or a product containing a hazardous substance.

Manitoba — Section 41 of the *Environment Act* authorizes the Lieutenant Governor in Council to make regulations respecting the use, restriction, or prohibition of use of any product or substance that may pollute or damage the environment.

Nova Scotia — Section 66 of the *Environment Act* authorizes the Governor in Council (here, the Nova Scotia Cabinet) to make regulations governing and prohibiting the use of any thing for the protection of the environment, including regulations governing the design, construction, maintenance or use of the thing. As well, section 66 states that the Governor in Council may make regulations governing and prohibiting the manufacture,

sale or use of any equipment or device designed or provided for any purpose related to the protection of the environment.

Ontario — Section 175.1(b) of the *Environmental Protection Act* authorizes the Lieutenant Governor in Council to make regulations prohibiting, regulating or controlling the making, use, sale, display, advertising, transfer, transportation, operation, maintenance, storage, recycling, disposal, or discharge or any manner thereof of any product.

Prince Edward Island — Section 25 (1)(j) of the *Environmental Protection Act* authorizes the Lieutenant Governor in Council to make regulations regulating or prohibiting the use of any product that may adversely affect the environment.

Quebec — Section 31 of the *Environment Quality Act* authorizes the government to make regulations to “regulate or prohibit the use of any contaminants and the presence of any contaminants in products sold, distributed or utilized in Quebec.”

Yukon — Section 110(1) of the *Environment Act* authorizes the Minister, if satisfied that the normal use of a manufactured product will cause significant impairment of the natural environment, to ban the sale of the product.

As well, municipalities can ban the sale or use of mercury-containing devices if there is satisfactory evidence that they pose a material hazard (specifically municipalities in Alberta, Nova Scotia, Ontario and Quebec have pioneered a broader approach to municipal authority).

Ontario Municipal Hazardous or Special Waste: Phase 2

In June 2002, the Province of Ontario passed the Waste Diversion Act (WDA) to promote the reduction, reuse and recycling of waste and to provide for the development, implementation and operation of waste diversion programs. The WDA empowers the Minister of the Environment to designate a material for which a waste diversion program is to be established.

Once the Minister has designated a material through a regulation under the WDA, Waste Diversion Ontario develops a diversion program. In December 2006, the Minister filed a regulation under the WDA designating Municipal Hazardous or Special Waste (MHSW). The Minister’s Program Request Letter directed that the MHSW program be implemented in multiple phases as per the following schedule. Phase 2 of the program will include mercury-containing products — fluorescent lamps; mercury-containing switches; and thermostats, thermometers, barometers, or other measuring devices containing mercury. As of March 2007, the timing and collection/diversion targets for Phase 2 products were not known.

Fever Thermometers

A typical mercury-containing fever thermometer contains approximately 0.7 grams of mercury, but larger thermometers can contain as much as 3 grams of mercury. The US EPA considers mercury thermometers to be one of the largest sources of mercury to the solid waste stream, estimated at 17 tons per year in the US.³⁶ It is estimated that prior to 2005, thermometers contributed 25–30 tonnes of mercury to the EU waste stream.

Several types of mercury-free fever thermometers are commercially available. These include:

- Digital electronic thermometers
- Glass gallium-indium-tin (galin-stan) thermometers
- Flexible forehead and ear canal thermometers

A recent statement by the American Medical Association indicated that non-mercury fever thermometers are adequate diagnostic tools.³⁷

Existing Standards

EU — Legislation banning the EU-wide sale of mercury thermometers to hospitals and the general public was proposed in February 2006.

US — There is no federal law that deals directly with banning mercury-containing thermometers.

Individual US States — Table 1 shows the laws that have been passed in various US states pertaining to the manufacturing, selling, importing, collecting and/or recycling of mercury thermometers.

Table 1: US State Action for Mercury-containing Thermometers

State	Actions Taken
California	Prohibits the sale of mercury-containing fever thermometers (except with written prescription).
Connecticut	Bans the sale and distribution of mercury-containing fever thermometers, effective January 1, 2003.
Delaware	Has a resolution that supports the Delaware Nurses Association sponsoring a mercury thermometer exchange week. The resolution further encourages retail establishments within the state to voluntarily stop stocking and selling mercury thermometers.
Illinois	Prohibits the sale, distribution and manufacture of mercury fever thermometers, effective July 1, 2004, exempting thermometers sold or provided to be used in health care facilities.
Indiana	Limits the circumstances under which a mercury fever

³⁶ HCWH fact sheet, Nov. 5, 2002

³⁷ Ibid.

	thermometer may be sold or supplied to an individual after July 1, 2003.
Louisiana	Bans the sale of mercury thermometers. Requires labelling of mercury-added products and manufacturer notification to the state of mercury-added products and related provisions.
Maine	Bans the sale of mercury fever thermometers. Requires manufacturers to provide written notice to the department before offering a mercury-added product for sale in Maine. Requires manufacturers who sell products to hospitals to provide a certificate of mercury content upon hospital request.
Maryland	Prohibits marketers from selling or providing to consumers, beginning October 1, 2002, of fever thermometers containing mercury, except under specified circumstances.
Massachusetts	Prohibits the sale of mercury fever thermometers, except by prescription or mercury emergency.
Michigan	Prohibits the sale of all types of mercury thermometers, with minor exemptions, effective October 3, 2002.
Minnesota	Prohibits the sale of almost all types of mercury thermometers, effective June 2001.
Nebraska	Prohibits the sale and distribution of liquid mercury thermometers.
New Hampshire	Bans the sale of mercury thermometers without a prescription.
New Jersey	Bans the sale of mercury thermometers.
New York	Bans the sale of mercury fever thermometers, except by prescription signed by a physician, effective January 1, 2005.
Oregon	Prohibits the sale of mercury fever thermometers.
Rhode Island	Bans the sale of mercury-containing fever thermometers, except with a prescription. Prohibits the landfill disposal of mercury and provides for the collection and proper handling of mercury.
Vermont	Bans the sale of mercury-added thermometers.
Washington	Bans the sale of mercury thermometers by January 2006, with some exceptions.

US Municipalities — The Town of Freeport, Maine was the first municipality in Maine to ban the sale of mercury fever thermometers in January 2001. The city council in Duluth, Minnesota unanimously adopted an ordinance in September 2002 to ban the sale of mercury basal and fever thermometers. In Wisconsin, one county and 12 villages and cities throughout the state have adopted local ordinances banning the sale of mercury fever thermometers. For additional US municipalities that have adopted ordinances banning the sale of mercury thermometers, see www.noharm.org/us/mercury/ordinances.

Thermostats

A mercury-containing thermostat (or bimetal thermostat) contains an internal mercury switch that controls the flow of an electrical current. The weight of the mercury drop moves the bimetal spring, creating a positive on/off switching action that can withstand millions of cycles without degradation of the contacts.

Mercury has been used in thermostats since the 1950s. A mercury-switch thermostat uses mercury in a sealed glass bulb. Each bulb contains approximately 3 grams of mercury. It is estimated that there are more than 50 million mercury-containing thermostats in homes across the United States.

Mercury-free thermostats include electronic models and snap switches. Electronic programmable thermostats add an energy conservation component by allowing for automatic adjustments while occupants are asleep or away from home.

Existing Standards

EU — Thermostats are considered as electric and electronic appliances; however, they are not under the present scope of the RoHS Directive. Equipment that falls under categories 8 and 9 of the WEEE Directive (which includes medical equipment and monitoring and control equipment) is currently excluded from the scope of the RoHS Directive, but there is a review underway to determine the possibility of including such equipment. A report was prepared in 2006 and is available at http://ec.europa.eu/environment/waste/weee/pdf/era_study_final_report.pdf.

US — Mercury-containing thermostats fall under the universal waste rule.

Individual US States — Table 2 shows the laws that have been passed in various US states pertaining to the manufacturing, selling, importing, collecting and/or recycling of mercury thermostats.

Table 2: US State Action for Mercury-containing Thermostats

State	Actions Taken
California	Bans the sale of mercury thermostats, effective January 1, 2006, with exemptions for blind or visually impaired people or in manufacturing or industrial purposes. Prohibits them from being disposed in landfills.
Connecticut	Implements a phase-out of mercury-containing thermostats, effective July 1, 2006. Bans the sale and distribution. Requires product labelling. Requires the manufacturers to initiate collection programs.
Illinois	Requires the state environment agency to report to the Governor and the General Assembly by July 1, 2006, concerning programs to reduce and recycle mercury from mercury thermostats.
Maine	Bans mercury thermostats, effective January 1, 2006. Requires that thermostat wholesalers serve as collection points for

	<p>mercury thermostats. The wholesaler collection requirement builds on an existing Maine law, enacted in 2000, that requires thermostat manufacturers to provide sufficient incentives and information to ensure that the mercury is properly handled when mercury thermostats are removed from service. Manufacturers have attempted to satisfy this requirement by placing collection bins at participating wholesale outlets. However, only 11 of the state's 31 wholesale outlets had agreed to participate voluntarily as of January 2004.</p> <p>"An Act To Protect Maine Families and the Environment by Improving the Collection and Recycling of Mercury Thermostats" requires that beginning January 1, 2007 manufacturers of thermostats containing mercury that are sold in this state pay a minimum of \$5 for each thermostat containing mercury brought to a state-approved collection site. It also requires that manufacturers of thermostats containing mercury that are sold in the state report annually to the joint standing committee of the Legislature having jurisdiction over natural resources matters on the fees imposed, and to the Department of Environmental Protection on the results of the thermostat collection and recycling efforts.</p>
Maryland	Prohibits a specified marketer from selling or providing a thermostat containing mercury to a consumer. Requires the Department of the Environment to make a specified report to the Governor and specified legislative committees on or before October 1, 2007, relating to the state-wide collection, reclamation and recycling of all products containing mercury.
Massachusetts	Bans the sale or offer to sell of thermostats effective May 1, 2008.
Michigan	Requires labelling of thermostats as of January 1, 2006, and bans their sale as of January 1, 2010.
Minnesota	Prohibits the disposal of mercury thermostats into a solid waste processing or disposal facility unless the mercury has been removed for reuse or recycling.
New Hampshire	Requires that manufacturers of mercury-added thermostats notify the state about the quantity of mercury contained in their products.
New York	Bans the intentional disposal of mercury-added consumer products in solid waste landfills and incinerators, effective July 12, 2005, and creates an educational campaign on compliance with this requirement.
Oregon	Prohibits installation of thermostats containing mercury in commercial or residential building, but provides exceptions. Prohibits the sale of thermostats containing mercury, but provides exceptions.

Rhode Island	Phases-out mercury-added fabricated products with a mercury content of one gram, or mercury-added formulated products with a mercury content greater than 250 parts per million, effective January 1, 2006.
Vermont	Bans the sale of mercury-added thermostats. On March 23, 2007, the Vermont House passed a bill that creates a \$5 incentive for contractors and technicians to return thermostats containing mercury back to the wholesaler for safe disposal.
Washington	Bans the installation or reinstallation of mercury thermostats, effective January 2006, unless the manufacturer of the thermostat participates in a thermostat recycling program.

US Municipalities — The city council in Duluth, Minnesota unanimously adopted an ordinance in September 2002 to ban the sale or installation of mercury thermostats. In May 2002, Dane County, Wisconsin adopted an ordinance to require retailers of mercury thermostats to take them back from consumers for recycling. The City of Madison, Wisconsin, adopted an ordinance that requires retailers of mercury thermostats offer to take them back from their customers for recycling.

Mercury-containing Switches in Vehicles

Mercury-containing switches have been used in vehicles for convenience lighting and anti-locking braking systems (ABS). These switches are found in vehicles manufactured in North America before 2003 and in imports from before the mid-1990s. While import automakers stopped using mercury switches in the mid-1990s, North American automakers only began phasing them out in 1995 and it wasn't until model year 2003 that mercury switches finally stopped being used in new North American cars.

Mercury tilt switches for under the hood or trunk convenience lighting operate as follows — when the hood or trunk reaches a certain angle, the mercury makes electrical contact and turns the light on. There is one switch per light, with the mercury content per switch being 0.7–1.0 grams (with an average of 0.85 grams of mercury per switch).

In the anti-lock braking system, the mercury switch is used to detect deceleration rates and to take four-wheel drive out during slipping and re-engage after the event has passed. There are usually three switches per vehicle for ABS applications, with 0.8 grams of mercury per switch.

While each mercury-containing switch in vehicles contains just less than a gram of mercury, cumulatively they amount to 13 to 15 tonnes of mercury in vehicles on the road in Canada today, with more than five tonnes in Ontario alone. Mercury in automobiles is the single largest source of mercury in use in Canadian products.

The alternatives for mercury-containing switches used for under hood/trunk convenience lighting are pendulums or ball bearings. The alternative for the mercury-containing switches used for ABS is a computerized ABS.

Existing Standards

EU — Mercury-containing switches were phased-out of vehicles manufactured in the EU in the mid-1990s.

US — Mercury-containing switches in vehicles fall under the universal waste rule. In addition, in July 2006, the US EPA proposed a Significant New Use Rule (SNUR) that requires notification to the EPA 90 days prior to US manufacture, import or processing of elemental mercury for use in switches in certain motor vehicles. This proposed rule covers manufacture or processing of elemental mercury for:

1. use in convenience light switches, ABS switches and active ride control system switches in new motor vehicles;
2. use in convenience light switches as new aftermarket replacement parts for any motor vehicle; and
3. use in ABS and ride control switches as new aftermarket replacement parts for motor vehicles that were manufactured after January 1, 2003.

The proposed rule does not include mercury switches used as aftermarket replacement parts for ABS and ride control systems in pre-2003 vehicles, because there are currently no suitable mercury-free substitutes for these replacement parts and the remaining market for these products is very limited and declining.³⁸

Individual US States — Table 3 shows the laws that have been passed in various US states pertaining to the manufacturing, selling, importing, collecting and/or recycling of mercury-containing switches in vehicles.

Table 3: US State Action for Mercury-containing Switches in Vehicles

State	Actions Taken
Arkansas	The “Mercury Switch Removal Act of 2005” requires manufacturers to develop, implement and finance a mercury switch removal program for vehicles, including both convenience lighting and ABS.
California	Enacted a law in 2005 that prohibits the sale of mercury-added switches and relays, with the opportunity for applying for an exemption.
Illinois	The “Mercury Switch Removal Act (2004)” requires manufacturers of vehicles containing mercury switches to begin a mercury switch collection program that facilitates removal of mercury switches from end-of-life vehicles prior to processing these vehicles for recycling, effective April 24, 2006. The Act requires that mercury switches removed from vehicles be managed in accordance with the Illinois Environmental Protection Act and associated regulations, and requires the vehicle recyclers, crushers and scrap metal recyclers that remove mercury switches to maintain records and make reports relating

³⁸ From www.epa.gov/mercury/snur.htm, last updated February 28, 2007.

	to the mercury switches removed.
Indiana	Requires a manufacturer of motor vehicles offered for sale in Indiana to develop and implement a plan to remove, replace, collect and recover mercury switches from motor vehicles. Prohibits the sale of motor vehicles that contain mercury-added components, beginning with the 2009 model year, but provides for certain exceptions. Establishes the mercury switch removal fund to implement mercury switch removal plans. Imposes mercury switch removal fees on vehicle registrations and titles, and requires deposit of those fees in the fund.
Maine	“An Act to Prevent Mercury Emissions when Recycling and Disposing of Motor Vehicles” prohibits the sale of mercury switches in automobiles as of January 1, 2003, and requires automobile manufacturers to establish a state-wide system to collect, consolidate and recycle the switches. A bounty of \$1/switch is provided for people who remove switches and return them for recycling, with money to be provided by the auto manufacturers.
Massachusetts	Bans the sale or distribution of motor vehicles containing one or more mercury-added switches, effective January 1, 2007. Prohibits the installation of mercury-added switches in motor vehicles and requires that existing mercury-added switches be replaced with a non-mercury alternative, if available. Requires vehicle manufacturers to set up a program to remove all mercury switches from end-of-life vehicles and requires all vehicle dismantlers and recyclers to remove mercury-added switches and devices prior to crushing or shredding.
New Jersey	Has established a program for the removal of mercury switches from scrapped vehicles.
New York	Requires removal and collection of fluids, lead acid batteries, mercury switches and other mercury-added devices prior to crushing and scrapping end-of-life vehicles. Requires vehicle dismantlers to complete and submit to the state Department of Environmental Conservation an annual report concerning end-of-life vehicles received, processed and stored on-site. Bans the sale of motor vehicles (commencing in calendar year 2011, with model year 2012) with any mercury-added component that contains greater than 15 milligrams of mercury, which is intentionally added in order to provide a specific characteristic, appearance or quality, to perform a specific function, or for any other purpose (components include, but are not limited to, switches, sensors, lights and navigational systems), effective January 1, 2007. Instructs the state’s agencies to give priority to purchasing mercury-free vehicles, taking into consideration competition, price, availability and performance.
North Carolina	Calls for the development and implementation of a plan to

	recover at least 90 per cent of mercury switches from recycled automobiles, with reimbursement of \$5/switch to auto recyclers, with the revenue for this purpose from the certificate of titles for vehicles. Vehicle manufacturers are also required to report annually to the state on all mercury-containing products included in their vehicles.
Oregon	Prohibits the sale of motor vehicles containing mercury light switches. Requires the removal of mercury light switches from state-owned motor vehicles. Directs the Department of Environmental Quality to work with local agencies to provide technical assistance to wrecking businesses concerning the removal of mercury light switches from motor vehicles.
Rhode Island	The "Mercury Reduction and Education Act" requires manufacturers of motor vehicles sold in the state to establish and implement a collection program for mercury switches by January 1, 2006. The Act eliminates the "voluntary" auto mercury program established by the General Assembly in 2005 and requires the state to adopt a more regulatory program that obligates auto manufacturers to pay auto recyclers a minimum bounty of \$5/switch removed from end-of-life vehicles. The goal is to attain a capture rate of not less than 50 per cent for calendar year 2006 and not less than 70 per cent for calendar year 2007 and subsequent years through 2017. The Act requires that quarterly reports on the number of switches collected, the amount of mercury collected and recycled through the program, and the capture rate be submitted quarterly, beginning March 31, 2006.
South Carolina	Requires that manufacturers of motor vehicles sold in the state develop a mercury minimization plan to be filed with the department of health and environmental control and provides for certain costs with regard to the collection and recovery of mercury switches to be paid by the vehicle manufacturer. Provides for other related provisions pertaining to the recycling, storage and disposal of mercury switches, including designating mercury switches as universal waste and requiring the department to promulgate regulations for the management of these switches.
Texas	Requires vehicle manufactures to develop an informational program for the location and methods of removal of mercury switches from end-of-life vehicles and to pay the costs of packaging and shipping of the switches to recycling, storage or disposal facilities, as well as the costs associated with recycling, storage or disposal of the switches. A vehicle recycler or scrap metal recycling facility that removes switches from eligible vehicles in accordance with the educational materials received will be provided regulatory incentives by the Commission on Environmental Quality.

Utah	The “Mercury Switch Removal Act” requires manufacturers of vehicles sold in the state to submit a plan for the removal and collection of mercury switches, pay for the costs of removing and collecting mercury switches, and submit an annual report to the Solid and Hazardous Waste Control Board. The Act specifies plan contents and authorizes the Solid and Hazardous Waste Control Board to establish a fee for the review and approval of the plan.
Vermont	Requires both vehicle manufacturers and vehicle recyclers to develop a vehicle switch recovery program, with financing of the collection and processing of switches by vehicle manufacturers.
Virginia	Requires certification by vehicle demolishers of removal of mercury switches in motor vehicles prior to demolition.
Washington	Bans the sale of automobiles with mercury switches, effective January 2006.

Canada — In December 2006, Environment Canada published a proposed notice titled, “Pollution Prevention Planning in Respect of Mercury Releases from Mercury Switches in End-of-life Vehicles Processed by Steel Mills” under Part 4 of the *Canadian Environmental Protection Act, 1999*. The notice outlines the proposed requirements to prepare and implement pollution prevention plans for mercury releases from mercury switches in end-of-life vehicles processed by steel mills.

The Notice applies to any class of persons who, at any time since January 1, 1988, has been a manufacturer of vehicles that contain one or more mercury switches, as well as any class of persons who owns or operates a steel mill that processes end-of-life vehicles to produce steel.

The factors to be considered in preparing the pollution prevention plans include:

- Participation by each vehicle manufacturer for 15 years after the last model year in which mercury switches were installed by that vehicle manufacturer.
- Participation by steel mills until December 31, 2017.
- Establishing and maintaining funding to support the mercury switch management program until 15 years have passed since the last model year in which mercury switches were installed for vehicle manufacturers, or until December 31, 2017, for steel mills. Funding provided by the vehicle manufacturers and steel mills that supports the mercury switch management program could include incentives or compensation for costs incurred by vehicle recyclers who participate in the mercury switch management program. Funding provided by vehicle manufacturers could be based on the number of mercury switches installed by that vehicle manufacturer as a proportion of those installed by all vehicle manufacturers since January 1, 1988.
- Compliance with all applicable federal, provincial and municipal legislation.
- Promotion and communication of the mercury switch management program to vehicle recyclers and the public.
- Development of annual targets for the number of switches to be collected and for the capture rate of mercury switches, in consideration of an ultimate goal of achieving an annual capture rate of 90 per cent within the first four years of participation in the

mercury switch management program.

- Public reporting of targets, timelines, and results in the management of mercury switches on an annual basis. The public reporting should include, but not be limited to, reporting the number of mercury switches collected and the estimated capture rate.
- Annual mercury switch management program review and implementation of steps to improve upon program performance in order to improve the capture rate, until such time as a capture rate of 90 per cent is achieved.
- Annual evaluation of the fate of the mercury contained in the mercury switches that were collected in order to ensure that the releases of mercury into the environment are reduced to the maximum extent possible.
- The distribution of guidance by vehicle manufacturers to vehicle recyclers that specifies the location of mercury switches in vehicles manufactured by that vehicle manufacturer and also explains how to remove and manage the mercury switches.
- The development and implementation of a procurement policy by steel mills that requires the steel mill to purchase only end-of-life vehicles from which the accessible mercury switches have been removed.
- Evaluation of the effectiveness of the Notice with respect to the risk management objective, in order to determine if other measures, including regulations, are needed to further prevent or reduce negative impacts on the environment and human health from mercury releases from mercury switches in end-of-life vehicles.

The Proposed Notice was published in the *Canada Gazette*, Part I, for a 60 day comment period that ended February 7, 2007. The comments received are currently being considered. After this, a Final Notice requiring the preparation and implementation of pollution prevention plans for mercury releases from mercury switches in end-of-life vehicles processed by steel mills will be published in Part I of the *Canada Gazette* (the timing for this is not known).

Mercury-containing Lamps

Mercury-containing lamps include fluorescent lamps (tubes and compact fluorescent lamps, or CFLs), high intensity discharge (HID) lamps (includes high pressure sodium (HPS), mercury vapour and metal halide lamps) and UV lamps.

A typical fluorescent lamp is composed of a phosphor-coated glass tube with electrodes located at either end. The tube contains a small amount of mercury in vapour form. When a voltage is applied to the lamp, the electrodes energize the mercury vapour, causing it to emit ultraviolet (UV) energy. The phosphor coating absorbs the UV energy, causing the phosphor to fluoresce and emit visible light. Without the mercury vapour to produce UV energy, there would be no light. The amount of mercury required varies by lamp type (see Table 4), date of manufacture, manufacturing plant and manufacturer.³⁹

³⁹ North Carolina Department of Environment and Natural Resources. Mercury website. www.p2pays.org/mercury/lights.asp#lights1.

Table 4: Mercury Content of Specific Mercury-containing Lamps

Lamp type	Hg content (mg)
Compact Fluorescent Lamps	1 – 25
Linear Fluorescent Lamps:	
Mercury reduced	3 – 12
Non-mercury reduced	10 – 50
Fluorescent U-tubes	3 – 12
Mercury Vapour Lamps:	
75-watt	25
1500-watt	225
Metal Halide Lamps:	
75-watt	25
1500-watt	225
Sodium Vapour Lamps:	
35-watt	20
1000-watt	145

Source: Environment Canada’s Mercury and the Environment Program.

Over the past two decades, the mercury content in fluorescent bulbs has steadily decreased. Today, the average four-foot linear fluorescent lamp contains less than 75 per cent of the mercury that the same lamp would have contained in 1985.

There are no ready alternatives to fluorescent lamps. In some cases, ordinary glow lights, low sodium vapour tubes or high energy long-lasting lights may replace them; however, mercury-containing lamps are two to three times more energy efficient than incandescent lamps. As well, it is sometimes the case that mercury-free electric lamps cannot be substituted for mercury-containing lamps because of incompatibilities of light output, shape, color, life, electrical characteristics and excessive heat, or because the increased energy consumption of the mercury-free lamps may violate energy codes and overload electrical circuits.⁴⁰

Existing Standards

EU — The RoHS Exempted Applications guidelines designate the acceptable amounts of mercury in fluorescent lamps, as follows:

- Compact fluorescent lamps (CFLs) — no more than 5 mg of mercury per lamp.
- Straight fluorescent lamps — no more than 10 mg per halophosphate lamp, no more than 5 mg per triphosphate lamp with a normal lifetime and no more than 8 mg per triphosphate lamp with a long lifetime.

There does not appear to be restrictions on the use of mercury in fluorescent lamps for special purposes (i.e., black light lamps, disinfection lamps, medical/therapy lamps and pet care lamps), HID lamps, and circular and U-shaped fluorescent lamps.

The WEEE Directive, which addresses the takeback of waste electrical and electronic

⁴⁰ NEMA. 2001. *Alternatives to Mercury-Containing Light Sources*. www.nema.org/gov/ehs/committees/lamps/upload/alt-mercury-lightsourcespdf.pdf.

equipment, requires producers to set up collection systems for electrical and electronic waste from households and other end users. The 2006 target recovery rate for lighting products under the WEEE directive is 80 per cent.⁴¹

Another regulatory tool for mercury-containing lamps in the EU is the CE mark, which is a mandatory label for certain product groups to indicate conformity with the essential health and safety requirements set out in European Directives. The letters “CE” are an abbreviation of *Conformité Européenne* (French for European conformity). The CE mark is applicable to many product categories, such as medical devices, machinery, toys, electrical equipment and measuring equipment, and it is mandatory for CFLs and straight fluorescent lamps to have the CE mark.

Without the CE marking, and thus without complying with the provisions of the Directives, products may not be placed in the market or put into service in the fifteen member states of the European Union and Norway, Iceland and Liechtenstein. If the product meets the provisions of the applicable European Directives, and the CE mark is affixed to a product, these countries may not prohibit, restrict or impede the placing in the market of the product. For further information on CE marking, see www.cemarking.net.

Other International — Taiwan implemented a compulsory fluorescent lamp recycling program in 2002 and now has a collection rate of approximately 87 per cent.⁴² Beginning November 1, 2004, citizens of Taiwan are able to recycle used fluorescent tubes in any of 2,000 shops island-wide that sell the lamps. Shop owners who fail to cooperate with the EPA on the recycling project will be fined between NT\$60,000 and NT\$300,000 (\$2,000–\$11,000 CDN).⁴³

In May 2003, the **Korean** Ministry of Environment amended the *Act on the Promotion of Saving and Recycling of Resources* in an effort to expand and improve the Extended Producer Responsibility (EPR) system, which will come into effect in 2006.⁴⁴ The EPR system includes a total of 15 items, one of which is fluorescent light bulbs. Under the Korean EPR system, producers of the included items receive mandatory recycling obligations for their specific EPR item.

Many **Australian** government agencies are beginning to include mercury-containing lamp recycling as an environmental management system (EMS) activity. The Department of the Environment and Heritage (DEH) has committed to the ongoing recycling of fluorescent tubes from its operations.⁴⁵

⁴¹ Ibid.

⁴² Environmental Policy Monthly. June 2000. *Recycling of Fluorescent Light Tubes to Begin July 2001*. Volume III, Issue 12. http://ivy2.epa.gov.tw/out_web/english/EPM/issue0006.htm, accessed March 17, 2005.

⁴³ Taipei Times. October 30, 2004. *Tube recycling system launched*. www.taipeitimes.com/News/taiwan/archives/2004/10/30/2003208949.

⁴⁴ Ministry of Environment, Republic of Korea. 2004. *Act on the Promotion of Saving and Recycling of Resources*. http://eng.me.go.kr/user/envnews/envnews_view.html?seq=275&page=1, accessed March 17, 2005.

⁴⁵ Australian Government, Department of the Environment and Heritage. www.deh.gov.au/industry/agency-performance/tubes.html, accessed December 14, 2004.

US — Mercury-containing lamps fall under the universal waste rule. The federal regulations mandate the recycling of fluorescent lamps, but exempt households and other small users.

Individual US States — Table 5 shows the laws that have been passed in various US states pertaining to mercury-containing lamps.

Table 5: US State Action for Mercury-containing Lamps

State	Actions Taken
Arkansas	"The Shielded Outdoor Lighting Act" requires the Department of Environmental Quality to promulgate regulations to prohibit the knowing disposal of mercury-containing lamps in landfills.
California	Prohibits the disposal of fluorescent lamps as municipal waste.
Connecticut	Has established a working group to evaluate the uses of lamps with a mercury content of between 100 milligrams and one gram, and alternatives to those lamps, and to make recommendations regarding the regulation of lamps with a mercury content of between 100 milligrams and one gram by January 1, 2005. Extends the exemption date for phase-out requirements for lamps to 2013. Requires labelling of mercury-added lamps.
Maine	"An Act to Amend the Law on Mercury-added Products" requires labelling of mercury-containing lamps, effective January 1, 2006.
Massachusetts	Requires manufacturers of mercury-added lamps to implement a plan to educate users about proper recycling options for end-of-life lamps and to meet specific recycling targets that increase over time.
Minnesota	Requires that any information regarding fluorescent lamps containing mercury that is sent by a utility to a customer, or is present on a utility's website or contained in a print, radio or video advertisement, must state that the lamps contain mercury that is harmful to the environment and that it is illegal to place them in garbage, and must provide a toll-free telephone number or website that customers can access to learn how to lawfully dispose of the lamps. Prohibits the disposal of fluorescent or high intensity discharge lamps in solid waste or a solid waste facility other than a household hazardous waste collection or recycling facility.
New Hampshire	Requires that manufacturers of mercury-added fluorescent lamps notify the state about the quantity of mercury contained in their products.
Rhode Island	Exempts high intensity discharge (HID) lamps, including metal halide, high pressure sodium and mercury vapour lamps from phase-out requirements.
Washington	Requires the labelling of fluorescent lamps by January 1, 2004.

US Municipalities — The City of Minneapolis, Minnesota, has adopted an ordinance related to point-of-sale signage for mercury-containing lamps, which requires retailers to post signage approved by city environmental services stating that fluorescent bulbs contain mercury and indicating how they can be recycled. In May 2002, Dane County, Wisconsin, adopted an ordinance to require retailers of fluorescent lamps to take them back from consumers for recycling. The City of Superior, Wisconsin, has banned the landfilling of fluorescent light bulbs from all sources and included them in the city's mandatory recycling program. The City of Marinette, Wisconsin, has adopted ordinances to both ban placing fluorescent lamps in solid waste and to remove and recycle all mercury-containing products prior to the demolition of buildings. The City of Madison, Wisconsin, adopted an ordinance that requires retailers of fluorescent lamps offer to take them back for recycling from their customers.

Canada — In June 2001, the Canadian Council of Ministers of the Environment (CCME) implemented a Canada-wide standard (CWS) for the mercury content in mercury-containing lamps, with the numeric target of 70 per cent reduction by 2005 (from a 1990 baseline) and a total reduction of 80 per cent by 2010. The CWS also includes a commitment to assess the feasibility of recycling and recovering mercury-containing lamps and to implement initiatives to encourage these types of activities. Overall, the recycling rate of mercury-containing lamps in Canada is only approximately seven per cent.

Individual Canadian Provinces — Ontario considers end-of-life lamps to be domestic waste, which can be disposed of at municipal landfill sites if there are less than 17 lamps per month (standard 4-foot long). However, for disposal of large quantities of lamps, building owners and businesses have to comply with Ontario's hazardous waste Regulation 347 and must disposed of the lamps at either a hazardous waste landfill site or lamp recycler. Table 6 shows the voluntary actions taken by various Canadian provinces pertaining to mercury-containing lamps.

Table 6: Canadian Provincial Action for Mercury-containing Lamps

State	Actions Taken
Alberta	Operates the "Partners in Recycling" program, which promotes the recycling of fluorescent lamps. It is a joint voluntary initiative between Alberta Environment and Northern CARE (Coordinated Action for Recycling), City of Calgary, Recycling Council of Alberta and Alberta Plastics Recycling Association. The recycling rate for fluorescent bulbs in 2002 for this program was 23 per cent.
Manitoba	Promotes lamps that contain lower levels of mercury in government buildings as part of its procurement policy. Assesses and promotes programs to recycle and recover mercury-containing lamps from government buildings.
New Brunswick	Uses low mercury fluorescent lights in government buildings, wherever possible, and encourages large property owners to use such lamps.