Global Green Standards

ISO 14000 and Sustainable Development

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ISO 14000
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Acknowledgments

Preface

This report is a heads-up analysis about ISO 14000 standards. A decade from now we may recognize these standards as one of the most significant international initiatives for sustainable development. ISO 14000 defines a voluntary environmental management system. Used in conjunction with appropriate goals, and with management commitment, the standards will help improve corporate performance. They will provide an objective basis for verifying a company's claims about its performance. This is particularly important in relation to international trade, where at present almost anyone can make assertions about environmental performance—and there are only limited means to address veracity.

Consumers, governments, and companies up and down the supply chain are all seeking ways to reduce their environmental impact and increase their long-run sustainability. For companies, the key goals are to become more efficient—to get more output per unit of input—while earning profits and maintaining the trust of their stakeholders. The ISO 14000 voluntary standards should help. It is important to note that the ISO 14000 standards do not themselves specify environmental performance goals. These must be set by the company itself, taking into account the effects it has on the environment, and the views of its stakeholders.

How then can ISO 14000 help meet the global need to move toward sustainable development?

Implementation of a management system based approach will help companies focus attention on environmental issues, and bring them into the main stream of corporate decision-making.

ISO 14000 is designed to provide customers with a reasonable assurance that the performance claims of a company are accurate. In fact, ISO 14000 will help integrate the environmental management systems of companies that trade with each other in all corners of the world.

These positives, however, come with a price tag. The ISO process has not fully involved all countries or levels of business. Some consumer and environmental organizations may well be sceptical of voluntary standards. And there is a large measure of capacity building needed

throughout the world in order for this system to work well. Finally, sustainable development requires that issues of human well-being be added to environmental and economic policies. While sustainable development is introduced within ISO 14000 standards, the detailed documents deal almost exclusively with environmental issues.

In this publication, IISD tracks the development of these standards and provides interpretation of them. The report highlights what companies need to think about and what stakeholders interested in sustainable development should understand about the ISO 14000 initiative. We anticipate adding further information and analysis as events unfold during the implementation phase. Interested readers should check our Internet site (http://iisd1.iisd.ca/) for these updates, including an extensive annotated bibliography, and for information on IISD's work on Business, Trade, and Measures and Indicators.

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President and CEO

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Chapter 1
Introduction

Why are Standards Important for Environmental Management Systems?

Why is there so much interest in the ISO 14000 standards? How will business make use of them? How will regulators respond to them? Of what interest are they to environmental and other interest groups? What are the international trade implications? How will they affect developing countries? And how can they further sustainable development? These are the questions addressed in this document.

The ISO 14000 series of standards has been designed to help enterprises meet their environmental management system needs. They have been under development by the International Organization for Standardization (ISO) since 1991. They consist of a set of documents that define the key elements of a management system that will help an organization address the environmental issues it faces. The management system includes the setting of goals and priorities, assignment of responsibility for accomplishing them, measuring and reporting on results, and external verification of claims. Even though the first standards in the series will not be published until late 1996, many organizations have been implementing the system using the drafts since mid 1995. There is intense interest in these standards around the world. However, there is often a lack of clear understanding about what they are and what role they can play.

The management system includes setting goals and priorities, assignment of responsibility for accomplishing them, measuring and reporting on results, and external verification of claims.

The ISO 14000 standards have been designed to help an organization implement or improve its environmental management system. The standards do not set performance values. They provide a way of sys-

tematically setting and managing performance commitments. That is, they are concerned with establishing "how to" achieve a goal, not "what" the goal should be. In addition to the core management systems standards there are also a number of guidelines that provide supporting tools. These include documents on environmental auditing, environmental performance evaluation and environmental labeling and life cycle assessment.

A key characteristic of these standards is their voluntary nature. Voluntary in this case means that there is no legal requirement to use them. This is not to say that an organization may not "require" its suppliers to meet these environmental management system (EMS) standards, thus creating a de facto requirement. However, such a market-based requirement is still considered "voluntary". The supplier may choose not to implement the standards and to look for other markets.

Since the standards have been designed as voluntary, the decision to implement will be a business decision. Business decisions are, of course, influenced by more than the short-term bottom line. The motivation may come from the need to better manage compliance with environmental regulations, from the search for process efficiencies, from customer requirements, from community or environmental campaign group pressures, or simply from the desire to be g   o   o   d corporate citizens. The source of the motivation is not important to the utility and benefit of the standards.

What is an Environmental Management System (EMS) and what is ISO 14000?

Any organization that has more than a few employees needs to have management systems in place in order to conduct its affairs rationally. There will be a financial system, which defines how decisions on spending, cash management, budgeting processes, accounting systems, and so on, will be made. In addition, delegation of authority, approval processes, and cheque signing controls will be covered. Usually, the financial management system in a large company will occupy the attention of many employees at the operational and executive levels. Organizations also have personnel management departments, sales and marketing functions, and manufacturing or production units—all with a management system through which decisions are made and day-to-day activities are directed. Just as all of these

areas of endeavour are complex and require planned and systematic approaches, so too do environmental and sustainable development issues.

ISO 14000 is being developed to meet the demand for an environmental management system that will be consistent for many sorts of organizations. The ISO 14000 set of standards and guidelines defines the core environmental management system itself, and the auditing procedures necessary for verification. It also defines three sets of tools that are important in implementing an EMS: life cycle assessment, environmental performance evaluation, and environmental labeling.

Accompanying the standards themselves is another body of material that defines how conformity to the standards will be assessed. ISO 14000 standards do not, however, define the specific environmental performance goals that an organization should attain. These are left up to the organization itself.

Three sets of tools that are important in implementing an EMS: life cycle assessment, environmental performance evaluation, and environmental labeling.

At the time of writing this report, these standards and guidelines were in various phases of completion. The core EMS and auditing standards were pretty well in final form, while the others were in various stages of completion.

ISO 14000 Series of Documents

These are the current documents that form the ISO 14000 series. Their expected date of coming into force, or current state of development, is also listed.

Document #	Document Name	State of Development
ISO 14001	Environmental Management Systems — Specification With Guidance for Use	Published Sept. 1/96
ISO 14004	Environmental Management Systems — General Guidelines on Principles, Systems and Supporting Techniques	Published Sept. 1/96
ISO 14010	Guidelines for Environmental Auditing — General Principles of Environmental Auditing	Published Oct. 1/96
ISO 14011	Guidelines for Environmental Auditing — Audit procedures Part 1: Auditing of Environmental Management System	Published Oct. 1/96
ISO 14012	Guidelines for Environmental Auditing — Qualification Criteria for Environmental Auditors	Published Oct. 1/96
ISO 14020	Environmental Labeling — General Principles	CD for ballot 1998
ISO 14021	Environmental Labeling — Self-declaration Claims — Terms and Definitions	DIS - 1998
ISO 14022	Environmental Labeling — Self-Declaration Claims — Symbols	CD for comment 1998
ISO 14023	Environmental Labeling — Testing and Verification Methodologies	WD - 1998
ISO 14024	Environmental Labeling — Practitioner Programs — Guiding Principles, Practices and Certification Procedures of Multiple Criteria (Type I) Programs	CD for ballot 1998
ISO 14025	Environmental Labels and Declarations — Environmental Information Profiles — Type III Guiding Principles and Procedures	NP - 2000
ISO 14031	Evaluation of the Environmental Performance of the Management System and its Relationship to the Environment	WD - 2000
ISO 14040	Life Cycle Assessment — Principles and Framework	DIS - 1998
ISO 14041	Life Cycle Assessment — Inventory Analysis	CD - 1999
ISO 14042	Life Cycle Assessment — Impact Assessment	WD - 2000
ISO 14043	Life Cycle Assessment — Interpretation	WD - 2000
ISO 14050	Terms and Definitions	DIS - 1998
ISO Guide 64	Guide for the Inclusion of Environmental Aspects in Product Standards	DIS - 1997

DIS - Draft International Standard, undergoing voting for final approval; CD - Committee Draft, ready for presentation to the full technical committee; WD - Working Draft; NP - Approved New Work Item.

Why Is Business Interested?

In broad terms, ISO 14000 can fill two requirements in an organization. The first is the internal need for a system that will help the organization address all of the legal, commercial and other challenges related to the environment that face it today. The second is the need to be able to assure those outside of the company that the company is meeting its stated environmental policies.

Internal Benefits

Reduce incidents and liability: A systematic approach to managing environmental issues can help to ensure that environmental incidents and liability are reduced.

Efficiency: A systematic approach can help to identify opportunities to conserve material and energy inputs, to reduce wastes and to improve process efficiency.

Performance: A systematic approach to management leads indirectly to improved environmental performance and improved cost control.

Improved corporate culture: Top management commitment to improved environmental management, clearly defined goals, responsibilities and accountabilities, creates a greater awareness and understanding of environmental issues and an improved corporate culture.

External benefits

Third party assurance and recognition: Companies often have to demonstrate that their products and services meet certain conditions. This is exactly what standards do efficiently, especially when combined with third party conformity assessment programs. They reduce or eliminate the need of companies to individually inspect each supplier's products and services with its own auditors. International standards such as the ISO 14000 series provide the widest possible recognition of this assurance.

Market access: ISO 14000 may become a pre-requisite of doing business. Companies have turned to agreed-upon international standards as a way of meeting certain expectations. Customers may demand that their suppliers meet specific environmental

goals and have ISO 14000 certification to ensure that the goals are being met.

Regulatory relief: Regulators may begin to recognize the assurance provided by ISO 14000 and offer some sort of regulatory relief, such as easier permitting, fewer inspections and streamlined reporting requirements, to those who implement EMS.

Expression of due diligence: By using ISO 14000 to systematically identify and manage environmental risk and liability, the courts, investors and lenders, and regulators may all use it as a sign of due diligence and commitment to good environmental management.

Public image and community relations: The presence of an EMS, the information it produces and the attention it demands will help an organization communicate with its stakeholders.

Financial markets: Having an internationally recognized EMS in place will improve investor confidence and access to capital, and potentially provide access to preferential insurance rates.

Why Should Environmentalists Be Interested?

Most outside stakeholders are more interested in how an organization actually performs than in the tools it may use to achieve that performance. Stakeholder interest goes beyond simply knowing that an EMS is in place. ISO 14000 does not set environmental performance standards. It leaves these up to the organization, saying only that its policies must include a commitment to comply with all relevant laws and regulations.

How then can those interested in improving environmental performance make use of the system? First, ISO 14000 provides a useful tool with which to hold companies accountable. When a company does establish a positive environmental policy, the ISO 14000 system can be used to check that it is actually accomplishing its goals, and reporting appropriately on them. Furthermore, companies can be encouraged to insist that all of their suppliers meet the environmental policy goals. Finally, just the existence of an EMS in a company will usually lead to environmental performance improvements. It is in the nature of organizations that when an issue is brought into their management structure, they try to deal with it systematically and posi-

tively. If encouraged by substantive inputs from customers, environmental groups and other stakeholders, the chances of improvement become greater.

The EMS and performance are closely related, because it is the EMS that generates the information by which performance is measured and future plans established. Thus, stakeholders should want to know two things about an organization in which the stakeholder is interested: the fact that it has an ISO 14000 compliant EMS, and an understanding of the organization's environmental policies and goals. By providing a common basis for defining an appropriate environmental management system for many kinds of organizations, ISO 14000 provides a context within which an organization's claims about its environmental performance can be assessed.

Relevance To Sustainable Development

Sustainable development involves the simultaneous improvement of the economy, the environment, and the well-being of people. The most commonly used definition comes from the World Commission on Environment and Development (the Brundtland Commission) that ties the issue of sustainability to future generations. It is given here in full, with the qualifiers the Commission felt it necessary to add to the single sentence usually quoted.

> Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:
>
> •   the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and
>
> •   the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.
>
> Thus the goals of economic and social development must be defined in terms of sustainability in all countries—developed or developing, market-oriented or centrally planned. Interpretations will vary, but must share certain general features and must flow

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from a consensus on the basic concept of sustainable development and on a broad strategic framework for achieving it.[1]

In the corporate context, IISD has developed the following definition:

For the business enterprise, sustainable development means adopting business strategies and activities that meet the needs of the enterprise and its stakeholders today while protecting, sustaining and enhancing the human and natural resources that will be needed in the future.[2]

This definition captures the spirit of the concept proposed in the report of the World Commission on Environment and Development and focuses attention on areas of specific interest and concern to business enterprises. It recognizes that economic development must meet the needs of the business enterprise and its stakeholders. The latter include shareholders, lenders, customers, employees, suppliers and communities who are affected (either positively or negatively) by the enterprise's business activities. The definition also highlights the dependence of the enterprise's economic activities on human and natural resources, in addition to physical and financial capital. It emphasizes that economic activity must not irreparably degrade or destroy these natural and human resources.

It is important to note, however, that sustainable development cannot be achieved by a single enterprise (or, for that matter, by the entire business community) in isolation from the rest of society. Sustainable development is a pervasive philosophy to which most participants in the global economy (including consumers and governments) must subscribe if we hope to meet today's needs without compromising the ability of future generations to meet their own.

ISO 14000 will contribute to sustainable development to the extent that it helps organizations meet the above definition. It should be noted that ISO 14000 deals with environmental management despite its preamble statement that it is based on the goals of sustainable development. For example, "Environment" is defined as:

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1   World Commission on Environment and Development. 1987. Our Common Future. Oxford, p. 47.

2   International Institute for Sustainable Development. 1992. Business Strategy for Sustainable Development: Leadership and Accountability for the '90s. IISD, Winnipeg, Canada, p. 116.

Surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans, and their interrelation.

Note: Surroundings in this context extend from within an organization to the global system.[3]

However, the human aspect of sustainable development does not receive much mention in the documents. ISO 14000 does not, itself, meet all the needs of corporations wishing to move more towards sustainable development. ISO 14000 standards will endeavour to bring environmental issues into the mainstream of the corporate decision-making process. The route to sustainable development, then, is through the company's goals with regard to its stakeholders, who are called "interested parties". Once again, it is the combination of voluntary responses by companies, often driven by consumer and campaigner forces, that will be important.

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3   Section 3.3 ISO 14001

Chapter 2
Voluntary Standards In Context

In everyday language, a standard is something that is used as a basis for comparison against which something may be assessed. In this general sense, most organizations have extensive experience with standards. They have standards that describe various attributes or characteristics that a product must have for reasons of interface, quality, or safety; they have standards that define performance levels and values that products, processes or services must achieve; and they have standards that define processes and systems that describe what must be in place or how an action is to be conducted. They will have standards for accounting, engineering, manufacturing, occupational health and safety, environmental protection, human resource management, collective bargaining, and employment equity.

Many of these standards may be internal to an organization. They have been developed to improve and promote consistency, efficiency or competitive advantage. Many, however, will be external to the organization. These fall into two broad categories: those that are mandatory and regulated by government, and those that are voluntary and developed and managed by the private-sector. Where regulatory standards are mandated by legislation, private-sector, voluntary standards represent a type of self-regulating activity. The violation of a regulatory standard might lead to fines or litigation; the violation of an industry standard could lead to loss of certification and business opportunity.

Who Writes Voluntary Standards?

Theoretically, voluntary standards can be written by anybody. Having them used and recognized, however, is a much more difficult proposition. Microsoft has done it very successfully with MS DOS and Windows. Apple has had more limited success with Mac/OS. CPM, a popular operating system in the early '80s, is almost never heard of any more. All of these standards were written by or for individual companies who then used them to differentiate themselves in an attempt to gain market share.

Another situation occurs when companies get together to develop a common standard or standards for their industry. This happens when competitors decide that it does not make much sense to compete at the level of the basic technical platform. They prefer to compete at a more value-added level, usually because they feel that this will enhance the overall market, for example, a VCR from any company can be plugged into a TV from any other company. These types of standards are usually developed by industry experts with a little push from accountants and marketers. Industry associations and private-sector standards developers often provide the forum.

When looking at a broader base of consumers, public safety or trade issues are involved and a standard is more likely to be developed using a broader consensus process, governed by strict guidelines and regulations. These types of standards are most often developed by private-sector standards writing organizations such as the Canadian Standards Association (CSA) who act as professional facilitators of a consensual process. These standards development organizations are often accredited bodies who provide process assurances. Electrical safety standards are a good example.

Even when the development process has been broadened, however, there is still potential competition between standards. The competition is now between jurisdictions and not just companies—although there is still much at stake for those companies who do business in more than one jurisdiction. This type of economically inefficient competition usually motivates efforts to harmonize standards. Local bodies begin to work within the framework of state or province; provinces begin to work within a national framework; and nations begin to cooperate in international fora.

The ISO, the International Organization for Standardization, based in Geneva is one of the key international voluntary standards development bodies. Formed in 1946, its members are the most representative of standards bodies in their countries. There are now 111 countries representing over 95% of the world's industrial output. The standards developed by the ISO are available to the member countries to adopt or adapt as they see fit. In the Technical Barriers to

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Trade Agreement of the GATT, signatories are encouraged to adopt international standards of the ISO. And although all ISO standards are developed as voluntary standards, many are eventually cited in legislation.

The ISO has in place a rigorous and complex process for standards development. When it is proposed that a new standard be developed it must be approved either by the members of an existing technical committee whose scope of work includes the subject of the proposed standard, or by the Technical Management Board of the ISO when there is no existing Technical Committee (TC) with an appropriate scope. Once a Technical Committee is established and has had its scope approved by the Technical Management Board it may establish subcommittees and working groups to carry out the work. There are currently over 190 active technical committees and over 11000 ISO standards have been published.

Technical Committees secretariats are managed by member bodies or their designates and not by the central secretariat in Geneva. Membership in the ISO does not require active membership in all technical committees, thus each technical committee must separately invite the national member bodies of the ISO to participate in its activities. National member bodies may join a technical committee as "participating" members (they must commit the resources necessary to actively participate in the meetings for which they get a vote) or "observer" members (they receive all committee materials but do not have to actively participate in the committees and do not receive a vote). In addition to national member bodies, other interest groups may participate in the activities of a technical committee as liaison members. Liaison members have the right to fully participate in the development process but they do not have a vote. As of June 1996, membership of TC 207 in environmental management consisted of 67 countries, and 22 liaison organizations (see list in Appendix 1).

Choosing to participate in an ISO committee requires a significant commitment. Meetings can take place anywhere in the world, the volume of information that must be dealt with is substantial and the process is complex. As a result, those who participate are those who can most easily identify the expertise and can afford the time and money to participate. The result is that even though the membership of the ISO is very broad and representative, the active participants in committee meetings can often look like meetings of OECD member countries and multi-national business meetings. It is recognized that the value of the standards developed will only increase with greater

participation in their development. And the ISO does have a developing country committee (DEVCO) that attempts to support and find funding for less affluent members to participate. However, there is still a discrepancy in participation.

Responsibility for ensuring balanced participation from the full range of parties interested in a given issue lies in large part with the national member bodies. The ISO recommends that member body delegations represent a balanced view but there is no strict requirement for this, nor is there an enforcement mechanism. The typical process is for the member body to put in place a national advisory group or committee whose structure mirrors the international committee structure, and whose task is to develop national positions. The national committees would then include members from all areas of interest and the members chosen by these national committees to be delegates to the international meetings speak on behalf of the national committee and not as individuals. In practice, some countries make a significant effort to ensure this balance while others do not. The participation in international committees of members from liaison groups representing special interests also helps to provide balance.

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Voluntary Standards and Regulation

Voluntary environmental management systems standards are meant to assist companies that are committed to responsible management of their environmental issues. This commitment must exist throughout the organization but especially at the management level. For voluntary measures to work effectively and to become a living part of a corporate organization there must be full support from the leadership. Without this, and without the sort of external pressure that comes from the enforcement of regulation, it is all too easy for middle managers to feel justified in giving lower priority to voluntary initiatives and to starve them of the resources they need to succeed.

Voluntary environmental management also includes managing compliance with regulatory requirements. This overlap between voluntary standards and regulations means that they cannot be considered as

mutually exclusive. Proponents of voluntary standards argue that properly designed, monitored and enforced they can complement regulatory standards and achieve important public policy objectives. Others argue that although it would seem logical to assume that voluntary standards may complement regulatory standards, they may also compete with or attempt to replace regulatory standards. The concern is that there will be a devolution of public authority to the private-sector.

The ISO 14000 series provide tools for use by an organization in accomplishing its goals. They are intended to be flexible, and therefore of use in a wide variety of situations. They apply perhaps most readily to large companies who have a formal management system already in place, and the expertise and resources to add environmental issues to that system. However, the principles have been designed to apply also to smaller businesses, and to non-business organizations of all kinds. They may also be applied in a very wide variety of ecosystems and regulatory regimes. This wide applicability is possible since the standards do not specify the environmental performance targets an organization must meet. That is, the standard setting process does not set itself the impossible goal of defining appropriate performance standards for all ecological, social and economic situations. Rather, it sets the goal of continual improvement, and (of course) obeying the law. These standards work with existing regulatory requirements and provide a way to manage and monitor performance.

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The designers of ISO 14000 have often stated that they do not wish it to become a model for regulation—it is explicitly a voluntary system. This issue also arose when the Eco-Management and Audit Scheme (EMAS) was first proposed by the European Union (see Chapter 3). EMAS was initially drafted as a mandatory system, but industry objected strongly. This resulted in EMAS being introduced as a voluntary system. The current voluntary nature of EMAS is, however, subject to review. Despite the wishes of those involved in the

development of the ISO 14000 standards, however, there are those who feel that, as with EMAS, some governments may be inclined to legislate compliance.

There is some movement in this direction already in various parts of the world. In North America the more likely occurrence will be some sort of accommodation between regulators and companies who have voluntarily chosen to implement the standards. A company that can demonstrate that it has a well-functioning EMS may receive regulatory enforcement relief so that governments can devote their enforcement resources to companies in whom they have less faith with respect to legal compliance. The degree of "faith" will depend on the credibility of the assurance provided by the organization that has implemented ISO 14000. How will regulators view self-assessment or self-declaration of compliance? An audit by an external expert brings an important discipline to the assurance of compliance as long as the appropriate checks and balances are in place to ensure the audit is credible. If the audit is slack or unprofessional, its value is lost.

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Regulators will need to define the characteristics of an acceptable audit process. If the audit does not meet their requirements, they will need to be able to intervene appropriately. In addition, if the audit itself is credible, and shows unacceptable results, intervention will again be necessary.

A regulatory system that relies in part on ISO 14000 compliance will need to have these provisions:

- Minimum performance standards in all applicable areas of corporate environmental impact. This presumably is the intent of existing regulations.
- Statement of the acceptable qualifications of auditors and acceptable procedures for audits. This might be based on the requirements of national standards certification and conformance bodies.

- Reporting requirements for audit results. This would also require consideration of whether to make part or all of the audit results public.

- Timeliness requirements for both audits and reports, to ensure that problems and gaps are reported without undue delay. Existing requirements to report on and deal quickly with contraventions to the regulations would presumably remain in place.

- The right to intervene on the part of the regulators, and a legal process for intervening, if the company is not meeting the requirements.

- A definition of the criteria under which a company will be eligible for the ISO 14000 based regime, instead of the normal regulatory regime.

Thus, ironically, in order to reduce regulatory burden and some government expenditures, new regulations will be necessary. They will be in addition to, rather than in place of, the existing regulations, because the need for the government to intervene will always remain, and cannot be replaced by a voluntary system. The analogy with the corporate income tax system is instructive. Companies are required to file financial statements along with their self-declaration of income and tax payable. For large companies, those statements are independently audited. Nevertheless, the income tax collectors retain a full range of powers to intervene directly with the company; powers that are necessary in cases where the voluntary system breaks down.

Finally, it is important to remember that any system introduced in parallel to the existing regulatory system will need to pass the test of public acceptability. If the system is not credible with the public and stakeholder groups, it will be challenged loudly and probably successfully.

In general there has been a trend away from environmental regulation of the command-and-control type to regulation based on economic instruments such as pollution charges and tradable permits. Such approaches require different sorts of information than just compliance records in order to ensure that environmental goals are met. In order to ensure that the desired environmental outcome is achieved, the authorities will need to monitor all relevant factors. An EMS can be designed so that it meets the information demands of the regulators in an efficient manner.

Advantages and Challenges of Voluntary Standards

The fact that these voluntary standards have been developed by consensus encourages companies to use them. They are developed by committees of peers to improve their own environmental management systems, not by governments and imposed. A process that includes industry may well produce more practical tools than a regulatory process, especially if the companies involved in the design implement the system themselves. The involvement by other interested parties such as governments, NGOs, and corporate advisors like lawyers and accountants, contributes to a widely applicable product.

A key aspect of the ISO 14000 standards is their international acceptability. They will be available for use by enterprises all over the world, as the common international approach to environmental management and verification of environmental performance claims. This can simplify international trade and inter-company procurement. For example, a company that designs and markets clothing may wish to enter the market for "environmentally friendly" clothing. In order to do this, it must first define exactly what environmental goals will be met in order to convince customers that they should buy these clothes. The company would probably look at any existing industry claims, and do market survey work to define what customers want. It would then revise its own production processes to meet these goals, using an ISO 14000 compliant management system to implement policies and procedures that will ensure that it meets its goals. It will also demand that its suppliers comply with the same (or more rigorous) goals. It is here that ISO 14000 can be uniquely useful—with the goals set, and the management system in place, the measurement and audit provisions can assure that the environmental claims are valid at all stages of the production process. This is much more efficient than a system where the clothing manufacturer had to design its own program audit to ensure compliance among its suppliers.

An often expressed concern is that "voluntary" standards imply the lowest common denominator. This concern has been voiced with respect to the ISO 14000 system. As with any document that emerges from a consensus-based approach, this concern is constantly before those sitting at the negotiating table. While the consensus process is designed to make it impossible for a single significant player to over-rule the wishes of the larger representative group, articulate and forceful participants can have tremendous influence over a committee. There is also a concern with how issues that have reached a stalemate

are handled, since it is all too easy to remove the stalemate by removing the issue. In the end, committee members must balance their interest in having a standard be as demanding as possible with their interest in having the standard widely adopted and therefore useful. Making a voluntary standard so demanding that it is unlikely to be adopted will cause it to be of little or no use.

In the end, the use of a common international approach helps to "level the playing field". This should simplify business for investors, lenders and insurers allowing them to better serve their customers. This should also be true for regulators, as they increasingly pay attention to the international implications of national or local decisions.

Advantages of Voluntary Standards and Guidelines

- They are developed on the basis of consensus

- They are flexible and widely applicable

- They are voluntary, discretionary, and proactive

- They may reduce conflict between the regulator and industry

- They may encourage others to improve their level of performance

- They may be a powerful incentive to trigger change

- Their related certification programs provide regulators with a level of confidence in an organization's performance, allowing scarce inspection resources to be applied to other companies

- They promote harmonization and are therefore understood and accepted by external stakeholders (banks, insurance companies, stockholders, regulators)

- They help to create a level playing field

- They encourage employee commitment to environmental responsibility

Challenges Faced by Voluntary Standards and Guidelines

- Concern that they imply a devolution of government responsibility

- Concern that voluntary implies lowest common denominator

- Concern that they can be ignored

- Concern that certification schemes be credible, unbiased and widely recognized

- Concern over the inclusiveness of the process—have developing countries, small organizations and special interest groups been meaningfully involved?

Chapter 3
ISO 14000 and Global Trends

ISO 14000 and Global Trends

The global pressures and trends that have resulted in the development of ISO 14000 have also had many other impacts. This chapter discusses these pressures, and some of the various responses that have come forward.

The concept of sustainable development manifests a growing realization that humanity must change its ways if it is to survive and prosper in this world. This realization has been building for years, but it was crystallized for many people by the 1987 book Our Common Future, the report of the United Nations Commission on Environment and Development, commonly called the Brundtland Commission.

Our Common Future called for a new development path, which it labeled sustainable development. It showed how present trends are both degrading the environment and leaving more and more people poor and vulnerable. It asked the question, "How can such development serve the next century's world of twice as many people relying on the same environment?[4]"

Our Common Future became the basis of a series of global conferences on the vital issues of sustainable development, the first of which was the Rio de Janeiro Earth Summit, held in 1992. This has been followed by conferences on (among other things) biodiversity, population, social development, human settlements, climate change, and so on. These are inter-governmental conferences, aimed at reaching agreement on steps that nations should take both together and individually to address the problems in the topic area.

At the same time, international agreements have been negotiated on a number of specific environmental issues. These include the Montreal Protocol, of 1987, on ozone depleting chemicals; the Basel

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4   World Commission on Environment and Development. 1987. Our Common Future. Oxford, p. 4.

Convention, of 1989, on transboundary movement of hazardous wastes; the Framework Convention on Climate Change, of 1992; and the Convention on Biological Diversity, also of 1992.

All of this inter-governmental activity amounts to the creation of new sets of regulations aimed at reducing environmental pressures on the planet. Many of these measures have real impacts on companies, both by constraining their actions and by creating opportunities for profitable business.

While individuals were pressing their governments to act, people were also changing their own consumption habits. Substantial markets have developed for "green" products, once again creating both challenges and opportunities for business.

Companies have responded to this rapid change in a variety of ways, as they attempt to meet their customers' demands, comply with regulatory requirements, increase efficiency, and seek out new opportunities. ISO 14000 is one of these responses. While it may not have formal links to all of the processes and initiatives mentioned above, it fits into the same context and results from the same underlying pressures. Here we will consider two aspects in particular: the implications of ISO 14000 for developing nations and the relevance to the new World Trade Organization, which came into being as a result of the GATT Uruguay Round of negotiations.

Voluntary Standards and the Developing World

The implications of the ISO 14000 series are important in both the developed and developing world. Some special steps may have to be taken to ensure that new standards for environmental management and sustainability do not reduce the opportunities of the developing world to trade with industrialized countries.

> Business and industry, including transitional corporations, should recognize environmental management as among the highest corporate priorities and as a key determinant to sustainable development. Some enlightened leaders of enterprises are already implementing 'responsible' care and product stewardship policies and programs, fostering openness and dialogue with employees and the public and carrying out environmental audits and assessments of compliance. These leaders in business and industry, including transitional corporations, are increasingly

taking voluntary initiatives, promoting and implementing self-regulations and greater responsibilities in ensuring their activities have minimal impacts on human health and the environment.

Source: UNCED, Agenda 21, (1993).

While the ISO 14000 standards will have important implications for developing countries, they find it difficult to participate in the development of the standards to the degree that the potential impact of the standards would suggest. The standards development process involves a large number of international meetings, operating in a global and fairly decentralized way. If a country is not represented at all of the sub-committee and working group meetings, it is difficult to influence the process. While the travel costs may be a deterrent, an even greater one is the need to devote the time and effort of several people to becoming expert in the issues, and to developing national positions that will serve the country's needs and have an impact on the process. This makes it difficult for the standards to fully reflect the needs of the developing world or its commercial realities.

From the viewpoint of developing countries, the evolution of the ISO 14000 series is akin to a set of international trade negotiations. The results might have a significant impact on the country's trade and production processes, they are multilateral, and they cover a range of issues that require close study and involvement to be fully understood. The fact that the negotiations are about voluntary standards does not reduce the importance of the potential trade impact.

The rate of the development of the ISO 14000 series has been very rapid. The normal checks and balances of multilateral, inter-governmental negotiations are replaced by the ISO processes. While the ISO process is rigorous, it is moving much more quickly than normal trade negotiations. As a result, the need to devote substantial effort to keep up with and contribute to the process is increased.

A further challenge developing countries will face is the need to build the institutional infrastructure necessary to serve the needs of their corporate citizens. Implementing ISO 14000 will require a sophisticated system of training and auditing, which will not be put in place quickly. If a country cannot put in place its own infrastructure it will likely be expensive to buy the needed services on the international market.

Organizations in developing countries are also concerned how they will define the policies, objectives and targets needed when imple-

menting the ISO 14000 environmental management system. In developed countries with experienced and active regulatory systems and well-understood notions of best or acceptable practice, an organization should be able to formulate its policies, objectives and targets in an acceptable way without undue difficulty. In developing countries without fully developed regulatory and business standards in place this may be more difficult. Implementing an EMS may take considerably more time and effort. Alternatively, the value of implementation may be challenged because of weak or inappropriate performance policies objectives and targets. On the other side of the argument, with appropriate international support and investment, the new standards may provide a tremendous incentive to strengthen developing world institutions.

> If ISO 14000 does become important to world commerce, and a factor in defining competitive advantage, countries and companies that best understand it and can work within it will be better positioned to increase trade and market access.

Finally, if ISO 14000 does become important to world commerce, and a factor in defining competitive advantage, countries and companies that best understand it and can work within it will be better positioned to increase trade and market access. So the incentives for successful implementation are great.

Because of these important implications for developing countries, their capacity to contribute to the international standards process should be a subject of concern to development agencies. There should be programs to fund the development of expertise, the analysis of positions, and attendance at meetings. This capacity-building should be aimed at both the government and the corporate sectors. In addition, the development of the internal capacity to train and certify auditors, and the capacity to provide them with the tools they need, will be critical.

Issues for Developing Countries: Results of a UNIDO Expert Group Meeting

The problem of spreading knowledge and understanding of the standards:

In this context it was important to focus on how the principles underlying the standards were communicated i.e. "mandatory" vs. "voluntary" application of the standards. It was also important to clearly establish the cause-effect relationships in actual business operations, i.e. that the implementation of quality and environmental management systems were intended to be the motivating force behind the standards as opposed to mere certification. In all this the particular situation and vulnerability of small and medium sized enterprises (SME's) needed to be kept squarely under consideration.

There was a clearly expressed concern over the lack of expertise at all levels, be they recognized accreditation bodies, auditors or consultants on quality management and environmental management. This expertise was crucial to the process of implementing standards and tracking implementation.

There was a lack of physical infrastructure, ranging from metrology facilities, calibration capabilities, laboratories and accreditation structures, which inhibited the propagation of environmental and quality management systems. Here, given the costs and the range of facilities required, regional institutions and regional networks may provide a fruitful basis for developing the requisite technical infrastructure.

Internationally, there was a need to support mutual recognition of accreditation bodies and certification schemes. Technical competence was considered a key to the recognition of accreditation and certification bodies, and in order to demonstrate compliance with pertinent international guidelines. For this reason, if no other, developing countries needed to participate fully in bodies such as ISO/CASCO to exert their influence in the formulation of guidelines in this area.

Environmental labeling schemes, at this point, were considered as being more serious non-tariff barriers than environmental management systems standards. Several questions

remained unresolved on these schemes. Often, the very criteria on which such schemes were established were open to question, and there was little agreement on the scientific basis on which common criteria could evolve. Here again, developing countries needed to exert the fullest possible influence on the process of formulating international technical criteria.

Finally, while the standards and schemes being discussed were voluntary in nature, there was a need for developing country governments to lend their weight to, or take initiatives on, such aspects as the accreditation infrastructure, and special support to SME's. Without their support, the fear was that there would be no change, and the situation would result in lost opportunities, at best, or diminished industrial competitiveness, at worst.

Source: United Nations Industrial Development Organization Report on an Expert Group Meeting on the Potential Effects of ISO 9000 and ISO 14000 Series and Environmental Labeling on the Trade of Developing Countries. Vienna, 23-25 October, 1995.

Voluntary Standards and the GATT/WTO

Because ISO 14000 is directed, at least in part, at smoothing the way for international trade, it is natural to ask how it will relate to the World Trade Organization and the agreements that resulted from the Uruguay Round of trade negotiations. The concern that differing standards of environmental management or codes of practice may create non-tariff barriers to trade has led to a great deal of interest in harmonization.

In the context of the WTO agreements, two issues arise with respect to ISO 14000. The first of these is the extent to which ISO 14000 interacts with, or is affected by, the WTO agreements. The primary area for regulation by the WTO is that of government activities. Fundamentally, the goal of international trade agreements is to require that imports be treated the same as domestically produced goods and services (national treatment), and to prevent discrimination by governments against the purchase of goods or services for specific countries (non-discrimination). The ISO 14000 standards are designed as standards for corporations, not countries. Therefore, unless the government of a country requires its importers to adopt

ISO 14000, the question of whether companies adopt it or not will not really be a question of interest under the WTO rules.

Two components of the WTO agreements are relevant: the Agreement on Technical Business to Trade (TBT), and the Code of Good Practice. The TBT Agreement covers any sort of restriction placed on imports or exports based on product standards and technical regulations, and describes how such restrictions must be prepared, adopted and applied. Technical regulations mandate that the product's characteristics (or the process and production methods, if they affect the final product's characteristics) must meet some requirement. A technical regulation might require, for example, that all imported automobiles must be equipped with catalytic converters, or that a product must be labeled in a certain way, or must undergo certain tests before entering the country. Standards are non-mandatory descriptions of a product's characteristics (or of the process and production methods), specified by a recognized body, such as a national standard-setting body, or an international agreement. Standards may be the basis for national-level technical regulations. Eco-labels, discussed below, are considered to be standards.

The Code of Good Practice for the Preparation, Adaptation and Application of Standards is Annex III to the TBT agreement. It deals with non-mandatory standards, and urges that countries bring their national standardizing bodies into compliance with the Code. It extends the national treatment and non-discrimination principles of the GATT to voluntary standards, and says that standards should be prepared in a way that is open and transparent, and open to input by those affected.

ISO 14000 has been designed primarily to be of use to companies in their relations with their suppliers and their customers. Whether companies choose to use ISO 14000 or not is a business decision, based on the normal business criteria. The WTO rules do not deal with these issues, except through the encouragement in the Code of Good Practice.

Finally, ISO 14000 deals with management systems. The specific performance goals that companies will set, are not included in the ISO 14000 requirements. The performance requirements will also be a business decision for the company, and once again not within the purview of the WTO rules. This is a very different situation than if a government sets performance goals for products imported into its country, in which case the normal WTO rules of national treatment and non-discrimination will apply.

The conclusion is that there is not much likelihood of a conflict between the requirements of ISO 14000 and the requirements of international trade law as implemented by the WTO agreements. This is not to say, of course, that ISO 14000 is irrelevant to international trade. Indeed, it is designed primarily to assist the flow of trade. However, it must be said that no cases have yet been brought before the WTO regarding these issues, and therefore this interpretation is preliminary. As jurisprudence develops, new issues may emerge.

The second issue raised by the WTO agreements and ISO 14000 concerns eco-labeling. Here, there is the possibility for an eco-label to become an informal or even formal requirement for selling a product in a country. If this is the case, as is discussed further in Chapter 6, the eco-label then becomes something of a technical barrier to trade and the WTO rules might be relevant. The re-launched Trade and Environment Committee of the WTO is watching the environmental labeling standards closely. Their concern centres on the relationship between environmental product labels and production and process methods. The GATT requires that products be treated as equal for purposes of trade if their attributes are equal. No discrimination is allowed based on the production and process methods used in the manufacture of the product according to the most widely held interpretation of the rules.

Eco-labeling requirements, since they are often based on life cycle assessment methods, do have the potential to enter the area of production and process methods. If eco-labels are used to restrict market access then there is every likelihood that they will be challenged. This is because a government requirement for eco labels as a condition of government procurement or of importation, would create a technical barrier to trade, and would be no different from the government setting a technical regulation. Any such regulations should be challenged under the WTO rules.

The question here is as much for the WTO as for the ISO labeling standards. Environmental improvement gains are made largely through process changes. How then can you write eco-labeling standards without addressing production processes and methods? A WTO secretariat paper prepared for the Committee on Trade and Environment does argue that the TBT was meant to cover standards based on process and production methods, but there is as yet no consensus among the members of this question.

Chapter 4
TC 207 and ISO 14000

How it Started

The recent interest in voluntary management system standards has several related origins. First, the Business Council for Sustainable Development was instrumental in promoting industry-consensus standards as a means to improve environmental performance and in bringing this concern to the attention of the international standards development bodies. Second, management and technical standards were discussed in preparatory meetings for the 1992 Earth Summit, United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro. Third, voluntary standards were deliberated at the Uruguay Round of the GATT. Fourth, individual companies, frustrated at having to deal internationally where there are no standards, and increasingly affected by pressure from governments, environmental and consumer groups, are seeking standards as a means of conformity to an accepted norm.

The response of the ISO and IEC (the International Electrotechnical Commission) was to jointly establish an ad hoc group, the Strategic Advisory Group on the Environment (SAGE) in June of 1991. The SAGE deliberations lasted until December 1992 at which time they submitted their report and recommendations to the ISO and the IEC. SAGE recommended that the ISO establish a new technical committee to develop standards in the areas of:

Environmental Management Systems (EMS)

Environmental Auditing (EA)

Environmental Performance Evaluation (EPE)

Life Cycle Analysis (LCA)

Environmental Labeling (EL)

Terms and Definitions (T&D)

Environmental Aspects of Product Standards (EAPS)

In January of 1993 the ISO Technical Management board approved the SAGE recommendations and established a new technical committee, TC 207 (see Appendix 1), to manage the development of these standards. In March of 1993 the management of the TC 207 secretariat was awarded to the Standards Council of Canada. The Canadian Standards Association took on the task of administering the secretariat on behalf of the Council. In June, 1993 the first plenary meeting of the new technical committee was held in Toronto, Canada.

The Scope of TC 207

The new technical committee was given the following mandate by the Technical Management Board.

Title:	Environmental Management
Scope:	Standardization in the field of environmental management tools and systems
Excluded:	Test methods
	Setting limit values
	Setting performance levels
	Standardization of products
Note:	TC 207 will have close cooperation with TC 176 in the fields of management systems and audits. (TC 176 is responsible for the ISO 9000 series of quality management system standards.)

At its first meeting in Toronto, TC 207, based on the recommendations of SAGE, established six subcommittees and a working group with secretariats based in different countries (noted in parenthesis):

SC1   Environmental Management Systems (UK)

SC2   Environmental Auditing (Netherlands)

SC3   Environmental Labeling (Australia)

SC4   Environmental Performance Evaluation (USA)

SC5   Life Cycle Analysis (France/Germany)

SC6   Terms and Definitions (Norway)

WG1 Environmental Aspects of Product Standards (Germany)

Each of the subcommittees in turn established a number of working groups to undertake specific projects:

SC1/WG1   EMS Specification

SC1/WG2   EMS Guidance

SC2/WG1   EA Principles

SC2/WG2   EA Procedures

SC2/WG3   Auditor Qualification Criteria

SC2/WG4   Site Assessments

SC3/WG1   General Principles for Practitioner Programs

SC3/WG2   Self-declaration Claims

SC3/WG3   Guiding Principles for Environmental Labeling Programs

SC4/WG1   EPE for Management Systems

SC4/WG2   EPE for Operational Systems

SC5/WG1   General Principles and Procedures

SC5/WG2   Inventory Analysis (General)

SC5/WG3   Inventory Analysis (Specific)

SC5/WG4   Impact Analysis

SC5/WG5   Improvement Analysis

SC6 has no working groups.

The standards being developed by TC 207 can be categorized as those that are organizational and those that are product related.

ISO 14000 Organizational Standards

Environmental Management Systems (EMS)

The EMS subcommittee has developed specification and a guidance document. The specification document is designed for organizations interested in certification or registration. The guidance document is not intended for registration purposes. In both cases, the approach is to enable an organization to integrate an EMS into its existing management system. By developing an environmental policy and objec-

tives, an organization will be able to assess its environmental performance with audits and the application of other environmental management tools and standards. The two EMS documents stress that significant commitments from the highest levels of management and throughout the organization are essential.

The specification document ISO 14001, is based on BS 7750 and EMAS, (discussed in more detail further on.) It details the core requirements of an EMS that, when implemented, will allow an organization to identify and manage its environmental responsibilities. These requirements are used as the basis for certification or registration audits. The specification indicates that it is applicable to any organization which desires to:

- Implement an EMS
- Assure itself of its conformance with a stated environmental policy
- Demonstrate such conformance to others
- Seek certification/registration of its EMS by an external organization
- Make a self-determination and declaration of conformance with the standard

The EMS guideline document takes the Canadian document, CSA Z750 A Voluntary Environmental Management System, as its point of departure. It provides information on the rationale, benefits, and scope of the EMS. The document discusses five key principles of an EMS model based on continual improvement: commitment and policy, planning, implementation, measurement and evaluation, and review and improvement.

Environmental Auditing (EA)

Environmental auditing has been a quickly growing field for some time. However, there is little commonality of understanding. Most environmental "audits" undertake some type of assessment of environmental regulatory compliance, environmental performance, due diligence or real or potential liabilities associated with a site or structure. Until recently, few have dealt with management practices.

To begin to bring some clarity to this field, one of the first tasks before the EA subcommittee was to define the difference between

audits, assessments, reviews and other types of investigations. An audit is defined as a systematic, documented, verification process of objectively obtaining and evaluating evidence to determine whether the specified information about the subject matter conforms with the audit criteria. In other words, an audit is not the search for new information but the verification of claims based on the information available to support the claims. It was further determined that the priority issues to be tackled were the audit of the EMS. Any work on site assessments or performance/compliance audits would come later.

The audit subcommittee, therefore, began work on three documents: an environmental audit principles document; an EMS audit procedure document; and an environmental auditor qualifications document. The principles document, ISO 14010, considers issues such as objectivity, independence and competence; due professional care; systematic procedures; audit criteria, evidence and findings; and the reliability of audit findings and conclusions. These principles are common to all types of environmental audits. The EMS procedure document, ISO 14011, was designed to provide the basis for planning and performing an audit to determine conformance with EMS audit criteria. It considers the responsibilities of the various parties including the client, the auditee and auditor. It defines the process for scoping, planning, executing and completing the audit. The auditor qualification criteria document, ISO 14012 stipulates the criteria in terms of education, work experience, formal training and personal attributes and skills.

At its June 1996 meeting in Rio de Janeiro, the subcommittee decided not to pursue any work on environmental compliance audits or audits of environmental statements. Work is underway to prepare a justification to proceed with the development of a guideline for environmental site assessments.

Environmental Performance Evaluation (EPE)

The methods for measuring actual environmental performance is the focus of this sub-committee. In evaluating how businesses approach environmental performance, two different elements are often taken into consideration: operations and management. Company operations view the performance at individual sites to determine which resources are being used and their resulting products, byproducts, emissions and waste. The management system sets goals and supplies resources needed to achieve these goals.

SC4 is developing a systematic approach to evaluating environmental performance within this context. EPE must also take into consideration the need for environmental performance indicators (EPIs). A systematic approach to the development of credible, usable EPIs is also very important. In addition, a good EPE system may provide a common framework for credible environmental performance reporting.

ISO 14000 Product Related Standards

Environmental Labeling (EL)

Regrettably, environmental claims on product labels are often vague, trivial, unsubstantiated, meaningless, ambiguous, or completely misleading. Inaccurate product labels can promote cynicism about manufacturer's claims: they are seen to have more to do with short term profit taking than environmental benefits.

> For many people interested in purchasing less harmful products, the lack of reliable information on product labels undermines their confidence in a manufacturer's incentive to seek further product improvements.

The first task before the EL subcommittee was to categorize the different types of labels. Once this was done they could begin to develop some common standards. They began by identifying three different categories: Type I, practitioner programs; Type II, self-declaration claims, Type III, and quantified product information (QPI) or report card programs. They began work on the first two categories as well as on a set of principles for all types of environmental labels. Originally these principles were to be developed to give guidance to the committee members only. However, it soon became evident that they should be developed as a separate public document. Work on Type III or report card labeling programs began in late 1995.

Type I labeling programs are the sort with which most people are familiar. They provide criteria against which a product is evaluated. If the product passes it earns the label. These programs are usually designed such that only the top 10 or 15 per cent of products will qualify. There are currently close to 30 of these programs around the world, programs such as Environmental Choice in Canada or Blue

Angel in Germany. The subcommittee is not trying to harmonize all of these existing product criteria standards, rather it is attempting to develop the ground rules for designing and running such a program so that the different programs may be recognized or agree to mutually accept each others labels.

Type II labeling is based on common terms, definitions and symbols. If self-declarations are made using the common terms, definitions, or symbols then there is some confidence in what they mean and in their accuracy. A process is also being developed for the verification of these claims.

Type III labels, like nutritional labels, provide information on a set series of considerations. Like Type II labels they provide consumer information and do not indicate that the product has passed a certain set of criteria.

All of these types of environmental labels may make use of life cycle assessment practices.

Life Cycle Analysis (LCA)

By reviewing existing approaches to LCA, this sub-committee will provide guidance on how to assess the environmental burden of products. These include material and energy use, production processes, distribution methods, recycling, and waste disposal options. LCA is a holistic and scientific approach for evaluating the environmental impact associated with a process, product, or activity. The assessment can be considered in four stages: initiation; inventory analysis; impact analysis; and interpretation or improvement analysis.

The sub-committee, SC5, is developing four documents, one on each of the four phases mentioned above. The first document also includes a set of principles for conducting an LCA.

> …the environmental burden of products. These include material and energy use, production processes, distribution methods, recycling, and waste disposal options.

Environmental Aspects of Product Standards (EAPS)

The assessment can be considered in four stages: initiation; inventory analysis; impact analysis; and interpretation or improvement analysis.

Since it may not develop product standards, TC 207 created a working group to prepare a guide on the environmental aspects of product standards (EAPS) to be used by those who will be developing product standards. This is a key long range issue, in that it deals with product standards themselves, rather than management systems. Over time, the revision of product standards has the potential to have a significant impact on environmental performance.

Terms and Definitions

It is the task of SC6 to ensure that there are common definitions across all of the committees and working groups of TC 207. SC6 does not write the definitions, rather it ensures that the definitions being developed are coordinated. Several instances have occurred where two groups have developed definitions for the same term. SC 6 identifies these disharmonies, brings them to the attention of the different committees and if requested will help to facilitate their harmonization. SC6 will eventually publish a listing of the common terms and definitions for TC 207.

Related Initiatives

Three other initiatives have played a significant role in helping to shape the ISO 14000 series: the British Standards, (BS) 7750 Specification for Environmental Management Systems, the European Union's Eco-Management and Audit Scheme (EMAS), and the CSA Environmental Management Program.

BS 7750: Specification for Environmental Management Systems

The British Standards Institute (BSI) published a draft British Standard, BS 7750 Specification for Environmental Management Systems, in March 1992. A second edition was published in 1994. It is a specification for an EMS rather than a guidance document. It

provides details about how an organization can ensure compliance with its chosen environmental policies and objectives. It also provides guidance on how to implement an EMS.

The BS 7750 EMS specification is designed to improve the environmental performance of all types and sizes of organizations and is underpinned by a systematic and integrated managerial approach, the creation of corporate environmental policy and objectives, and by the key concept of environmental auditing. (BS 7750 shares common management system principles with the BS 5750 specification for quality management systems; though the latter is not an operational prerequisite).

The specification provides details on the following requirements: the environmental management system; environmental policy; organization and personnel; environmental effects; environmental objectives and targets; on environmental management program; operational control; environmental management records; environmental management audits; environmental management reviews. It was designed to be compatible with the EU Eco-Management and Audit Scheme (EMAS), a voluntary regulation which came into effect in April, 1995.

The requirement for an environmental effects register, that is, a list of the significant environmental effects, direct and indirect, of the activities, products, and services of the organization is a major objective of the specification. These effects include registering the significant effects of emissions to the atmosphere, discharges to water, solid and other wastes, land contamination, and resource use.

The BS 7750 does not define or set specific environmental performance criteria, objectives, indicators, targets, or timetables for a business or organization. The single level of performance specified is to meet the requirements of the standard.

After its release, the draft specification was examined in a special study involving over 450 organizations and

> The BS 7750 does not define or set specific environmental performance criteria, objectives, indicators, targets, or timetables for a business or organization. The single level of performance specified is to meet the requirements of the standard.

38 different industry sectors. Although many have reacted favorably, some reservations have been expressed about the ability of small and medium enterprises (SMEs) to adopt BS 7750. According to the (British) Federation of Small Businesses these reservations arise from experience in implementing the BS 5750 quality management systems specification and include claims of disproportionately high implementation and registration costs. Some businesses are unhappy with the quasi-mandatory aspect of registration. They dislike industry pressure to conform to a standard and they fear being excluded from tender lists where registration is qualification criteria. Despite these concerns, it was generally argued that the benefits of registration outweigh costs.

British Standards 7750 was a major influence on the development of the ISO 14001 specification document. However, according to the terms of the Vienna Agreement (an agreement between the European Union and the ISO) if an ISO document is ratified by the Union then all competing National standards must be withdrawn. The EU has now agreed to accept ISO 14001, so it will supersede BS 7750 by March 1997.

The European Eco-Management and Audit Scheme (EMAS)

Environmental initiatives in the European Union (EU) are guided by specific action plans. The most recent program, the Fifth Environmental Action Program of 1992, is based on the concept of sustainable development and is fundamentally proactive. It is supported by Article 130R, paragraph 2 of the Single European Act of 1987 which states:

> Action by the Community relating to the environment shall be based on the principles that preventative action should be taken, that environmental damage should as a priority be rectified at source, and that the polluter should pay. Environmental protection requirements shall be a component of the Community's other policies.

The Fifth Environmental Action Program includes the Eco-Management and Audit Scheme (EMAS) to encourage the private-sector to improve its environmental performance. EMAS was adopted June 29, 1993 by the EC Council of Ministers as a regulation effective April, 1995. All 12 member states are obliged to implement the regulation although it will remain voluntary as far as industry is con-

cerned. Each member state must designate an independent national authority to oversee the regulation within 21 months of its coming into force.

Registration to EMAS is site specific. This means that a company cannot register on behalf of its subsidiaries. The EMAS regulation requires:

- Company adoption of an environmental policy
- Policy commitment to continuous[5] improvement
- Definition and implementation of environmental program and environmental management system
- Procedures for monitoring and verifying compliance
- Environmental audits at the sites concerned
- Preparation of a periodic site based Environmental Statement
- Independent verification of Environmental Statement
- Public access to verified statement
- Quantified improvement targets set at the highest management level

One of the major differences between EMAS and BS 7750 is the requirement for an Environmental Statement that would have to be prepared for every site participating in the scheme. The Environmental Statement should:

- Describe company activities at each participating site
- Assess all the significant environmental issues
- Summarize figures on pollutant emissions, waste generation, consumption of raw materials, energy and water, noise, and other significant data
- Consider other factors concerning environmental performance
- State the company's environmental policy, and describe its program and management systems
- Emphasize significant changes since the previous statement
- Give details of the deadline for the submission of the next statement
- Identify accredited environmental verifier

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5   Referred to as continual improvement in ISO deliberations.

The EU's standardization body, the Comité Européen des Normes (CEN) was directed by the European Council to develop standards to meet the needs of EMAS. CEN created an environmental standardization Programming Committee (PC7) in the following areas:

- Environmental measurement standards
- Measurement methods for environmental properties of chemical substances and chemical products
- Pollution control methods and equipment
- Environmental management tools
- Methods for evaluation of environmental effects of products
- General aspects (terminology, symbols, definitions)

The Programming Committee, PC 7, agreed that it would not duplicate the work being done within ISO TC 207 if the ISO committee could develop its standards in an appropriate time frame. EMAS was therefore a significant force driving the pace and scope of work of TC 207.

The issue of who sets standards has raised questions about the role of regional trading blocks in standards development. How voluntary management standards may affect trade agreements such as the North American Free Trade Agreement (NAFTA) remains an open question. This may ultimately become an important issue for the trilateral North American Commission for Environmental Cooperation which will oversee the environmental side agreement to NAFTA.

The Canadian Standards Association Environmental Program

The Canadian Standards Association (CSA) has developed consensus-based information for a range of environmental initiatives including EMS and auditing systems. By way of a Voluntary Environmental Management Program, they are assisting businesses and organizations in improving their environmental performance.

The CAN/CSA Z750-94 information product entitled A Voluntary Environmental Management System is based on the premise of prevention rather than end-of-pipe control. The EMS design should emphasize prevention by identifying the organization's significant environmental effects, applicable laws and regulations, and priorities, and by facilitating corrective actions, systems auditing, and operation processes and procedures.

The framework is based on four general principles for management systems: purpose, commitment, capability, and learning.

1. Purpose concerns the organization's environmental policy; the risks associated with its activities, processes, products, and services; and its environmental objectives and targets.

2. Commitment refers to motivation according to environmental values; organizational alignment and integration; and accountability and responsibility.

3. Capability refers to human, physical and financial resources; knowledge, skills, and training; and information management.

4. Learning is about measuring and monitoring, communication and reporting, system audits and management review; and continuous improvement.

These four aspects of the EMS are discussed with reference to a set of practical tools and a series of self-assessment questions.

Three critical questions about the organization's environmental management initiatives are:

> Where are we now?

> Where do we want to go?

> How do we want to get there?

The CSA has also developed guidelines for environmental auditing (CSA Z751-93). This is a process of objectively obtaining and evaluating evidence regarding an environmental matter. The results must be documented by factual data before the findings are communicated to the client.

Each process of the audit is performed and documented by an auditing team which is responsible for developing a plan to determine what evidence is to be collected and why. It is the responsibility of the auditee to assist the team by providing them with the relevant information. Evidence is collected from personnel, third-parties, physical measurements, data and reports and other techniques. After the results are evaluated, the findings are released.

A good environmental audit will have auditors performing the
process objectively and independently of activities audited. The
auditor must be free from conflict of interest. The audit report
includes the objectives and scope, referencing of the procedures and
criteria used, and the audit results.

Chapter 5

Environmental Management Systems and Environmental Auditing

ISO 14001   Environmental Management Systems — Specification With Guidance for Use

ISO 14004   Environmental Management Systems — General Guidelines on Principles, Systems and Supporting Techniques

ISO 14010   Guidelines for Environmental Auditing — General Principles of Environmental Auditing

ISO 14011   Guidelines for Environmental Auditing — Audit procedures Part 1: Auditing of Environmental Management System

ISO 14012   Guidelines for Environmental Auditing — Qualification Criteria for Environmental Auditors

What Are They?

The ISO 14000 series environmental management and environmental auditing standards are not about environmental performance per se but about management systems. The difference is fundamental, and can be the source of much confusion if not clearly understood. Rather than dealing with the values and limits of performance, with energy efficiency ratings and emission levels, a management system standard establishes what the organization needs to do in order to manage itself so as to meet its goals.

It is a fundamental principle of ISO 14000 that organizations set their own goals, based on whatever considerations they wish to include, including the demands of customers, regulators, communities, lenders or environmental groups. That is, a company can set its own objectives and targets for performance. The ISO 14000 management system provides a framework to develop plans to meet those targets and to produce information about whether or not the targets are met. The EMS and EA standards are then useful to the stakeholders of the organization who wish to be assured that the environmental claims of producers are valid.

A good EMS standard should improve environmental performance. This is because the system will require that clear goals be set for environmental performance, and then the success in meeting the goals be monitored. This focus of attention will often result in goals being set higher than current practice, in an ongoing process of continual improvement. It is important not to over-stress this, however. These voluntary standards will encourage and facilitate improvement, but they do not replace performance requirements whatever the source. Voluntary standards will give tools to companies who wish to improve, helping them to move in whatever directions they choose. Properly enforced legal requirements will demand that all companies meet the performance standards set by the authorities.

These standards are very similar in concept to the ISO 9000 series of quality management and quality assurance standards. They include a specification which lists and defines the management systems elements that an organization must have in place if it wishes to demonstrate conformity with the standard and a guidance document which provides advice on how to effectively implement the system. A specification document is used as the basis for an audit whereas a guidance document is to help with implementation. The audit documents provide the principles and procedures for systematic auditing so that related conformity assessment programs or other assessments and demonstrations of conformance, have a foundation upon which to assert their credibility. Part of this foundation is the certified expertise of the people conducting the audits, thus there is also one standard defining the criteria for auditor qualification.

How They Work

The EMS and EA standards are based on an auditable, continual improvement, management systems framework. The model is comprised of five major components, each of which contains a number of specific elements. For the specification standard the five major components of the management systems model are:

- Environmental policy
- Planning
- Implementation and operation
- Checking and corrective action
- Management review

The environmental policy must commit the organization to regulatory compliance, prevention of pollution and continual improvement. It must also be appropriate to the nature and scale of the operations of the organization. In other words it can not willfully ignore significant issues. This policy must be communicated to all employees and made available to the public. The policy is the cornerstone of the whole management system.

When the policy is in place the planning can begin. Planning includes:

- Identification of environmental aspects
- Identification of legal and other requirement
- Establishment of objectives and targets
- Establishment of environmental program(s)

The first step is to identify all environmental aspects related to the organization's activities, products and services. "Environmental aspects" are ways in which an organization interacts with the environment. They are identified so that their related significant impacts can be identified. The term 'significant' is not clearly defined in the standard. Organizations will, therefore, have to define what significant means and then be able to justify this meaning to auditors. The aspects related to significant impacts must then be considered in the development of the organization's objectives and targets. The next step is to identify all of the legal and other requirements that the organization must meet.

The objectives and targets of the organization are based then on the commitments established in the policy, the identification of aspects and the identification of legal and other requirements. Objectives and targets must be developed for every relevant function and level within the organization. They must be specific enough to be achieved. These objectives and targets should also be developed in light of technological options, financial concerns and the views of interested parties.

In implementing the standard with the view to third party registration an organization should look very carefully at what is suggested and what is mandatory. If the word "shall" is used then it is mandatory; if the words "should" or "may" are used then it is suggested. What is apparently mandatory may also be made conditional by the use of such words as "shall consider" or "where appropriate".

The management plan provides all of the missing detail. It designates who is responsible for achieving the objectives and targets, and describes the means and time frame within which they are to be achieved.

The implementation and operation section includes the following elements:

- Structure and responsibility
- Training awareness and competence
- Communication
- EMS documentation
- Document control
- Operational control
- Emergency preparedness and response

All roles, responsibilities and authorities must be defined and the resources needed to implement the plan must be made available. This includes human, financial and technology/facility resources. Top management must appoint a specific representative who will be responsible for ensuring that the EMS is established, implemented and maintained and who must report to top management on the performance of the EMS for management review purposes.

The organization must identify and provide training for anybody whose work may have a significant impact on the environment. In addition all employees must be made aware of the importance of conformance with the environmental policy and the requirements of the EMS, their roles and responsibilities in achieving conformance and the potential consequences of not using specified procedures. As well as specific training the organization must ensure that its employees have the necessary competence based on education and experience.

The communications requirements of ISO 14001 are minimal. The organization must ensure, of course, that its internal communications are sufficient to ensure effective implementation of the EMS and achievement of it policies, objectives and targets. In terms of external communications it is only required that an organization have in place procedures to respond to external inquiries. Organizations are also required to consider processes for external communications on its significant aspects. Thus, it allows for but does not require the sort of environmental statement required by EMAS.

All of the elements in the system are subject to documentation. A common phrase, often repeated, is that the organization must establish, document and maintain procedures. Unlike the ISO 9000 quality management series of standards, the ISO 14000 series does not require an EMS manual per se. The standard requires that documents be available in written or electronic form, that there is direction to their location, that they are periodically reviewed and revised as necessary, that current versions of documents are available at the locations where they are needed and that obsolete documents are removed or clearly marked. As for the quality system, all documents must be clearly identified and dated.

Documentation is often seen as a burden. However, when the documentation serves the goals of the business and is integrated as much as possible with existing systems, organizations have found that it is extremely beneficial. It is an essential cornerstone of a well-functioning system, especially when change is rapid and an organization can no longer depend on the institutional memory of thirty-year veterans to come up with the missing bit of knowledge or information.

Operational controls and procedures allow an organization to ensure consistency and efficiency. There is also the potential for significant improvement during the review and revision of operating procedures in light of the identification of environmental aspects and related significant impacts.

A good management system must plan for and manage the expected. But it must also be able to respond to the unexpected. Uncertainty will never disappear but it can be managed in a way that reduces risk. The standards require that an organization have procedures in place to identify the potential for accidents and emergency situations and to have in place plans and procedures to prevent, respond and mitigate these effects. The plan must be periodically tested and assessed otherwise a paper plan developed three years ago may not be up to the task when it is needed. After a test or an incident the plan should be reviewed and improved.

Checking and Corrective Action contains the following elements:

- Monitoring and measurement
- Non-conformance and corrective and preventive action
- Records
- Environmental management system audit

Monitoring and measuring is dealt with here in a somewhat minimal way. SC4, working on environmental performance evaluation, is developing a more detailed treatment of this issue. However, the implementation of the SC4 standard is not a required element of ISO 14001. It is optional. The organization is required, though, to have a process in place to measure and monitor. This element requires that the organization record information and track the performance of all operational controls and conformance with its objectives and targets, including regulatory compliance. All measuring equipment must be calibrated and maintained, and as with all other elements there must be record keeping and documentation.

Any time something goes wrong, that is, when there is a non conformance, there must be procedures in place to deal with it. Not only must something be done to correct the immediate problem and mitigate any impact, but the root cause of the problem must be identified and eliminated so as to prevent it from occurring again. The identification and remedy of the problems must be recorded and any affected procedures must be changed to ensure that it does not happen again.

An essential part of any documentation system is the records generated during day to day operations. They may be training records or records of audits, reviews or performance evaluations. They must be identifiable, traceable, retrievable and protected from damage or loss. These records will be used to help demonstrate conformance to the EMS or to regulatory or other requirements.

Environmental audits are not only carried out by third parties for registration purposes. A key element of the EMS itself is the internal audit program. The internal audit program is different from the ongoing measuring and monitoring process. It is a periodic assessment to determine if the EMS conforms to planned arrangements and has been properly implemented and maintained. It is for the use of management and not external parties. Also, an internal EMS audit can be integrated with other internal audit functions depending on the needs of management. A registration audit serves a single purpose and its scope is defined accordingly. Like a registration audit the internal audit program is subject to accepted principles and procedures.

The final component of the EMS specification is the Management Review. Since top management must demonstrate its commitment to the EMS at the beginning of the process it must also, at intervals, review it to ensure that it continues to be suitable, adequate and effec-

tive. This review will gather information from all sources, including documentation, records, environmental performance evaluation processes and internal audit programs to allow top management to fully assess where they stand. They shall then determine whether any changes are needed to the policy, objectives or other elements of the EMS. This management review process is the key link in the continual improvement of the EMS.

These are the auditable elements of the ISO 14001 EMS specification document, the elements that a third party registrar will audit. The scope of the registration audit will be limited by the language in the specification. There are, however, other non-binding sources of information on the implementation of the ISO 14000 EMS. The specification document ISO 14001, includes some guidance information in a non-mandatory annex. Essentially, the information in the annex attempts to elucidate the specification where there may be some lack of clarity. It also offers some information on how certain requirements might be met. It is non-mandatory because the requirements do not have to be met in the way suggested in the annex.

ISO 14004 offers significantly more guidance on implementing an EMS. Structured similarly to ISO 14001, it is based on a series of five principles and is, generally speaking, more broadly conceived guidance document. The five principles correlate with the five components of the specification. In addition to the elements in the specification it includes considerably expanded discussions of:

- Top management commitment and leadership
- The initial environmental review
- Associated environmental impacts
- Internal performance criteria
- Human, physical and financial resources
- EMS alignment and integration
- Continual improvement

ISO 14004 also includes a series of self-assessment questions for each element and a series of practical help sections that are based on industry experience with environmental management.

These standards, together with the three audit standards, ISO 14010, ISO 14011 and ISO 14012, provide the standards necessary for a third party registration system. ISO 14010 defines the principles

common to all environmental audits; ISO 14011 defines the procedures for an EMS audit; and ISO 14012 defines the qualification criteria for an environmental auditor.

Before an audit can be conducted it must be determined that there is sufficient information about the subject matter available, that there are adequate resources to support the audit process and that there will be adequate cooperation from the auditee. This is important since an audit may be commissioned by a client who is not the auditee. The client may be, for example, the corporate office. Thus the scope and objectives of the audit are set by the lead auditor and the client not the auditee. However, the scope and objectives must be communicated to the auditee.

The audit process must of course be objective. To ensure that this is the case the members of the audit team must be independent of any activities they audit. An audit team may include an internal auditor as long as there is no bias, no conflict of interest, and the internal member of the team is in no way accountable to those responsible for the subject matter being audited.

The audit team members must possess the appropriate combination of knowledge, skills and experience as defined in ISO 14012, they must exercise due professional care and they must follow procedures that provide for quality assurance. They must also act with confidentiality and discretion. The release of information is at the discretion of the client.

Although the audit must be conducted according to systematic procedures such as those in ISO 14011 and the process should be designed to provide a high level of confidence in the reliability of the findings, there must be an awareness and acknowledgment of the limitations associated with any audit. An audit is only a sampling of information. There will always be an element of uncertainty. This limitation must be considered when planning and executing the audit as well as in the findings and conclusions.

In addition to defining the procedure for conducting an EMS audit, ISO 14011 also defines the responsibilities of the various parties to an audit. The audit team is composed of the lead auditor and other auditors where appropriate, as well as auditors in training and technical experts. The lead auditor has overall responsibility for the audit and must direct all of its activities.

The client commissions the audit and may or may not also be the

auditee. The client determines the need for the audit and its objectives. He/she also selects the auditing organization and approves the audit team. He/she provides the appropriate authority for the audit to be conducted and approves the scope, the audit criteria, the audit plan, and receives the report and determines its distribution. The auditee, on the other hand, ensures that the site and its employees are ready for the audit, appoints staff liaison, ensures that there is the necessary access to facilities and information and in general cooperates with the audit team to ensure that the audit objectives can be met.

The audit procedure is divided into four parts:

- Initiating the audit
- Preparing the audit
- Executing the audit
- Reporting

The initiation phase includes the definition of the audit scope and the preliminary document review. The scope defines the boundaries of the audit in terms of location and activities. The preliminary document review allows the auditors to assess whether there is enough information to meet the audit objectives.

To conduct a third party registration audit the registrar must employ qualified auditors. ISO 14012 provides a framework for the assessment of auditor qualifications. Organizations may also require their internal auditors to meet the same qualification criteria. There are three areas of qualification:

- Education
- Work experience
- Formal training

Based on each of these, auditors should be able to demonstrate skills and understanding of the following:

- Environmental science and technology
- Technical and environmental aspects of facility operations
- Relevant requirements of laws, regulations and related documents

- Environmental management systems and standards
- Audit procedures, processes and techniques

Before an auditor may be certified he/she must have a combined total of five years of education and work experience, with a maximum of two years allowable for education. Formal training has two parts, a course or professional designation, that must have some means of demonstration such as an examination, and on-the-job training. On-the-job training means participating in an audit as an auditor in training. Before an auditor may be certified he/she must have completed 20 audit days within a three-year period. The auditor must also maintain his/her qualification by remaining current with the knowledge and skills required.

This combination of environmental management system specification and guidance as well as audit principles, procedures and auditor qualification criteria are designed to provide the necessary assurance that registration to the ISO 14001 is responsive and credible.

What Can They Do?

Provide a systematic approach to managing environmental issues: Issue by issue management lacks the scope and integration of the systematic approach.

Provide assurance that policy objectives and targets are being managed: The combination of the systematic approach and the independent third party registration system provide a private-sector mechanism for demonstrating conformance.

Contribute to improved environmental and business performance: A systematic approach to identifying and responding to environmental issues allows an organization to better understand and integrate environmental performance issues into existing business practice.

Lessen the enforcement burden of regulators: The level of assurance provided by the private-sector registration will allow government regulatory enforcement officials to achieve more with limited resources.

What They Cannot Do

Replace regulatory requirements: ISO 14000 does not replace regulated performance requirements. It provides a mechanism to manage them and to provide a measure of assurance that they are being managed.

Provide a guarantee of regulatory compliance: The ISO 14001 requires a commitment to comply with regulations and the implementation of a management system to ensure compliance. This is not a guarantee of 100 per cent compliance but assurance that the obligation to comply is being managed.

Stipulate or provide assurance of environmental performance: Setting the policies, objectives and targets is the responsibility of the organization. An organization with a registered ISO 14001 EMS provides assurance that it has established these policies, objectives and targets and that it is effectively managing them.

Create harmonized international environmental performance requirements: The ISO 14000 series respects national sovereignty as codified in GATT. It has not attempted to harmonize national regulatory requirements. It is questionable whether the ISO is the appropriate body to undertake such a task.

Require extensive public disclosure: Unlike EMAS, ISO 14001 does not require a public environmental statement. There are those who feel that mandatory public disclosure will accelerate environmental performance improvement. In North America and Europe there are significant existing public disclosure require-ments. Further disclosure through the ISO 14000 series is an issue of continuing debate.

Management Systems and Managing Performance

There is an ongoing debate about the role that management systems can play in the improvement of environmental performance. It is true that the ISO EMS standards do not set or require standardized per-formance values. It is also true that two companies who implement and are registered to ISO 14001 and who have the same certificate to show to their customers may be performing two quite different per-formance standards. It is true that the continual improvement

required by ISO 14001 is improvement of the management system itself and not of environmental performance. It is also true that proponents of the ISO 14000 series justify this approach by claiming that a systematic approach will necessarily result in improved performance and that an improved system will improve performance yet again. If the real goal is environmental performance improvement, it can only be achieved if the indirect approach of ISO14000 succeeds.

ISO 14000 can succeed in what it sets out to do. But it does not set out to do everything. It must be complemented by a mechanism that sets performance requirements—whether that mechanism is voluntary or mandatory. The standards as written require as a minimum a commitment to comply with regulatory requirements. Thus even though two registered companies may be meeting different performance standards they are still meeting what is required by the law. ISO 14000 provides a high level of assurance that they are managing that obligation successfully. A customer or a regulator will have greater confidence in a company with ISO 14000 over one without. If the stakeholders of an organization feel that the organization is still not performing at a high enough level then they must approach and work with whoever is setting the performance levels. This may be the organization itself; it may be the regulators. It may be the regulator negotiating performance levels with the organization.

> A response to a single issue is too likely to become a cost rather than an investment. When an organization systematically reviews all of its environmental aspects and impacts and integrates this understanding into its business planning process it is more likely to have an affect on what and how things are done. It has the chance of becoming part of the culture not simply another irritant.

We must also consider the value of the systems approach. Tackling environmental problems on an issue by issue basis may produce unexpected outcomes. It is also more difficult for a business to incorporate single issues into a business strategy. A response to a single issue is too likely to become a cost rather than an investment. When an organization systematically reviews all of its environmental aspects and impacts and integrates this understanding into its business planning process it is more likely to have an affect on what and how things are done. It

has the chance of becoming part of the culture not simply another irritant.

The assurance provided by ISO 14000 is the assurance that goals are being set and managed. This is a significant accomplishment in a world of paper policies and empty promises. At the same time proponents of ISO 14000 acknowledge that it is only part of the solution, not the whole solution.

Certification/Registration

For many organizations the decision to implement ISO 14000 may be relatively easy to make. The benefits have been repeated often:

- Improved public image
- Increased investor confidence
- Improved access to capital
- Reduced liability
- Reduced number of incidents
- Ability to express due diligence
- Conservation of materials
- Reduced waste
- Improved process efficiencies
- Improved organizational culture
- Improved environmental performance

The decision to have a third party certification/registration audit is not so easy. (Although certification and registration have distinct definitions, in the context of ISO management systems audits they are used interchangeably. The word registration has been preferred in North America. Europeans tend to use the word certification.) Companies must decide whether it is sufficient to implement and self-declare conformance with the standards or whether the added level of objectivity provided by a third party audit will better serve their needs.

For most companies that decision will be based on just a few questions:

- Will certification/registration gain me regulatory relief?

- Will regulators require it?

- Will my customer buy less if I don't? More if I do?

- Will other groups (environmental groups, consumer groups, community groups) influence my customers to buy less if I don't? More if I do?

- How much will it cost?

As the marketplace begins to live with and assess the value of these standards some of these questions may become much easier to answer.

Credibility and Recognition

If the decision is made in favor of certification/registration then the credibility and recognition provided by the system is paramount. It must be consistently applied by knowledgeable professionals and be objective. The credibility of the private-sector conformity assessment industry is based on a rigorous system of checks and balances.

When an organization makes the decision to be registered it must first choose a registrar. The registration body must be accredited to offer registration by an accreditation body. Both the accreditation body and the registration body operate under guidelines developed by the ISO Conformity Assessment Committee (CASCO). These guidelines define strict requirements for the operation of such organizations. They define the independence and freedom from potential conflict of interest required, the confidentiality required, the transparency of process required, the personnel qualifications required and the quality assurance systems that must be in place.

> The organization must undergo periodic surveillance audits to provide assurance that it is maintaining the management system.

Equally important, they define the basis upon which registration may be granted, maintained, suspended or withdrawn. The system must have teeth. The story is not over once an organization applies for and receives registration. The organization must undergo periodic surveillance audits to provide assurance that it is maintaining the management system.

In Canada, for example, there is one accreditation body, the Standards Council of Canada (SCC). The SCC may accredit any number of registration bodies. In order to fulfill the requirements for qualified personnel the SCC also accredits an organization that certifies environmental auditors, the Canadian Environmental Auditors Association (CEAA). Auditors certified by CEAA are eligible to work for accredited registrars. In order to become a certified auditor you must take formal environmental auditor training. The course providers for the formal auditor training must also be accredited.

An organization is interested not only in the credibility of its registrar but also in the recognition of the certificate of registration provided by the registrar. In the early days of ISO 9000 quality management system registration it was sometimes the case that a certificate earned from a registrar in one country was not accepted in other jurisdictions. To respond to this problem registrars would enter into bilateral agreements for mutual acceptance with other registrars or would seek multiple accreditations. Now the accreditation bodies, rather than the registrars, are entering into mutual recognition agreements so that all the registrars that they have accredited may be accepted in the jurisdiction of the other accreditation body. This has expanded further to the point where there is now a multilateral body under development, QSAR. An accreditation body that recognizes qualification for membership including recognition of all of the other members and the registrars accredited by these members.

This rigorous system of checks and balances has operated well for many years and there is every expectation that it will continue to do so. In the environmental arena, however, maintaining this credibility will be a primary concern. What will happen the first time a registered company is involved in a major environmental incident? How will the registrar respond? How will external stakeholders, including environmental groups, respond if the organization is allowed to retain its registration after a major incident? It is important to consider these questions not only in the light of the proper functioning of a private-sector conformity assessment system but also in light of the perception of a public who is not knowledgeable about the complexities of the system. There may be a justifiable reason for the organization to retain its registration after an incident. The incident may have been caused by unforeseen circumstances. The emergency response plan may have worked very well, contained and mitigated the problem. The company may have then assessed the problem to determine the root cause and put in place corrective and preventive measures. The

company may have immediately disclosed the incident and their response. However, if the incident was caused by an ineffective management practice, the registration must be withdrawn for the system to retain its credibility.

The issue of credibility will be particularly acute in the first few years of operation of the standard. It is in the early days that auditors will be inexperienced, training programs will be under development, and management systems will be evolving to meet the new requirements. In short, there will be plenty of scope for mistakes. Those who want to deliberately mislead the system may find it fairly easy to do so. This presents a major danger for the long term credibility of ISO 14000, because one well-publicized problem or false claim will be remembered for a long time.

Chapter 6
Environmental Labeling

ISO 14020   Environmental Labeling — General Principles

ISO 14021   Environmental Labeling — Self-declaration Claims — Terms and Definitions

ISO 14022   Environmental Labeling — Self-Declaration Claims — Symbols

ISO 14023   Environmental Labeling — Testing and Verification Methodologies

ISO 14024   Environmental Labeling — Practitioner Programs — Guiding Principles, Practices and Certification Procedures of Multiple Criteria (Type I) Programs

ISO 14025   Environmental Labels and Declarations — Environmental Information Profiles — Type III Guiding Principles and Procedures

What Is It?

Since the late 1980s, there has been a growing demand by consumers for products that do not harm the environment. This is evident in the controversy over disposable versus washable diapers. It is also evident in the sale of products such as non-toxic household cleaning agents, chlorine-free paper, recycled oil, and mercury-free batteries.

Such sales reflect a "greening" of the market place. Public willingness to use its buying power as a tool to protect the environment provides manufacturers with an opportunity to develop new products. But how does a person judge a product's environmental impact? How do we know what to buy and what to avoid? Are manufacturers making matters more difficult by selectively promoting certain environmental attributes over others? In other words, how do we assess the validity of a product statement about environmental impacts? How do we assess the label?

The need for rules about environmental labeling or eco-labeling has led to concerted efforts to develop labeling protocols or standards worthy of public trust. Paulos and Stoecle[6] describe eco-labels as "soft policy" instruments which guarantee the public that products conform to minimum environmental standards. These goods still

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6   Paulos, B. and A. Stoecle. 1994. The Right Label, The Environmental Forum, No. 11 May/June, pp. 24-29.

possess environmental impacts. However, they are considered to be superior relative to other products that fulfill a similar role.

The marketplace has seen an explosion in recent years of products that claim to be "green" or environmentally acceptable. In 1989, 24 products in the U.S. claimed to be green; by 1990, there were over 600 products; in 1994, it was predicted that green products would be an $8.8 billion business. How can manufacturers and advertisers label these products honestly to avoid confusion in the marketplace?

How It Works

The ISO is currently developing standards for three types of environmental labeling programs.

Type I	Multi-criteria practitioner programs
Type II	Self-declaration claims based on common terms definitions and symbols
Type III	Quantified product information—report card programs

All of the ISO labeling standards are intended to be based on the same principles. Although still under discussion, these principles include:

- Labeling should be accurate, verifiable, relevant and non-deceptive
- The party that makes the label should make relevant information about the attributes available to purchasers
- Labeling should be based on comprehensive scientific methods that are reproducible
- Information on the process and methodologies should be available to all interested parties
- Labeling should incorporate where appropriate the life cycle of the product or service
- Administrative requirements should not make participation difficult
- Labels should not create unfair trade restrictions

- Labeling should not inhibit innovation that may improve environmental performance
- Labeling criteria should be developed by consensus

Multi-criteria practitioner programs, of which there are now close to 30 around the world, are what most people think about when they think of environmental labels. Like traditional product safety standards, they are developed for specific products or product categories. The labeling guidelines define the characteristics or attributes that a product must have if it is to earn the label. Unlike traditional product safety standards, however, they do not provide minimum acceptable criteria, rather they attempt to set the qualifying bar high enough so that only the top 10 to 15 per cent of products will qualify for the label. If too many qualify then the guideline is revised and the bar is raised.

The ISO Type I standard is not attempting to harmonize the criteria found in the guidelines of existing programs. Instead it is establishing the ground rules for designing and running a practitioner program such that consumers can have equal confidence in all programs.

The standard defines the principles for operating a Type I program as well as the procedures for setting criteria and for operating a certification program. In addition to the general principles, the Type I principles emphasize that environmental labeling programs are voluntary and do not replace regulation. As a minimum, a product must already comply with any environmental regulations applicable to it. Programs must be credible. This is gained largely through the transparent criteria development process and the independence of the third party certification system. The use of a comprehensive life cycle approach in setting criteria is encouraged, and the criteria must be periodically reviewed to ensure their appropriateness and currency. Finally, participation in environmental labeling programs should be open to anyone who is interested.

The development of criteria begins with the process of selecting products or product categories. There is an obvious desire to develop those guidelines that represent the greatest opportunity for environmental improvement first. So the stakeholders selecting the categories will look at such factors as consumer demand, market volume, the potential for environmental improvement and the availability of information. The manufacturers and suppliers must also be involved in and support the process.

Once the category is selected, research must be undertaken to ensure that the criteria developed are based on sound and reliable information. The development of criteria should take into account the economics of production and the availability of technology as well as ecological criteria. Once the consensus committee has established a set of criteria the proposed criteria should be published for public consultation. After the successful completion of the public consultation the criteria may be adopted and published.

The certification procedures are designed to ensure the credibility of the labels and to ensure public confidence. As a necessary first step the practitioner (i.e. the label granting body) must determine what method of verification will be used. The standard states that one or more of the following methods may be used:

- Declaration of conformity: the manufacturer self-declares conformance
- Review of supporting documentation: the practitioner requires the applicant to provide documentary evidence of conformity
- Evaluation of conformity with manufacturing phase requirements: where the production phase is evaluated
- Product testing: samples of the product are tested

Once the verification has taken place and the label has been awarded it is the duty of the practitioner to monitor compliance. A system must therefore be put in place to ensure that the product continues to be made in the way in which it was certified. If not, then the practitioner may revoke the manufacturer's right to use the label.

The Type II labeling program is for the self-declaration of claims. Manufacturers simply declare the information they wish to declare about the environmental attributes of their products. There are no set criteria, no bar to get over. At issue is truth in advertising and credible consumer information. The Type II standard attempts to do two things: to establish general guidelines for environmental claims and to define and provide rules for the use of specific terms and symbols.

The general guidelines include the requirement to be

- Accurate and non-deceptive
- Substantiated and verifiable

- Relevant to the product and its use in a given context
- Specific and clear
- Unlikely to result in misinterpretation
- Not trivial
- Provide a basis for informed decisions

The standard then goes on to deal with specific terms and symbols. A standard on the verification of such claims is also in the preliminary stage of development.

Type III labeling programs provide a product profile rather than a verifiable claim or an assurance that set criteria have been met. Like Type I, it is multi-criteria but like Type II, there is no minimum threshold to pass. Work has just begun on this standard.

What Can It Do?

Eco-labeling has a number of major strengths. It informs consumer choice, improves economic efficiency, and can enhance market development. It also promotes continual improvement, certification systems, and monitoring.

Informed consumer choice: Eco-labeling is an effective way of informing customers about the environmental impacts of selected products and the choices they can make. Eco-labels thus empower people to discriminate between products that are harmful to the environment and those judged to be more compatible with environmental objectives. An eco-label makes the customer more aware of the benefits of certain products, for example, recycled paper or toxic-free cleaning agents. It also promotes the value of energy efficiency, waste minimization and product stewardship.

Economic efficiency: The cost of eco-labeling is generally estimated to be less than the cost of regulatory controls. By empowering customers and manufacturers to make environmentally supportive decisions, the need for regulation is kept to a minimum. This is clearly beneficial to both government and industry.

Market development: When customers choose eco-labeled products, they have a direct impact on supply and demand in the marketplace. This is a signal which guides the market towards greater environmental protection. Eco-labels thus raise corporate awareness of the impacts of their goods on the environment.

Continual improvement: A dynamic market for eco-labeled products would ensure corporate commitment to continual environmental improvement. Customers could expect to see the environmental impacts of products decline over time as measured by resource use, by-products generated, and disposal costs.

Certification: An environmental certification program is a seal of approval that a product meets a certain eco-label standard. It provides customers with visible evidence of the products desirability from an environmental perspective. Certification, therefore, has an educational role for customers and promotes competition among manufacturers. Since certified products have a prominent logo to help inform customer choices, the product stands out more readily on store shelves. Coveting the logo may induce manufacturers to re-engineer products so that they are less harmful to the environment.

Monitoring: Another benefit of an official eco-labeling program is that claims can be more easily monitored. Unlike with regulation, competitors and customers may be in a better position to judge the validity of a given claim and will have an incentive to do so should a claim be doubtful.

Challenges

Arguments against eco-labeling arise from disputes over misleading claims, uninformative labels, erroneous seals of approval, unfair competition, concerns about green consumerism, the feasibility of labeling all products, and methodological difficulties.

Misleading or fraudulent environmental claims: An eco-label has no value to the environmentally-conscious customer if the label is misleading or fraudulent. Since trust is a major component of a labeling program's credibility, the label must be above suspicion. Terms such as, "recyclable, "biodegradable, and "ozone friendly", must be used accurately. When claims are used arbitrar-

ily in advertising and labeling, customers will become confused, discouraged, and skeptical even of legitimate claims.

Uninformative claims: Labels that provide trivial or irrelevant environmental information promote environmental benefits which are insignificant and do nothing to improve the status quo.

Unfair competition: Some companies are concerned about unfair competition. They are reluctant to rely on the word of a foreign company or a foreign eco-labeling program that specific environmental criteria are being met. Indeed, some companies may choose to intentionally misrepresent their products as "environmentally friendly" in order to bolster profits. This amounts to unfair competition for those companies which must spend the time and money to adhere to regulations. Companies seek assurance that a double standard will not emerge.

Green consumerism: Many environmentalists are critical of consumerism and argue that "green consumerism" is a self-contradicting term. The goal is to reduce consumption, not re-define it according to an environmental set of criteria. Individual actions when limited to "green shopping" will do little to bring about the more fundamental economic and social changes that are required to protect the planet. Eco-labels, although complementing government action, are no substitute for it. Consumer preference and market forces cannot, by themselves, guarantee environmental protection.

Feasibility: Another concern is that only a small number of products can realistically be labeled. Since the vast majority of goods will not be considered in eco-labeling programs, many environmentalists point to regulation as being a more effective tool of public policy than the development of a special case voluntary standard.

Methodologies: Differences in testing and certification methods have created a number of difficulties in the applications of an eco-label to a product category. Should the label represent an overall assessment of a product's environmental burden over its entire life cycle or some subset of it? What techniques can be used to measure environmental impact? Who determines what specific environmental impacts are the most important? What criteria are appropriate in rating impacts?

Public and Private-sector Certification Programs

Owing to increasing public demand for "environmentally friendly" products, both governments and the private-sector have become involved in eco-labeling programs. Government involvement in running Environmental Certification Programs (ECPs) may have a number of advantages, it may:

- Improve the program's economic stability, legal protection and credibility in the opinions of manufacturers and consumers

- Provide more dependable, long-term resources

- Overcome high start-up and compliance monitoring costs, thus allowing for lower prices and greater participation by small manufacturers

- Allow for facilitation of international standards

- Provide better terms of accountability and in some areas, technical expertise

- Ensure public observation, review and comment on proposed standards

But, private-sector involvement in ECPs is also important. private-sector programs:

- May be less vulnerable to erosion or elimination in the wake of shifting political currents and budget constraints than government programs

- May be able to set more stringent standards than government agencies in some product sectors, since their criteria do not have to take job loss into account

- Are an effective means of pressuring foreign companies and countries to comply with environmental regulations

Credibility and Recognition

Since there is a growing demand for products that do not harm the environment, the accreditation of groups or bodies that assign eco-labels is of crucial importance. The accreditation of certifiers, therefore, should be appropriately rigorous because of their role as links between the assessment process and the consumer. Ultimately, it is

the certifiers who will enforce discipline in eco-labeling programs. Certifying bodies, consequently, should be above suspicion in terms of trust and actions. They may have to disclose their finances, evaluation criteria, standard setting and monitoring procedures to ensure trust. Also, certifiers should monitor the use of their certification marks and should be allowed to take aggressive action (withdraw license to use marks) against companies whose products no longer merit the certification. Environmental certification standards should also meet standards for environmental advertising. In addition, to avoid conflict of interest, manufacturers should not be allowed to operate ECPs.

Trade Issues

Environmental labeling presents significant trade issues. As was discussed in an earlier chapter, the use of Life Cycle Assessment methods in the development of product labeling criteria introduces production processes into the certification process. This is specifically proscribed by the WTO agreements. If labels are used as a voluntary mechanism, as "soft law", and not by governments to define acceptability then they are outside of the influence of the WTO. However, if they are construed as de facto market entry requirement then they may be the cause of a the WTO challenge.

The drafters of the ISO labeling standards are very aware of this concern. WTO officials from the Trade and Environment Committee have been participating in the drafting process. The labeling principles dealing with trade and restrictions to trade have been the occasion for the commissioning of a series of discussion papers. And the drafting committee has discussed the use of the WTO language on technical barriers to trade in the ISO standard. Various UN agencies, including UNCTAD (United Nations Committee on Trade and Development) and UNEP (United Nations Environment Programme), have also followed the negotiations closely and contributed expert opinions. In the end the resolution of this trade and labeling issue will have to be resolved in other fora and not just at the ISO.

Chapter 7
Life Cycle Assessment

ISO 14040	Life Cycle Assessment—Principles and Framework
ISO 14041	Life Cycle Assessment—Inventory Analysis
ISO 14042	Life Cycle Assessment—Impact Assessment
ISO 14043	Life Cycle Assessment—Interpretation

What Is It?

The debate between manufacturers of disposable diapers and wash-able diapers is based on the assertion that the disposable product is less desirable from an environmental perspective than the washable diaper. The disposable diaper uses more natural resources to manufac-ture and it takes up more room in landfill when disposed. On the other hand, the reusable diaper consumes energy, water and deter-gents as it is cleaned for reuse. So the argument goes. But what are the empirical facts? This is where life cycle assessment (LCA) comes in. It is a method of checking the facts about the environmental burden of a product from its design through to production and then final dis-posal. An LCA can be used in the design of a new product or the evaluation of an existing product. An LCA attempts to make system-atic, holistic sense of environmental information.

The need to clarify the assumptions and methods upon which LCA depends has led to a great deal of interest in the development of LCA techniques. LCA has been defined by Portney[7], as a complicated methodology for identifying energy and other resource requirements as well as the environmental impacts associated with every stage in the life cycle of a product. LCA considers the air, water and solid waste pollution generated when raw materials are extracted. It includes the energy used in the extraction of raw materials and the pollution that results from manufacturing the product. It also accounts for environ-mental harm that might occur during the distribution and use of the product. Lastly, LCA examines the solid and liquid wastes that are loaded on to the environment following final use of the product.

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7   Portney, P. 1993. "The Price is Right: Making Use of Life Cycle Analysis".
     Issues in Science and Technology, No. 10 Winter, pp. 67-75.

LCA is a tool which is used to identify and measure both direct and indirect environmental, energy, and resource impacts associated with a product, process or service.

The uses of LCA as set out by the Canadian Standards Association[8], include:

A. Evaluation and policy-making to:

- Supply information for evaluating existing and prospective polices that affect resource use and releases

- Develop policies and regulations on materials and resource use and environmental releases where a comprehensive inventory and impact analysis have been conducted

- Identify gaps in information and knowledge, and help establish research priorities and monitoring requirements at various government levels

- Evaluate product statements of quantifiable reductions in energy, raw materials, and environmental releases

B. Public education to:

- Develop materials to help the public understand resource use and release characteristics associated with products, processes, and activities

- Design curricula for training those involved in product, process, and activity design

C. Internal decision-making to:

- Compare alternative materials, products, processes, or activities within the organization

- Compare resource use and release inventory information with comparable information on other manufacturers' products

- Train personnel responsible for reducing the environmental burdens associated with products, processes, and activities, including product designers and engineers

D. Public disclosure of information to:

- Provide information to policy makers, professional organizations, and the general public on resource use and releases, including appropriate disclosure and documentation of findings

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8   Canadian Standards Association Z760-94, 1994, pp. 16-17.

- Help substantiate product-related statements of quantifiable reductions in energy, raw materials, and environmental releases, provided that information is not selectively reported

How It Works

Life cycle assessment helps companies to look at all aspects of their operations and integrate them into their overall decision making process. Life cycle assessment is the analysis of a product or service through all stages of its life cycle, raw materials acquisition, manufacturing, transportation, use/reuse/maintenance, recycling/waste management and relevant energy supply systems.

There are several existing methodologies. The one that forms the basis of the work of SC5 is the one developed by the Society of Environmental Toxicology and Chemistry (SETAC). Before we look at the ISO framework it is useful to look at two other existing models since this area is still very much under discussion. In fact, the CSA Life Cycle Assessment Standards, published in 1994, did not attempt to present a single methodology. Instead it provided a discussion of the state of the art, including a discussion of several competing methodologies.

Eco-Profiling System (EPS)—Volvo/Swedish Industry

The EPS system uses four different environmental indices as a primary tool in its approach to environmental impact analysis. The four indices are:

> Natural resource index
> Substance effect index
> Material index and
> Process index

The natural resource and substance effect indices are developed through the application of six ecological scores which are multiplied together to yield a single numerical index number. The six determining criteria are:

Type and extent of environmental impact or problem

Intensity and frequency of occurrence of impact

Real distribution of impact

Durability of problem

Contribution to problem by emission of 1 kg of the substance

Possibility and associated costs of remedying problem

A substance or natural resource is awarded a score for each of the above criteria, scores are then multiplied together to yield an index number expressed in environmental load units per unit of substance. The higher the number, the greater the negative environmental impact.

Scores can be further adjusted to reflect uncertainty in the information. Natural resource scores are based on known sources which are technically extractable with an evaluation factor taking into account the uniqueness of the resource, while substance effect information is derived from any available, verifiable and reliable source.

To determine the impact of a particular product or service, material and process indices are developed from the natural resource or substance effect indices. The environmental load unit taken from the natural resource or substance effect index multiplied by the amount of the substance used or released produces a total environmental load value (ELV) for the particular product or process.

The end result of the eco-profiling analysis technique is a single number reflecting the environmental burdens associated with a particular process or product. This eliminates the need for a subjective valuation phase since the numerical values can be easily compared and contrasted to reveal preferable options.

Method for Comparatively Evaluating the Environmental Impact of Products—CML, Netherlands

The process encompasses four components:

Goal definition

Inventory

Impact analysis

Valuation

The key to this methodology is the impact analysis and valuation. The final step of the inventory phase begins the process of environ-

mental impact analysis, which is initiated by drawing up the impact tables. For each process identified within the system boundary, a list of magnitudes of the direct environmental impacts of that process in proportion to its quantified occurrence is compiled.

The impact analysis phase translates this list into relevant environmental effects by means of models. This indicates how the impacts develop into effects. These environmental effects represent the contribution per functional unit to environmental problems. The approach uses a standard model to translate impacts into effects, and suggests that, at very least, depletion of resources, human health, acidification, the greenhouse effect, damage to the atmosphere, and space consumption should be considered within the analysis.

The second step in the analysis involves arranging the potential environmental effect into an environmental profile. This entails aggregating, arranging, and totaling the environmental effects in a table of scores which is passed on to the valuation phase.

The valuation of the environmental profile, phase four of the CML methodology, is a largely judgmental process which requires the comparison of often dissimilar environmental effects. The CML process suggests four approaches to valuation but stresses the use of the multiple criteria approach:

Dominance analysis: this requires the simple unweighed comparison of two or more environmental profiles

Hierarchical multiple criteria analysis: this sets absolute priority on a single environmental effect and compares processes or products based strictly on the top priority

Qualitative multiple criteria analysis: this is a non formalized valuation of the importance of the various effect scores, administered through subjective discussion of issues and analysis information

Quantitative multiple criteria analysis: this approach uses a collection of objective assessment factors which are ascribed to each environmental problem to evaluate the importance and magnitude of the various effect scores

ISO Standards

In the ISO standards there are four basic components in the LCA process:

1. Goal Definition and Scope: identification of the reasons for carrying out the study, the intended application and audience, and a definition of the system boundaries of the study, assumptions, data requirements, methods and limitations;

2. Inventory Analysis: the identification, compilation and quantification of the inputs and outputs for a given product or service;

3. Impact Analysis: the evaluation and understanding of the magnitude and significance of environmental impacts of a given product or service;

4. Interpretation: the evaluation and implementation of opportunities to reduce environmental burdens.

The ISO committees have reached significant consensus on the first two phases: goal and scope definition and inventory analysis. The impact assessment and improvement or interpretation phases are much less mature for the simple reason that there is far less experience in business with these phases.

The first step in any LCA is defining the goals and the scope. This should encompass answering the following questions:

- Why is the LCA being conducted?
- Who is it being performed for?
- Who will participate in it?
- How will the results be applied?
- Who is the intended audience?
- What quality of data will be required?
- What type of critical review will be used?
- Who will the results be communicated to?
- What limitations will be placed on its use?

Depending on the goals determined for the study it may be very comprehensive or somewhat cursory. The scope of the LCA should then be defined in order to achieve the agreed to goals. The scope should include a consideration of:

- Functional unit to be assessed
- System(s) to be assessed
- Function(s) of the system(s) being assessed
- Boundaries of the system
- Data requirements
- Assumptions and limitations

LCA is an iterative process. Even though the scope is set at the beginning of the process, once the collection of data is begun the goals and scope may have to be revised.

The definition of the systems and the system boundaries is very important to the definition of the data to be collected. In general the assessment process will look at inputs, processes and outputs. The inputs will be primarily raw materials and energy but may also include processed materials used as feed stock. The process elements may include material acquisition—including transportation, manufacturing processes, distribution—including transportation, use/reuse/maintenance, recycling and waste management. The outputs may include water borne effluents, airborne emissions, solid wastes, waste heat, usable products—including byproducts and any other environmental release. Each system may contain subsystems that will also have to be considered. The ISO standard emphasizes that it is important to define the system very clearly and precisely.

An LCA can generate a tremendous amount of data. It is also very important then to clearly decide on the desired data quality. This will depend on the defined goals. Is the study for internal use only and therefore will site generated data serve the purpose; or are claims going to be made based on the study, in which case the data should be independently verified. When data is to be used for comparative purposes data should be assessed for precision, completeness, representativeness and reproducibility.

The life cycle inventory analysis is all about data collection and calculation. The main task here is the collection of the data required by the scope. This can be a complex and resource intensive process. Most

studies will employ appropriate data management programs that can organize data by unit processes, data categories, and units of measurement. Flow charts are recommended as extremely useful. During this process, once again the scope and the systems boundaries may have to be revised.

The impact assessment is designed to evaluate and understand the magnitude and significance of the environmental impact. The methodologies for impact assessment are numerous. The ISO methodology is still very much under discussion. However, the current drafts divide the process into three steps: classification, characterization and valuation. Classification involves grouping and sorting information into impact categories, including resource depletion, human health and ecosystem impact. Characterization involves analysis and impact quantification within each category. Valuation attempts to provide an assessment of the relative significance of impacts. This involves stated assumptions, weighting, and ranking.

The final phase involves the use of the material in the study. ISO 14040 states that if the study is to be used for any external purposes, such as public comparative assertions, it musts undergo a critical review. That is, it must undergo an independent examination to determine its credibility and validity. A critical review would answer the following questions:

- Were scientifically and technically valid methods used?
- Were reasonable and appropriate data used?
- Are the conclusions valid, given the goals?
- Is the study transparent and consistent?

What Can It Do?

LCA has a number of major strengths. It informs consumer choice, tackles environmental effectiveness, and promotes continual improvement.

Informed consumer choice: LCA is a scientific way of advising customers about the environmental burdens of a given product.

Environmental effectiveness: Using LCA techniques products are designed to have a lower impact on the environment than would

be the case without careful product scrutiny. It is hoped that LCA will eventually become more available for individual users to analyze emission and energy impacts of various energy processes with timely, region-specific data.

Continual improvement: Companies will have to become more committed to LCA if customers continue to expect on-going product improvements.

Challenges

Although LCA has many positive aspects, it also presents many challenges, including cost, insufficient or inappropriate data, inconclusive results and the lack of a standard methodology.

Cost: The research required to do an LCA is complex and may be too costly for many products. LCAs must be tailored to particular circumstances and repeated for each set of different circumstances since the impact of certain products or processes vary according to the character of various areas.

Insufficient data: Given the large data requirements in a life cycle assessment, there will inevitably be a number of gaps in the information available. Researchers often have to rely upon typical manufacturing processes, inputs based on national averages, engineering estimates of processes and professional judgments. As a result, data may be inaccurate, misleading or biased, producing erroneous results.

Inconclusive results: LCA does not provide a customer with conclusive results about the superiority of a given product. This is because many parameters cannot be simplified to the degree necessary to reach a conclusion, data are dated relatively quickly, and assumptions used in weighting may be questioned.

Inadequate methodologies: Translating numbers from life-cycle inventory into human health or ecological impacts is not well-understood. The lack of any single methodology for comparing environmental impacts compounds the problem. It is also difficult to compare different types of pollution since no scientifically accepted method exists for weighing the effects of various pollutants. They are frequently not even measured in the same units.

Chapter 8

Environmental Performance Evaluation

ISO 14031   Evaluation of the Environmental Performance of the Management System
            and its Relationship to the Environment

What Is It?

The EMS standard requires organizations to develop measurable objectives and targets, and to monitor and evaluate their performance against them. The EMS does not audit this performance but it does audit the management of performance objectives and targets. SC4 is developing a guideline to help organizations manage this monitoring and evaluation process.

The basic premise is that what gets measured gets done. Measurement allows an organization to more clearly understand and quantify where it is and how far it has to go to meet its objectives and targets. It also provides a basis for understanding improvement. The EPE then will provide the organization with a systematic tool for generating information. A necessary element of generating useful information is selecting or defining the environmental performance indicators (EPIs) or performance measures that will be used.

EPE is different from environmental audits in several significant ways. EPE is an ongoing process. As part of the management system it is something that is put in place and available at all times. It helps to define actions, responsibilities and information flows that are part of ongoing, day-to-day operations. An environmental audit is a snapshot in time. It is a periodic verification that everything is as it should be. As well, while the evidence collected during an audit is existing evidence, the information generated by an EPE is new evidence. While within the framework of an EPE an organization can conduct research and investigate new issues, within an audit one can only assess claims concerning the current state.

Since an EPE system provides the framework for information gathering it also provides a logical link to reporting. Organizations will have

many internal and external reporting requirements and EPE system can ensure that the information is gathered and disseminated correctly and on time. Many organizations also choose to voluntarily report on their environmental management system or environmental performance. The systematic collection and generation of information provided by the EPE system provides tremendous efficiencies of effort should an organization decide to report voluntarily.

How It Works

The standard being developed by SC4 will allow organizations to develop appropriate systems to measure, evaluate, describe and communicate environmental performance. It is part of the environmental management system and not separate from it. Thus ISO 14001, the EMS specification document, requires that an organization monitor and measure on a regular basis the key characteristics of its operations and activities. The developers of this standard, however, intend to develop a document that will be useful to an organization that wishes to evaluate its environmental performance whether or not it has a formal environmental management system in place. If an organization without an EMS wishes to use the EPE system it must still have a mechanism for developing objectives and targets since the EMS document and not the EPE document provides this guidance.

The current draft of the EPE document contains the following elements:

Planning EPE
Management considerations
Selecting indicators for the management area
Selecting indicators for the operational area
Selecting indicators for the environmental area
Evaluating Environmental Performance
Collecting data
Analyzing data
Evaluating information
Internal reporting and communicating
External reporting and communicating
Reviewing and improving EPE

Planning involves reviewing or identifying those environmental aspects of an organization's activities products and services that have generated objectives and targets. It is essential that the EPE process be integrated with the EMS since the development of objectives and targets should include identifying what an organization wants to measure and therefore how it wants to measure it.

The selection or definition of environmental performance indicators is key at this juncture. There is much debate about the development of EPIs. Should there be generic EPIs across sectors? Common EPIs would provide the basis for comparison and benchmarking. They might also provide the basis for generation of national, regional or international environmental accounts. But is the development of such generic EPIs possible given the diversity of business operations, local conditions and measurement capabilities? Should individual sectors develop their own EPIs? If generic EPIs are too difficult to develop should sector-based EPIs be developed?

In 1992, SC4 set itself the goal of developing generic and sector specific EPIs but soon abandoned it as too large a project. They also had to ask themselves if they were the right group to develop sectoral EPIs. Perhaps the industry associations, which are able to bring together all of the experts in their area, should be encouraged to undertake this task. Sector efforts to date to do this have proven difficult. Organizations are wary of helping to create indicators that will allow them to be too easily ranked for environmental performance against their competitors.

Instead of developing actual indicators SC4 has set itself the objective of developing an analytical tool for the development of indicators. This tool begins by classifying the areas for environmental performance evaluation. The first evaluation area is the management system itself; the second is the operational systems; and the third is the state of the environment. Each area will consider inputs, processes and outputs and can be subdivided into a series of sub-categories. In the management systems area for example there might be a series of subdivisions that match the elements in the EMS standard.

The recognition that these three areas are linked rather than discrete is also important. When looking at the inputs and outputs from an operational system there will inevitably be a consideration of the state of the environment. The same holds true for management systems. Decisions based on EMS policies must be viewed in the context of their relationship to the state of the environment.

The tool for defining or selecting EPIs includes a way to classify them, ways to validate them, and criteria for selection.

Classifications include:

Absolute:	basic data without interpretation
Relative:	compares the data from one parameter against another
Index:	a consolidation of data placed on a con-structed scale, usually 1 to 100
Aggregated:	a collection of data from related factors or of the same factor from different sites; aggre-gates often highlight accumulative concerns not evident from single datum
Weighed:	placing a value judgment on different data for comparative or cumulative purposes

Validation criteria include:

Scientifically valid:	technically sound, verifiable and reproducible
Representative:	representing a general condition or issue
Responsive to change:	capable of indicating trends within an acceptable time frame
Predictive:	capable of indicating future trends
Targeted:	capable of being compared to a target for comparative purposes
Cost effective:	the cost of obtaining the data must not exceed their value
Adequacy/availability:	must serve the purpose and be reliably available
Relevant:	must serve the organization's objectives
Understandable:	clear and understandable to non specialists

Selection criteria include:

- Indicators should be simple and understandable
- There should be a minimum number of indicators to provide the necessary information
- Indicators should be quantitative wherever possible and justifiably qualitative where not
- Indicators should be related to financial measures

Defining the scope of an EPE process is not dissimilar from the scoping exercise involved in life cycle assessment. An organization must define the boundaries of what it will measure. How far outside its own fences will it attempt to assess and measure the impact or potential impact of its activities? It may decide to limit the scope to measuring only those activities within its fences over which it has control.

The application of the EPE process draws largely on good quality management practices. The process should allow for the collection, filing or data entry, storage, maintenance, retrieval and disposition of information. As well there must be appropriate procedures in place to ensure data quality. The sampling protocols, test methodologies and modeling techniques must be valid and accepted; the test equipment must be calibrated and the data and processes must be periodically verified. With good data the organization is in a position to analyze and evaluate its performance. Any evaluation should of course always look for root cause and not simply respond with corrective measures. The philosophy should be that of taking preventive action rather than responding to crisis.

The information generated by the EPE process will be used for internal purposes to ensure that the organization remains in compliance with its legal requirements as well as with it own policies objectives and targets. It will also be used in the review process to provide the basis for recommendations for improvement and change. As mentioned earlier, it also provides the information and framework necessary for mandatory as well as voluntary external reporting.

What Can It Do?

Provide credible information: Using a rigorous quality assurance approach to information gathering, maintenance and dissemina-

tion the EPE process can assure the information generated is the right information and that it is credible.

Provide a systematic approach: An EPE can help organizations avoid redundant data and departmental overlap in operations by promoting integrated, company-wide information systems capable of gathering salient details for both compliance and strategic management purposes.

Enable benchmarking: Good environmental performance information is repeatable and comparable. It provides the basis for benchmarking analyses and for understanding trends. An organization may wish to do this internally over time or it may wish to work within its sector to benchmark itself against its competitors. EPE thus enables competitive analysis.

Help identify problems: If you can't see it, if you don't know about it, you don't see it as a problem. But it may still represent a risk or liability. A systematic approach to generating and reporting environmental performance information will help to identify problems early on when they are still manageable.

Facilitate Improvement: Good performance information provides an understanding of where improvement is possible, the parameters within which it can take place and the means for assessing its achievement.

Identify savings: Good information allows for the identification of waste and process inefficiencies. Reducing or eliminating these produces costs savings. The information generated by the EPE identifies savings opportunities.

Facilitate Reporting: One of the major obstacles confronted by organizations that consider voluntary external reporting is the lack of good information. With a good information system in place reporting becomes feasible and cost effective.

What It Cannot Do

Does not provide common performance standards: The ISO EPE process standard is a systems standard in support of the EMS standard. It does not provide common performance standards. The scope of TC 207 prohibits it from developing limit values or performance levels.

Does not provide a common set of indicators: The standard provides a rigorous methodology for the definition and selection of indicators rather than the indicators themselves. Common indicators may evolve over time. The EPE guidance is designed to catalyze this process.

Will not solve environmental problems: The EPE standard is about the credible generation of information. This information can contribute significantly to solving environmental problems but in and of itself, it is not the solution.

Does not provide a greater level of certainty: The EPE process will provide more credible and consistent information about environmental performance, but it will not provide a greater level of scientific certainty about environmental impact. What it should do is clearly identify where uncertainty exists and the basis for this uncertainty.

Chapter 9:

The Challenge Ahead: Voluntary Standards and Sustainability

In the same way that lax environmental standards are regarded by some as a subsidy to domestic producers, lax social standards are targeted by many groups as unfair "social subsidies".

Source: Runnalls, D. and A. Cosbey.1992. Trade and Sustainable Development: A New Research Agenda. IISD, Winnipeg. p. 31.

Understanding the Trends

The sustainability trilogy of economic, social, and environmental issues is increasingly affecting how organizations do business. This is equally true for resource extractive industries such as forestry or mining as it is for heavy manufacturing industries. Municipalities and government departments are also affected. The major influences on organizations include public confidence, capital markets, regulations, peer pressure, competitive position, and litigation.

But the influences are more complex than in the past. The range of stakeholders has expanded from traditional groups to include emerging interests. Business is being asked to respond by expanding its corporate accountability beyond traditional stakeholders to meet the needs of this emerging group and those of surrogate stakeholders such as future generations and the world biosphere (including world population).

Increasingly, these stakeholders are concerned about the economic, social and environmental performance of a business. They want to see more than regulatory compliance. They want a corporate-wide internationalization of responsibility. Administrative, organizational, and managerial issues may thus be every bit as important as legal and regulatory issues. To address these issues, organizations will have to adopt systems thinking to promote the integration of many different considerations in its decision-making.

Central to the sustainable development debate are deliberations about how to make it operational. Although some treat sustainable development as an impractical philosophy and others reduce it to a matter of environmental responsibility, it has surprised many by its robustness. It brings together people of many different persuasions. But not all of them recognize the equity dimension which includes such issues as ensuring fair trade, and improving the distribution of income and wealth. Many firms and industries believe that as the engines of economic activity contributing to social wealth and welfare, they have fulfilled their responsibilities. But in fact, their actions can have much wider implications. With its capacity to innovate, business is often a trend-setter in social responsibility. The benefits provided to employees and host communities constitute social programs in the broadest sense. The need to make this component of an organization's activities explicit is every bit as important as the need to have voluntary systems in place for corporate environmental management, quality management, and financial management.

Business has a self-interest in assessing its responsibility to people and communities. A combination of high unemployment and high public sector debt is not conducive to business development. The need for jobs, income maintenance, and poverty alleviation is felt by the business community as it is by all other sectors in the society.

Voluntary Standards and Sustainability

With standards so frequently the key to winning new business, or gaining entry to lucrative new markets, it is understanding and effectively managing the standards which affect your business that is crucial if you are to fully exploit their potential.

Source: British Standards Institution. 1993. Profit from Standards. London.

Corporations and organizations of all types are concerned about good management principles, practices and systems. Traditionally these principles and systems are drawn from financial and quality management studies where a vast literature exists in accounting, commerce, and engineering. Along with other benefits, they facilitate the auditing of an organization for compliance with legislation or professionally designated guidelines or standards. Management principles and systems also provide a framework within which a standards setting body can promote a certification or registration program. Companies

which meet the standard receive a certificate of compliance. This supports a company's claim that it is meeting a given level of performance.

The general success of voluntary standards in quality assurance, the ISO 9000 series, has raised the expectation that they may also be successfully applied to other areas of activity. ISO TC 207 has taken on this challenge and is developing a uniform approach to management systems that can be adopted world-wide. We have looked at these standards in some detail. At the beginning of the TC 207 process, it was recognized by some members of the committee that a higher level management document was needed that goes beyond quality and environmental management. It is unlikely that such a document will be produced in the foreseeable future. Environmental issues will dominate new management responsibilities in the short term.

This is because business and industry discussions about standards and environmental management tend to focus on the positive and negative effects of their activities on the biophysical environment. As previously noted, the effects of business decisions on people and their communities are also important, although frequently neglected. Corporate decisions affect employment, training, and resource use—factors that have long term community implications.

Businesses often address these types of considerations through human resource management programs and other initiatives. Programs are routinely developed for pay and employment equity, community-sensitive procurement practices, safety, job security, income security, pay and benefits, maternity and parental benefits, day care, community employment opportunities, training, and labor-management relations. But, although many sound programs are already in place, they are usually not reported on in a fashion amenable to stakeholder scrutiny. They cannot, for example, be audited against an industry-consensus standard. As interest in sustainability practices grows, corporations can anticipate increasing public and regulatory review of their human resource and social performance.

> For an organization interested in sustainable development, the first challenge is to recognize that environmental management is not by itself sustainable development.

For an organization interested in sustainable development, the first chal-

lenge is to recognize that environmental management is not by itself sustainable development. There are social as well as environmental limits to growth and development. This means that standards for environmental management can only be part of an organization's response to the goal of sustainable development. While this report has focused largely on environmental initiatives, other initiatives affecting social welfare are required in a bona fide sustainability strategy. Because sustainability requires an integrated approach to decision making, the economic, human and environmental implications of decisions must be understood.

The question of whether and how organizations can meet the sustainability challenges needs to be raised. More research is required on what a "sustainable" organization is and how this relates to more traditional views of organizations as necessarily seeking efficiency and survival. The idea that an organization may have a specific niche suggests that organizations have to adapt to a number of external controls, including controls relating to biophysical and social limits.

Standards, Trade and Environmental Management

Two broad perspectives are evident in the trade and sustainable development debate. One group advocates freer trade and argues that this will increase net economic welfare at the global level thus offsetting environmental and social costs. The other group believes that freer trade will not by itself ensure better social welfare, environmental protection or natural resource management. Whatever the merits of the debate, the key sustainability issue is to ensure that resources are managed in a sustainable manner. Because trade policy can be used as a mechanism to control economic, social and environmental costs and benefits, both groups have an interest in how standards are developed. For some, low standards may lead to "pollution havens", particularly in the developing world. For others, high standards may be seen as an unfair non-tariff barrier to trade imposed by the developed world. Some also argue that higher standards will emerge as world trade expands. The process of setting standards thus comes into question. Standards can be developed by both the public and private-sectors and fall into two different camps: technical and managerial. Technical standards may be developed by governments as part of a legislative and regulatory process. Failure to comply with a regulated standard may lead to a fine, the closure of operations and, occasionally, imprisonment. It is generally agreed that regulatory standards are

required to protect the public interest in areas as diverse as consumer protection, human health and safety, and financial reporting. It is also recognized that it is not desirable, feasible or necessary for governments to regulate every area of business activity. Industry is thus free to develop its own consensus-based standards, that is, voluntary standards, to promote its own activities. Industry has developed both technical standards for products (electrical specifications, timber grades, etc.) and management system standards (including quality management). Much of the current debate centres on the role harmonized or equivalent standards can play in reducing trade-induced environmental impacts. Among the key issues requiring consideration are transboundary and global environmental threats, market access for developing countries to support sustainable development, and dispute resolution.

Standards, Trade, Health and Social Welfare

The challenge of how a company can be assured that it is complying with its environmental policy and objectives and how it can demonstrate such compliance to others is being met with environmental standards. In response to such difficulties, there has been a remarkable growth of interest in corporate environmental management systems (EMS). This interest, however, tends to respond to only one of the three dimensions of the sustainability problematic, that of the biophysical environment. A business or industry with a first rate EMS cannot make claims about sustainability on the basis of its commitment to the biophysical environment alone. Thus, a management system which documents the biophysical environmental effects of its activities, products and services but overlooks their social effects is not managing for sustainability.

Ultimately, a business, industry or organization will need to assure itself that it is complying with a given sustainability policy and that it can demonstrate this compliance to others. To achieve this, the international community will have to agree on sustainability criteria, a difficult albeit essential challenge. The international community will need to recognize that sustainable development is not, by itself, the management of environmental impacts and effects. It also includes impacts and effects on health and social welfare. We believe that the current standards-environmental management debate can become even more productive by expanding it to deal with sustainable development.

The growth of labor, human rights, anti-poverty and environmental movements provide ample testimony that people are concerned about their working conditions, incomes, natural resource base, and environmental protection. Social considerations raise questions about the fairness of an organizations' economic activities. Companies routinely make decisions about issues of race, gender, health, safety, employment, promotions, layoffs, and retirement. They deal with livelihoods, human welfare, equity, quality of life, community-sensitive procurement practices, animal welfare, risk management, job security, income security, pay and benefits, community employment opportunities, emergency responses, understanding of company activities, human resources, and collective bargaining. However, these issues are not fully integrated into the economic and environmental decisions that companies also make. A management system that incorporates sustainable development principles would begin to integrate all of these issues.

Overlooking the social dimension of sustainability is short-sighted from a public interest perspective. Increasingly, the demands of stakeholders concerned with the impact of corporate decisions on social life will have to be accommodated. While environmental management is a key determinant of sustainable development, corporate performance on issues such as human resource management, human rights, employment, labor-management relations, and community development are also important. The growing need of business to develop a comprehensive and integrated management system that takes into account economic, social and environmental issues is an implicit reflection of society's interest in sustainable development. A voluntary management system for sustainable development could improve corporate performance. By focusing on corporate policy, objectives, systems, reporting, auditing, and performance for social and environmental issues—as well as for economic (financial) issues—business and industry could achieve an integrated approach to management that is currently lacking. New management systems, however, require a better understanding of the relationship between social development and sustainability. They require organizations to consider the benefits that will accrue to business in making management strategies proactive around social benefits such as human resource development and community improvement.

Principles of Sustainable Performance

1. Sustainable performance is a process of systems thinking, analysis, and integration that requires that the organization be understood and managed as a system.

2. Sustainable performance is an ecologically interdependent process and requires that all organizational processes, products, and services be revised or replaced to ensure their compatibility with nature's ecosystems.

3. Sustainable performance is a results-oriented process and requires the demonstrated commitment of organizational leaders to specific, measurable results.

4. Sustainable performance is a community-building process. This requires organizations to co-operate with one another and use the environment in ways that are equitable for one another. This also requires that organizations involve all their stakeholders in the processes of planning and implementing sustainable performance.

5. Sustainable performance is a limiting process. It requires that organizations recognize that there are costs associated with the earth's resources and ecosystems that must be included in the organization's accounting processes and which will place limits on the size and nature of their businesses.

6. Sustainable performance is an open process and requires that organizations communicate fully all aspects of their planned and actual environmental performance to all the organizations' stakeholders.

7. Sustainable performance is a process of continuous improvement of every aspect of an organization's performance and requires the full involvement of every member of the work force.

8. Sustainable performance is a data-based process and requires concrete information retrieved from auditing, measuring, and reporting the organizations' environmental performance.

9. Sustainable performance is a technologically dependent process and requires organizations to develop partnerships

with governments, other organizations, educational entities, research and development sources, suppliers, and customers in order to discover and implement ways to improve sustainable performance.

10. Sustainable performance is a total organizational process and requires that all planning, decision making, and human resource systems be made fully congruent with the organization's commitment to sustainable performance.

Source: Kinlaw, D. 1993. Competitive and Green: Sustainable Performance in the Environmental Age. San Diego. Pfeiffer and Company. pp. 28-29.

The Challenge Ahead

Everywhere, people and communities are claiming a right to a safe and healthy environment and society. Businesses are increasingly being asked to actively promote environmental as well as human resource and social issues as part of their operational freedom in society. To this end, industry is developing voluntary environmental standards to provide corporations and other organizations with sound guidance and direction about their environmental performance.

Sustainable development takes into consideration economic, social, and environmental concerns. It is increasingly an overall objective of many businesses and government bodies around the world. The World Business Council for Sustainable Development as well as the International Chamber of Commerce and many other industry bodies have stated that they support sustainable development. This support is being expressed in the development of voluntary standards for environmental management. A full agenda for sustainable development, however, would require a similar effort on issues of human well-being.

Standardization facilitates a number of objectives common to many public and private-sector organizations. Now that voluntary standards developers are more involved in systems and other issues that bring them increasingly into the public policy forum they face, in addition to expanding the scope of their activities in the area of sustainable development, at least three major challenges:

- Process: the voluntary standards writing process is rigorous and complex but, at least internationally, it does not allow the same level of participation to all potential interested parties. In sensitive public issue debates is this adequate? Industry, because of its financial resources and pools of expertise has tended to dominate certain negotiations. Regardless of the integrity of the industry representatives and the balance of personal perspectives, the public perception is that access is difficult and unequal. On the other hand, if the voluntary standards development process is made more open, will industry be less supportive?

- Performance: ISO 14000 does not contain environmental performance standards. Yet many of the stakeholders involved in the process, especially those interest groups who feel they do not have full access to the process, feel that the real issue is performance standards. Should the ISO respond to this concern? Is the ISO the right body to respond to this concern?

- Public/private mandate: How far into the area of public issues should voluntary standards writers go? Traditionally they have worked very closely with governments and regulatory bodies and in many cases developed standards to be cited in regulation on their behalf. When the stated aim of a standard is to remain voluntary and unregulated and the issue is of major public concern are they setting themselves up as competitors of public policy makers. If voluntary standards writers are taking on this self-regulatory, public policy character should they reconsider their relationship with governments?

The development of environmental management systems and ISO 14000 has been undertaken in response to increasing pressures for better environmental and sustainable development performance.

These pressures can only intensify, as humanity's impact on the global ecosystem increases with population and economic growth.

Even though the ISO 14000 standards are only now being implemented, it is fair to assume that they will evolve further, to address the sustainability issues mentioned above.

Appendix 1:
TC 207 Memberships

Participating Members

Argentina

Australia

Austria

Belgium

Brazil

Canada

Chile

China

Columbia

Cuba

Czech Republic

Denmark

Ecuador

Finland

France

Germany

India

Indonesia

Israel

India

Jamaica

Japan

Kenya

Korea

Malaysia

Mauritius

Mexico

Mongolia

Netherlands

New Zealand

Norway

Philippines

Romania

Russian Federation

Singapore

South Africa

Spain

Sweden

Switzerland

Tanzania

Thailand

Trinidad and Tobago

Turkey

Ukraine

United Kingdom

Uruguay

USA

Venezuela

Zimbabwe

Observer Members

Algeria	Lithuania
Barbados	Poland
Croatia	Portugal
Egypt	Slovakia
Estonia	Slovenia
Greece	Sri Lanka
Hong Kong	Viet Nam
Iceland	Yugoslavia
Libya	

Liaison Members

Asian Productivity Organization

European Chemical Industry Council

Consumers International

Environmental Defense Fund

European Environmental Bureau

European Apparel and Textile Organization

Friends of the Earth International

International Chamber of Commerce

International Council on Metals and the Environment

International Federation of Organic Agricultural Movement

International Institute for Sustainable Development

International Iron and Steel Institute

Industrial Minerals Association

International Network for Environmental Management

International Primary Aluminum Institute

International Trade Centre

National Wildlife Federation

Organization for Economic Cooperation and Development

Sierra Club

United Nations Conference on Trade and Development

United Nations Environment Program

World Wide Fund for Nature

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www.cris.com/~isogroup/14000.html/ - ISO 9000/QS 9000 (this is a link from the ISO homepage).

www.iso14000.com/ - ISO 14000 InfoCenter.

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www.quality.co.uk/quality/iso14000.htm - International Standard 14000, from the Quality Network.

www.iisd1.iisd.ca - International Institute for Sustainable Development — IISDnet.

Related IISD Publications

Business Strategy for Sustainable Development: Leadership and Accountability for the '90s	$35.00
EarthEnterprise™ Tool Kit	$30.00
Making Budgets Green — Leading Practices in Taxation and Subsidy Reform	$20.00
Green Budget Reform: An International Casebook of Leading Practices	$39.95
Protecting the Environment and Reducing Canada's Deficit: Action Plan on Where to Start	$5.00
Employment and Sustainable Development: Opportunities for Canada	N/A
Performance Measurement for Sustainable Development: A Compendium of Experts, Initiatives and Publications	$23.00
Indicators for Sustainable Management of Tourism: Report of the International Working Group on Indicators of Sustainable Tourism to the Environment Committee, World Tourism Organization	$4.00
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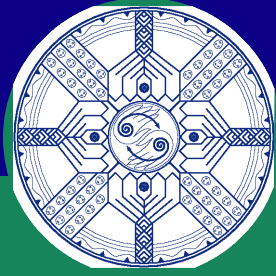City/Province/Country: _____

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To be sustainable, development must improve economic efficiency, protect and restore ecological systems, and enhance the well-being of all peoples.

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