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**INTERNATIONAL STANDARDS ON
ENVIRONMENTAL MANAGEMENT SYSTEMS (EMS)**

**ISO 14000 SERIES:
Implications for Developing
Countries' International Trade**

Contents

The subjects and documents included

The main purpose of the series

The EMS Specification Standard: ISO 14001

The EMS Guidance Standard: 14004

The Environmental Auditing Standards

The Environmental Labelling Standards

Implications for developing countries

The UNIDO survey on the trade implications of ISO 9000/ISO 14000 series

Recommended bibliography

The subjects and documents included

The International Organization for Standardization (ISO) which is the apex body in the world concerning standardization is now completing the preparatory work of the first international standards on environmental management systems.

More than 11 000 standards published, ISO membership comprises the national standards institutes of 120 countries.

The initial documents of the 14000 series which are expected to be published before the end of 1996 are the following:

ISO 14001	Environmental management systems - Specifications with guidance for use
ISO 14004	Environmental management systems - General guidelines on environmental management principles, systems and supporting techniques
ISO 14010	Guidelines for environmental auditing - General principles
ISO 14011.1	Guidelines for environmental auditing - Audit procedures - Part 1: Auditing of environmental management systems
ISO 14012	Guidelines for environmental auditing - Qualification criteria for environmental auditors

These are the organization-oriented standards in the ISO 14000 series and constitute their core documents that will provide guidance to company managers and specialized staff on the establishment, maintenance, auditing and continual improvement of an environmental management system.

The ISO Technical Committee TC 207 is responsible for developing the environmental management standards. It works through working groups (WG) and sub-committees (SC) which cover the following topics/areas:

WG1	Environmental Aspects in Product Standards
<i>SC1</i>	<i>Environmental Management Systems</i>
WG1	Specification
WG2	General Guidance
<i>SC2</i>	<i>Environmental Auditing and Related Environmental Investigations</i>
WG1	General Principles
WG2	Audit Procedures
WG3	Qualification Criteria for Environmental Auditors
WG4	Environmental Site Assessments
<i>SC3</i>	<i>Environmental Labelling</i>
WG1	Practitioner Programmes
WG2	Environmental Claims
WG3	Basic Principles
<i>SC4</i>	<i>Environmental Performance Evaluation</i>
WG1	Evaluation of the Environmental Performance of the Management System and its Relationship to the Environment
WG2	Evaluation of the Environmental Performance of the Operational System and its Relationship to the Environment
<i>SC5</i>	<i>Life Cycle Assessment</i>
WG1	General Principles and Procedures
WG2	Life Cycle Inventory Analysis - General
WG3	Life Cycle Inventory Analysis
WG4	Life Cycle Impact Assessment
WG5	Life Cycle Assessment Interpretation
<i>SC6</i>	<i>Terms and Definitions</i>
SC1	ISO 1400 - 14009 (Environmental

The standards produced by the various sub-committees of TC 207 will correspond to the following pre-assigned number ranges (which justifies the generic denomination of ISO 14000 series standards):

Management Systems)

SC2	ISO 14010 - 14019 (Environmental auditing)	ISO 14022	Environmental labels and declarations - Symbols
SC3	ISO 14020 - 14029 (Environmental labelling)	ISO 14031	Environmental performance evaluation
SC4	ISO 14030 - 14039 (Environmental performance evaluation)	ISO 14023	Environmental labels and declarations - Testing and verification methodologies
SC5	ISO 14040 - 14049 (Life cycle assessment)	ISO 14042	Life cycle assessment - Impact assessment
SC6	ISO 14050 - 14059 (Terms and definitions)	ISO 14043	Life cycle assessment - Life cycle interpretation
WG1	ISO 14060 (Environmental aspects in product standards)		

In addition to the documents that will be released at the end of 1996, the work in progress includes the following standards which, at the moment, are at the draft or preparatory stage:

ISO 14040	Life cycle assessment - Guiding principles and framework
Guide 64	Environment aspects of product standards
ISO 14020	Environmental labels and declarations - Basic principles of all environmental labelling
ISO 14021	Environmental labels and declarations - Self declaration - Environmental claims - Terms and definitions
ISO 14024	Environmental labels and declarations - Practitioner programmes - Guiding principles, practices and certification procedures of multiple criteria (type 1) programmes
ISO 14041	Life Cycle Assessment - Goal and definition/scope and inventory assessment
ISO 14050	Terms and definitions

Another standard that will probably be included in the work programme of TC 207 refers to EMS guidance for small and medium size enterprises. These standards may be finalized between 1997 and the year 2000.

The guiding principles of the ISO TC 207 Environmental Management include transparency and a broad participation in its activities of all the interested parties including representatives of developing countries, small and medium enterprises, industries, government, consumers, traders, environmental groups, science and technology and the legal profession. This explains in part the relative slowness of this TC in delivering the first international standards (TC 207 was created in 1993 in response to the increased awareness of the need to take urgent action to preserve the environment resulting from the United Nations Conference on Environment and Development or Earth Summit which met in Rio de Janeiro in June 1992) which are adopted through a consensual and transparent process. This slow but effective procedure should then facilitate the adoption and implementation at national level. The most recent meeting of TC 207 took place in Rio de Janeiro, Brazil, in June 1996, with a significant participation of developing country representatives.

The main purpose of the series

The main purpose of the ISO 14000 series standards is to promote a more effective and efficient environmental management in

organizations and the provision of useful and usable tools (cost-effective, systems-based, flexible, based on the best organizational practices

available) for gathering, interpreting and communicating environmentally relevant information, the end result of which should be the improvement of environmental performance.

For enterprises and organizations in developing countries, economies in transition and newly industrialized countries, the ISO 14000 series standards represent an opportunity for technology transfer in the form of a guidance tool for introducing/adopting an environmental management system based on the best universal practices, in the same way as the ISO 9000 series

represented the same kind of opportunity for technology transfer of the best quality management practices available.

The EMS Specification Standard: ISO 14001

The organization-related ISO 14000 standards: ISO 14001 Environmental Management Systems - Specification with guidance for use - contains the requirements of a sound environmental management system (in the same way as ISO 9001 contains the requirements of a sound quality management system).

The ISO 14001 requirements include the following core elements:

- 1. Environmental policy**
- 2. Planning**
- 3. Implementation and operation**
- 4. Control phase**
- 5. Management review**

These phases correspond to the universally known basic principles of continuous improvement formulated by D. Edward Deming (Plan, Do, Check, Action or PDCA cycle) which are at the root of the total quality management (TQM) methodology.

The ISO 14001 standard is applicable to any organization (either public or private enterprise, company, firm, institution or operational unit within an organization) aiming at:

- < implementing, maintaining and improving an environmental management system;
- < assuring itself of its conformance with its

stated environmental policy;

- < demonstrating such conformance to others, either through an independent, third party; certification/registration of its environmental management system; or through a self declaration of conformance with the standard.

The ISO 9000 series on quality management system are mainly focused on ensuring full satisfaction of customer needs, for which 20 requirements are specified in the ISO 9001 standard. The ISO 14000 series on environmental management systems address the needs of a broad range of interested parties and the society's needs to protect the environment, for which the organization has to follow five key requirements as specified in the ISO 14001 standards, as follows:

1. Environmental policy
2. Planning
 - 2.1 Environmental aspects
 - 2.2 Legal and other requirements
 - 2.3 Objectives and targets
 - 2.4 Environmental management programme(s)
3. Implementation and operation
 - 3.1 Structure and responsibility
 - 3.2 Training, awareness and competence
 - 3.3 Communication
 - 3.4 Environmental management system documentation
 - 3.5 Document control

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- 3.6 Operational control
 - 3.7 Emergency preparedness and response
 - 4. Checking and corrective action
 - 4.1 Monitoring and measurement
 - 4.2 Non conformance and corrective and preventive action
 - 4.3 Records
 - 4.4 Environmental management system audit
 - 5. Management review

< “When establishing and reviewing its objectives, an organization shall consider the legal and other requirements, its significant environmental aspects, its technological options and its financial, operational and business requirements, and the views of interested parties.”

< “The objectives and targets shall be consistent with the environmental policy, including the commitment to prevention of pollution.”

As can be seen, there are many similarities between ISO 9000 and ISO 14000 requirements in areas such as policy, programme, training, documentation, document control, non-conformance, corrective and preventive actions, records, audits and management reviews. Furthermore, certification or registration by a third party is a common feature of both standards.

Each of the above requirements are briefly explained in ISO 14001 which gives details only on *what* should be done but not on *how* to be done (as is the case in ISO 9001). For example, concerning the requirement 2.3 *Objectives and Targets*, the document establishes that:

< “The organization shall establish and maintain documented environmental objectives and targets, at each relevant function and level within the organization.”

However, the number of ISO 9000 certificates issued worldwide was around 130,000 in almost 100 countries by mid 1996, while certification/ registration to ISO 14000 (or to its predecessor the British Standard BS 7750-1994) is in its infancy at this moment despite the fact that about 300 organizations in the Netherlands, Germany, R. of Korea, Denmark, the United Kingdom, Japan, Canada, Australia and the USA have already got certification to the environmental standard. In Thailand, a pilot group of 10 companies/organizations are getting prepared for certification to ISO 14000, and training in this field is on the way under the guidance of the Thailand Business Council for Sustainable Development (TBCSD), the Thai Environmental Institute (TEI) and the Thailand Industrial Standards Institution (TISI). Under this programme, TISI may eventually accredit TEI as certification body for ISO 14000.

The EMS Guidance Standard: ISO 14004

On the other hand, the guidance standard *ISO 14004: Environmental Management Systems - General guidelines on principles, systems and supporting techniques* is intended to provide guidance on the development and implementation of environmental management systems and principles, and their coordination with other management systems. It contains a wealth of ideas, principles, examples, indications and practical help sections presented in such a way that it constitutes a complete orientation handbook to guide company managers in their efforts to introduce ISO 14000 in their organizations. For

example, the section concerning Internal Performance Criteria (4.2.4) the Practical Help examples of areas where an organization can have internal performance criteria include:

- management systems,
- employee responsibilities,
- acquisition, property management and divestiture;
- suppliers,
- contractors,
- product stewardship,
- environmental communications,

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- regulatory relationships,
 - environmental incident response and preparedness,
 - environmental awareness and training,
 - environmental measurement and improvement,
 - process risk reduction,
 - prevention of pollution and resource conservation,
 - capital projects,
 - process change,
 - hazardous material management,
 - waste management,
 - water management (e.g. waste, storm,

- ground),
- air quality management,
- energy management, and
- transportation

This standard is equivalent to ISO 9004-1: 1994 "Quality Management and Quality System Elements - Part 1: Guidelines" which provides guidance needed for correct implementation of quality management systems within an organization. Consequently, this standard is not apt for certifications purposes.

The Environmental Auditing Standards

The *environmental auditing standards* consist of a set of guidelines for environmental auditing including general principles (ISO 14010), audit procedures for EMS (ISO 14011.1) and

qualification criteria for environmental auditing (ISO 14012). Furthermore, ISO 14031 will provide guidelines for environmental performance evaluation.

The Environmental Labelling Standards

The *product oriented environmental standards* include the critical area of environmental labelling (eco-labelling) and its concomitant life cycle assessment principles and practices. Unfortunately, standards in this area are not expected to be finalized soon due to the difficulties in reaching consensus among the various interested parties. These include exporters in developing countries who are facing

market access difficulties due to eco-labelling criteria established in industrialized countries for products originating in developing countries such as textiles and clothing, leather and leather products, wood and wooden products, etc. (See the ITC Export Quality bulletin No. 48 of February 1996 on Eco-labelling and other environmental quality requirements in textiles and clothing).

Implications for developing countries

The lack of international standards and guidelines in this area has led to a situation in which eco-labelling schemes are being established in many countries and regions (see the ITC Export Quality bulletins Nos. 40 and 42 of February and July 1994 which include profiles of about 20 different eco-labelling schemes) and consumers are faced with proliferation of environmental labels and claims affixed to the products or their packages. It is expected that international

standards in this area will improve the existing situation and promote transparency and participation of all interested parties in the area of eco-labelling.

On the other hand, life cycle assessment or cradle to grave analysis (the environmental impacts of a product from its conception to its production, packaging, transportation, use and disposal), on which most eco-labelling schemes

are based, impose burdens to developing country exports on the grounds of non-environmentally friendly production stages which, however, may not have any repercussion in the end product when it reaches its intended market. These kind of difficulties will have to be considered by the international standards on eco-labelling principles and life-cycle assessment in order to ensure transparency, non-discriminatory treatment and full participation of all parties involved.

“ Other implications for developing country exporters

International standards are voluntary by definition. Therefore, the adoption of ISO 14000 series standards will respond to voluntarily adopted company policies aimed at avoiding pollution and waste and at becoming more efficient and competitive while respecting the environment. According to a recent report on ISO 14000 standards by the UNDP's Private Sector Development Programme,^{1/} these standards will help create a more environmentally

international credibility and to facilitate mutual recognition of certification.

The needs of developing countries with respect to the application of ISO 14000 standards include the provision - by both the public and the private sector - of financial and technical assistance to build up local infrastructure including information dissemination, awareness creation, training, consultancy, and the establishment of efficient and well recognized testing, inspection, certification and accreditation services, particularly through cooperative strategies within the private sector such as the sharing of know-how and technology among small and medium-sized enterprises.

1/ ISO 14000 Environmental Management Standards and Implications for Exporters to Developed Markets, United Nations Development Programme (UNDP), New York, 1996, Private Sector Development Programme (PSDP), One United Nations Plaza, TM 9th floor, New York, NY 10017, Tel: 212 697 3846, Fax: 212 697 50 58 (34 page A4 size report).

sensitive industrial culture, which will result in a more efficient use of raw and waste material, reduction of emissions and increased investment in pollution control, abatement and cleaner technologies. Furthermore, the report says that exporters in developing countries will most likely face pressure from their trading partners in industrial countries to implement an environmental management system according to ISO 14001 and to become certified. However, companies in developing countries in general will be confronted with obstacles to fulfill this requirement. These obstacles originate mainly from lack of capital and specialized skills, the lack of a local certification infrastructure and of an appropriate accreditation mechanism to ensure

The UNIDO Survey on the trade implications of ISO 9000/ ISO 14000 series

The United Nations Industrial Development Organization (UNIDO) is taking action to identify the potential effects on trade of developing countries of ISO 9000, ISO 14000 and eco-labelling and for this purpose convened an Expert Group Meeting in Vienna from 23 to 25 October 1995. The meeting was attended by 25 experts from developing countries and concerned international organizations. The need for international collaboration in this area was identified, particularly to assist the SMEs in developing countries to minimize the potential negative impacts of the standards in their accessibility to international markets. In fact, most of the issues presented in the above mentioned UNDP report were covered in this meeting. Furthermore, UNIDO is conducting a worldwide survey on the trade implications of these standards, in collaboration with ISO, RESOURCE Ltd. (Science and Technology Expertise) and ITC. The results of the survey are expected during 1997. However, the results of a preliminary survey, which were presented at the

Vienna Meeting are available in the following UNIDO publication: *Trade Implications of International Standards for Quality and Environmental Management Systems*. If you are interested in this publication please contact the United Nations Industrial Development Organization (UNIDO), Human Resources, Enterprise and Private Sector Development Division, Industrial Sectors and Environment Division, P.O. Box 300, 1400 Vienna, Tel: (431) 21131 3681/5090; Fax: (431) 21131 6840, e-mail: omaizza-neto@unido.org.

Complete and detailed information on the developments in ISO TC 207 activities on the ISO 14000 series of international standards is being produced and delivered directly by the ISO Secretariat through a publication that will be updated at appropriate intervals, which can be obtained through the ISO member bodies (which are operational in most of the developing countries) or the ISO Headquarters in Geneva.

Recommended bibliography

" From ISO

- C ISO 14001 Environmental Management Systems - Specifications with guidance for use
- C ISO 14004 Environmental Management Systems - General guidelines on principles, systems and supporting techniques
- C ISO 14010 Guidelines for environmental auditing, General principles
- C ISO 14011 Guidelines for environmental auditing - Audit procedures - Auditing of environmental management systems
- C ISO 14012 Guidelines for environmental auditing - Qualification criteria for environmental auditors
- C ISO Standards Compendium Environment - Water quality, 1994, 3 volumes: Vol. 1 General, 274 p., Sw F 121,00; Vol. 2 Chemical methods, 336 p., Sw F 139,00; Vol. 3 Physical, biological and microbiological methods; 226 p. Sw F 112,00
- C ISO Standards Compendium Environment - Air quality, 1994, 478 p., Sw F 188,00
- C ISO Standards Compendium Environment - Soil quality, 1994, 400 p., Sw F 166,00

" From ASQC Quality Press

- C The ISO 1400 handbook, 1996, 764 p., Joe Cascio, editor, item: H0929, US\$ 75,00
- C What is ISO 14000? Questions and answers, second edition, 1996, 44 p., item: H0923, US\$ 24,95
- C ISO 1400: A guide to the new environmental management standards, Tom Tibor with Ira Feldman, 1996, 237 p., item: P591, US\$ 35,00
- C Implementing ISO 14001, Marilyn R. Block, 1997, approx. 175 p., item: H0916, US\$ 38,00
- C ISO 14001 Certification: Environmental management systems, W.Lee Kuhre, 1995, 365 p., item: P601, US\$ 63,00
- C ISO 14010s Environmental Auditing: Tools and techniques for passing or performing

environmental audits, W.Lee Kuhre, 1996, 435 p., item: P602, US\$ 63,00

" From the Canadian Standards Association (CSA)

- C Requirements for the competence of environment laboratories, ref: CAN/CSA-Z753-95, Can\$ 52,00
- C Guideline for pollution prevention, ref: Z754-94, Can\$ 40,00
- C Life cycle assessment, ref: Z760-94, Can\$ 40,00
- C Guideline on environmental labelling, ref: Z761-93, Can\$ 59,00
- C Design for the environment (DFE), ref: Z762-95, Can\$ 59,00
- C Introduction to environmental risk assessment studies, ref: Z763-96, Can\$ 40,00
- C Environmentally responsible procurement ("green procurement"), ref: Z766-95, Can\$ 30,00
- C User's guide to life cycle assessment: conceptual LCA in practice, ref: PLUS 1107, Can\$ 44,00
- C Life cycle review (LCR), ref: PLUS 1115, Can\$ 44,00
- C Competing leaner, keener and greener: a small business guide to ISO 14000, ref: PLUS 1117, Can\$ 30,00
- C Companion instructor's guide to PLUS 1117, ref: PLUS 1118, Can\$ 250,00
- C Reporting on environmental performance, PLUS 1131, ref: Z763-96, Can\$ 4500
- C ISO 14000 essentials handbook, ref: PLUS 14000, Can\$ 42,00

" From the United Nations Environment Programme (UNEP)

- C Cleaner production: a guide to sources of information, 1996, US\$ 10,00
- C Life Cycle Assessment: what is it and how to do it, 1996, US\$ 40,00

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|---|---|---|--|
| C | Cleaner production - a training resource package, first edition, 1996, US\$ 120,00 (English, Spanish) | C | Eco-efficiency and cleaner production: charting the course to sustainability (a UNEP IE/WBCSD joint publication) |
| C | Trainers workbook on cleaner production in leather tanning, first edition, 1996, US\$ 120,00 | C | UNEP/ICC/FIDIC Environmental Management System- training resource kit, US\$ 190,00 |
| C | Trainers workbook on cleaner production in the brewing industry, first edition, 1996, US\$ 100,00 | | |
| C | Trainers workbook on cleaner production in textile wet processing, August 1995, US\$ 120,00 | | |

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