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**Developments in the Area of Environmental Management Standards
and their Implementation in the World**

Introduction

1. Over the last decade there has been an increase in awareness and involvement of industry in environmental issues. The role of industry has changed from complying with environmental legislation to actively implementing voluntary environmental standards.
2. The International Organization for Standardization (ISO) took on the task to develop International Environmental Management Standards back in the early nineties. ISO Technical Committee 207 (ISO/TC 207) "Environmental management" was established in 1993 to develop International Environmental Management Standards. There are presently more than twenty standards and technical reports in the ISO 14000 series, addressing Environmental Management Systems (EMS), Environmental Auditing (EA), Environmental Labelling (EL), Environmental Performance Evaluation (EPE), and Life Cycle Assessment (LCA). The most prominent of the EMS standards is ISO 14001, a voluntary EMS Specification standard, which is the only one in the 14000 series with the opportunity for third party certification.

The present document is circulated for information to delegates on the recent activities of ISO Technical Committee 207 "Environmental Management". It is prepared by Mr. Ahmad Husseini, Secretary to ISO TC 207 who is also contributing to Working Party activities as a Rapporteur on Quality.

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3. It is important to note that in the early nineties the European Commission introduced Eco-Management and Audit Scheme (EMAS). The main difference between these two systems is that the ISO approach focuses on continual improvement of the environmental management system, while the EMAS approach is more prescriptive and relates to improvement in environmental performance. EMAS also includes environmental public reporting, through environmental statements. This paper will focus on the implementation and response to ISO 14001 and the other ISO 14000 series of standards.

The ISO 14000 series of International Standards:

4. Organizations deal with competing priorities, balancing between the needs of industry, government and society. International Standards writers, in their efforts to respond to these needs, must carefully consider the interactions between these three elements. Industry is interested in this process in order to increase profit and stock values while implementing a responsible manufacturing process. Key needs of government relate to the protection of the environment, increased compliance with legislation, job creation and trade implications. Society is concerned about protecting the environment, job creation; reliable environmental reports and buying products that are reasonably priced. It is evident that these concerns can be addressed through the implementation of international standards, specifically ISO 14001. Certifying to ISO 14001 through third party registration only enhances the benefits mentioned above. Lately, industry has been discussing a triple bottom line concept. Simply put, it is testing formulas that would balance financial constraints with environmental performance costs, and societal needs. To a larger degree, industry has been testing successfully an approach known as Eco-Efficiency, which attempts to strike a balance between business and environmental needs.

5. There are two options open to an organization that wishes to conform to the requirements of ISO 14001; they can either self-declare or be certified through an independent third party audit. There are pros and cons to each scenario. If a company self-declares they will save the cost involved in certification, however, if an environmental incident occurs, they will probably need to exert more effort to convince the authorities that they have indeed been carrying out due process. Furthermore, if they are challenged by stakeholders, e.g. an Environmental Non-Governmental Organization (ENGO), they will likely need to submit documentation that proves that they have an EMS in place. On the other hand, if a company is certified to ISO 14001 and an environmental incident occurs such as a spill, they will probably follow their plans to rectify the situation quickly and be able to demonstrate that they have been following due process. The costs of implementing and certifying an EMS will depend on the size of the organization, its current state of preparedness, the number of environmental aspects that it has, and whether it has appropriate resources in house to manage the implementation. Rough figures suggest that the costs, which include internal preparations, range from \$20,000 to \$150,000.

6. The ISO 14000 series of standards provide a structure, a methodology and practical tools to help organizations of all types, in both public and private sectors, to manage the impact of their activities on the environment. They are for the CEO who is not satisfied with mere compliance with legislation. They are for the proactive manager with the breadth of vision to understand that implementing a strategic approach can bring a return on investment in environment-related measures. The benefits of this systematic approach are:

- reduced cost of waste management;
- savings in consumption of energy and materials;
- lower distribution costs;
- improved corporate image among regulators, customers and the public, and
- a framework for continuous improvement of environmental performance.

7. The basic philosophy is that the environmental management system is of central importance to an organization and that the other standards in the ISO 14000 series are intended to support specific elements of the organization's environmental policy. Essentially, ISO 14001 specifies the requirements of an environmental management system and can be used as a basis for certification of an organization's EMS. ISO 14004 provides guidance for the design, development, maintenance and improvement of an EMS in general, in addition to guidance specifically directed at ISO 14001.

8. Environmental audits are important management tools to assess whether an EMS is well implemented and maintained and conforms to specified requirements. ISO 14010 and ISO 14011 provide guidelines on the principles and conduct of environmental audits, and ISO 14012 provides the criteria for environmental auditors. In 2002 these environmental auditing standards (ISO 14010/14011/14012) will be replaced by the new ISO 19011, which was circulated as a Draft International Standard (ISO/DIS 19011) in June 2001. It is a joint auditing standard for quality and environmental management systems. ISO 14015, which was circulated for approval as a Final Draft International Standard (ISO/FDIS 14015) in July 2001 will be published by the end of 2001 will address the environmental assessment of sites and organizations.

9. Environmental labelling is a mechanism used by manufacturers and retailers to help consumers identify products that have a reduced impact on the environment. The increase in awareness and concern by consumers has necessitated the development of these labelling standards. The ISO 14020, ISO 14021, ISO 14024 and ISO 14025 standards address specific aspects of environmental labelling varying from self-declared environmental claims to third party verified Eco-Labelling schemes that provide an environmental "logo".

10. Organizations implementing ISO 14001 commit themselves to continually improve their environmental performance. ISO 14031, Environmental Performance Evaluation, provides guidance on how an organization can evaluate its environmental performance. Among others, guidance is given on the selection of suitable performance indicators to assess the actual performance against criteria set by management. Such information can, for example, be used as a basis for internal and external reporting on environmental performance. There has been an increase in the expectations of stakeholders for businesses to address environmental aspects as to enhance their environmental performance. This standard assists organizations in identifying their environmental aspects and aids in meeting their environmental goals, targets and objectives. As well it helps to improve management practices through increased efficiency and effectiveness and highlights strategic opportunities.

11. While ISO 14001 addresses the management of the environmental aspects of an organization's activities (production processes), products and services, Life Cycle Assessment (LCA) is a technique used to identify and evaluate the environmental aspects of products and services from raw materials to disposal (from cradle-to-grave). ISO 14040, ISO 14041, ISO 14042, and ISO 14043 provide guidelines on the principles and framework of LCA studies which provide an organization with information on their products, services and environmental significance to assist them in reducing the overall environmental impact.

12. The future Technical Report ISO/TR 14062 addresses Design for the Environment. It was developed to assist all types and sizes of organizations, irrespective of their location and the complexity of their products. It has proven to be a useful tool to both individuals involved in product development, policy and decision making as well as stakeholders. ISO/TR 14062 describes the concepts and state of the art related to the integration of environmental aspects in product development.

Why is ISO 14001 important?

13. As indicated above, the best known standard in the family is ISO 14001, specifying the requirements of an environmental management system (EMS). ISO 14001 provides the basis for independent certification of an organization's EMS. An ISO 14001-certified EMS provides confidence to external parties that an organization has control over the significant environmental aspects of its operational processes, and that it has committed itself to comply with all relevant environmental legislation and regulations and to continually improve its overall environmental performance.

14. An important principle of ISO 14001 is that it does not establish preset environmental performance requirements. The company must formulate its own environmental policy and therefore determines its own specific objectives and targets with respect to environmental performance. Skeptics see this as a weakness of ISO 14001. Promoters of the standard consider this as its strength: ISO 14001 provides a management tool to achieve the environmental objectives relevant to the processes, products and services of the organization, the applicable legislative framework and the views of interested parties in that specific situation. Therefore, ISO 14001 is really a management system standard that is applicable to any type of organization worldwide and does not need to be changed or adapted to local or regional circumstances.

15. What about the actual use of ISO 14001? This is often expressed as the number of ISO 14001 certificates issued worldwide. In fact, the number of ISO 14001 certificates issued is only one measure of the success of the ISO 14000 standards. In many cases companies choose to implement the standard without seeking a certificate. What really matters is not the piece of paper issued to certify an organization, rather the conformance with the ISO 14001 requirements (since this will help improve the organization's environmental performance).

16. At the end of November 2000, an estimated 22,000 ISO 14001 certificates had been issued in 97 countries, compared to 8,000 certificates in 72 countries at the end of 1998 and less than 300 certificates in 19 countries at the end of 1995.

17. As a rule of thumb, it is thought that for every one ISO 14001 certificate, there are ten organizations that have a self-declared ISO 14001 in place, are preparing for one, or are planning to implement in EMS in the near future. This translates into a brighter picture for ISO14001, with some 200,000 organizations in the world applying principles and approaches proposed in an EMS.

18. Japan has been one of the world leaders in implementing ISO 14001, perhaps in an effort to be more environmentally conscious due to some well-publicized disasters of the past, and to the pollution problems of its densely populated, industrial centres. In the case of the ISO 9000 quality standards, government authorities have been among the last sectors in many countries to discover the benefits of quality management systems. However, in the case of the environment, it is local government authorities who often have the responsibility of enforcing regulations. Signs are that local government authorities in Japan see in ISO 14001 implementation an effective means of controlling their own adverse impacts on the environment, as well as setting a good example to the industries and communities they serve. Local administrations are in the vanguard of organizations implementing ISO 14001. At the end of July 1999, 19 local authorities had achieved ISO 14001 certification and more than 100, including the Tokyo Metropolitan authority, which employs 13 000 persons, were engaged in, or planning, ISO 14001 implementation and certification programs. As a result, Japan is now the leader in the world with some 4,700 certifications to ISO 14001.

19. The second highest national total of ISO 14001 certificates issued is in Germany, which at the end of November 2000 had 2,400 certificates. While this total is a long way behind Japan, it has to be taken in context. ISO 14001 has also been very well accepted in the United Kingdom, Sweden, Taiwan and the Netherlands.

20. The EMAS (Eco-Management and Audit Scheme) is primarily used in the European Union. Out of all the European Union countries, Germany has by far the highest number of EMAS registrations – 2,600 out of 3671 certified EMAS schemes in the EU as of the end of November 2000.

21. The implementation of ISO 14001 has affected various industries around the world. The first financial service institute to receive certification of ISO 14001 was the Crédit Suisse Group in 1997. Since then they have extended their system to incorporate all banking operations worldwide. The company believes that good environmental practice and good financial performance go hand in hand. This philosophy has led them to request their partners and suppliers to also comply with common environmental standards, as well as to aid them in risk assessment. Although the many insurance companies are not certified to ISO 14001, some companies have started to lower premiums for organizations which are certified to the ISO 14001. They are providing a discount on product liability and comprehensive damage compensation policies with larger reductions for company wide certifications.

22. Other industries such as airports/airlines, mills, hospitals, nuclear power plants and the army have also taken an active role in implementing ISO 14001.

International Standards and Trade:

23. Although the International Environmental Standards mentioned above are voluntary, they have the potential to have a significant impact on trade relationships. Certification of International Standards is seen by some as a means to increase export competitiveness and strengthen market positions. For instance, the WTO Agreement on Technical Barriers to Trade includes international standards as a benchmark for the harmonization of national standards. In specific, countries that adopt Type I eco-labelling schemes that depart from the ISO Standard (ISO 14024) may need to justify any departure from an internationally accepted standard.

24. In a recent study the question of whether the presence of multiple eco-labels will have an impact on trade was investigated. The issue of how an internationally recognized label would impact export opportunities was also addressed. All respondents felt that having an internationally recognized eco-label would have an impact on exporting. Twenty percent of respondents felt that it would have a large impact on exporting opportunities and forty six percent of respondents felt that having an internationally recognized label would have a fair impact on exporting opportunities.

25. Surveys have indicated that the key incentives behind implementing an EMS range from the need to be in compliance with environmental legislation, fulfilling export requirements, conforming to industrial mandatory standards, and meeting the requirements of international environmental agreements. Another key incentive, that is gaining in popularity, is the wish to be competitive in a global marketplace, coupled with the need to increase market share.

26. The United Nations Industrial Development Organization completed a study in 1997-1998 which revealed that over 70% of companies in developing countries and countries in transition perceived that compliance with ISO 14001 can open trade opportunities and strengthen their market position. This same survey revealed that 60% of the companies perceived that ISO 14001 would have significant, positive or negative, trade effects. However, some felt that it may take a decade before the trade implications of ISO 14001 are clearly understood.

27. SMEs are also impacted by the increase in International Standards. The cost involved in certification is always a concern for smaller organizations. As major corporations ask their tier two and three suppliers to implement ISO 14001, SMEs will be challenged to meet that demand in order to stay competitive.

28. A recent study reported in the journal, *International Systems Update*, January 2001 provided a breakdown of *Fortune* magazine's Fortune 100 companies. The results of this survey reveal that the top 10 companies have taken a proactive approach towards environmental issues with all of the companies having an environmental policy and they are all involved in some form of an environmental program. Half of the companies were certified as ISO 14001 compliant and eighty percent of the top ten companies were producing environmental reports.

29. The Environmental Commitment of Fortune Magazines Fortune 100 Companies

	<i>Environmental Policy</i>	<i>ISO 14001</i>	<i>Other Environmental Programs</i>	<i>Environmental Reports</i>
Top 10 Companies	10	5	10	8
Top 100 Companies	51	23	54	36

Climate Change:

30. Climate change is one of most significant issues facing the world community as it seeks to embrace sustainable development. In response, the United Nations Framework Convention on Climate Change (UNFCCC) was opened for signature at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil in June of 1992 and came into force in March of 1994. Some 184 countries are signatories to the Convention that sets an ultimate objective of stabilizing greenhouse gases at "safe levels". The Convention, however, does not quantify such levels, but commits all Parties to implement policies and measures that mitigate climate change.

31. In December of 1997, the Kyoto Protocol to the UNFCCC was adopted by the Parties to the Convention. The Kyoto Protocol commits so-called Annex I Parties* to individual, legally-binding targets (i.e. assigned amounts) to limit or reduce their greenhouse gas emissions, adding up to a total cut of at least 5% from 1990 levels in the period 2008 to 2012. The Kyoto Protocol establishes three "flexibility mechanisms" designed to allow Annex I Parties to reduce the cost of meeting emission reductions targets by allowing them geographic flexibility:

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| <p>Joint Implementation (JI)</p> | <ul style="list-style-type: none"> • JI involves projects to be undertaken in Annex I countries. The "Emission Reduction Units" (ERUs) generated from each projects can be deducted from the Annex I host country's assigned amount and added to the investing country's assigned amount, with the overall Annex I assigned amount remaining unaffected. |
| <p>Clean Development Mechanism (CDM)</p> | <ul style="list-style-type: none"> • CDM refers to projects undertaken in non-Annex I Party countries. CDM projects must assist non-Annex I Parties in reducing emissions and in achieving sustainable development. "Certified Emission Reductions" (CERs) credits resulting from CDM projects can be acquired by Annex I Parties and added to their assigned amounts. |
| <p>International Emissions Trading (IET)</p> | <ul style="list-style-type: none"> • IET enables the buying and selling of assigned amounts between Annex I countries. |

* Annex I Parties include OECD countries and countries with economies in transition.

32. Since 1998, ISO has been exploring the potential role of voluntary standards in facilitating implementation of the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol. To this end, ISO has established two groups:

Year	Group	Mandate	Secretariat Responsibility
1998	ISO/TC 207 Climate Change Task Force (CCTF)	<ul style="list-style-type: none"> To explore the potential application of the ISO 14000 series of Environmental Management standards to climate change. 	√ Standards Council of Canada.
2000	ISO/TMB Ad Hoc Group on Climate Change (AHGCC)	<ul style="list-style-type: none"> To explore the potential application / adaptation / development of ISO standards to climate change. 	√ Standards Council of Canada.

33. Two primary areas where the use of existing ISO products may facilitate the implementation of the UNFCCC and its Kyoto Protocol have emerged:

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| Product/Performance Standards | <ul style="list-style-type: none"> The AHGCC has developed a database of Technical Committee standards and work programmes potentially relevant to Government and Business in designing and implementing climate change policies and measures. |
| Environmental Management Standards | <ul style="list-style-type: none"> The AHGCC and CCTF have developed specific guidance on how the existing ISO 14000 series of standards may be used to manage greenhouse gas mitigation projects. |

34. The Kyoto Protocol's Clean Development Mechanism (CDM) requires independent third party certification at two stages of the project cycle:

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| Project Validation | <ul style="list-style-type: none"> Third party "Operational Entity" validates that project design is in accordance with eligibility, baseline and monitoring/verification plan requirements. |
| Project Verification/Certification | <ul style="list-style-type: none"> Third Party "Operational Entity" verifies / certifies project performance against the validated design. |

35. The Kyoto Protocol's negotiating text outlines the architecture, rules and procedures for a CDM accreditation and conformity assessment system. The AHGCC continues to discuss the potential utility of adapting existing ISO/IEC Guides to meet the needs of the Parties to the UNFCCC.

36. The AHGCC has been mandated "to consider the need for any new work items within ISO which may facilitate the implementation of the UNFCCC and any underlying legal and policy instruments (e.g. the Kyoto Protocol)". Potential areas where standardization – including the harmonization of best practice - may facilitate implementation of the UNFCCC and its Kyoto Protocol includes:

- Greenhouse gas project monitoring and verification/certification protocols,
- Guidelines for assessing greenhouse gas project baseline methodologies,
- Emissions trading transfer/acquisition contracts,
- Guidelines for greenhouse gas accounting inventories and registries, and
- Guidelines for assessing/designing environmentally sound technologies.

Conclusion:

1. It is evident that organizations have started to include environmental issues in their business plans. International Standards harmonize good environmental practices on a worldwide basis and can go a long way toward facilitating the solution, while enhancing international trade. The benefits of International Environmental Standards will only increase as more organizations recognize that taking a proactive approach to environmental issues is not only good for society, it is good business. ISO needs to work with industry, and other stake holders to identify priorities, enhance technological innovation, assist developing countries and SMEs in understanding and implementing the ISO standards, and finally work towards a balance between environmental concerns, societal needs, and economic realities.

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